



HEM *harmonize*

Maths
Grade VIII

Integration of Values

Teacher's Manual



Teacher Manual for Integration of Values in Teaching Academic subjects

By

HEMA Foundation, Mumbai

Teacher Manual for Integration of Values in Academic subjects

Maths

Grade VIII

IDEA conceived and executed by

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Preface



It gives immense pleasure to all of us at HEMA Foundation in presenting the “Teacher Manual for Value Integration” from Grade I to Grade X to our beloved teaching fraternity in school education. Teachers are the corner stones in building the huge edifice for the student community and they are the driving force and guiding spirit to the society. Little will change in the society, if the teachers do



not make any efforts. We are all living in a scenario where value systems need to be integrated and enhanced through essential school subjects so that the students assimilate values into their regular habits effortlessly. There may have been innumerable reasons why values from the society are disappearing, but there cannot be two opinions about the significance of educational institutions in restoring the culture and values of the society. When they say, ‘values are to be caught’, it is leaving a high degree of moral responsibility on the part of our teachers and this manual is our humble effort to lessen that burden for them. This manual is not a substitute to the academic teaching lesson plan, but is a supplementary assistance to the academic text. Nevertheless, the teachers are at perfect liberty to choose and aptly use the learning materials/activities wherever they find it relevant. This manual would be of great use to the teachers as they are written by practicing teachers in the school system and after thorough research and therefore, the general difficulties of teachers such as completion of portions in the given time to teach the subjects etc are taken care of. In fact, some of the lessons have been written after seeing their practical applications in actual classrooms.

We all have a responsibility of creating a society that is driven by values and our younger generation is the key change makers in the society. They all must be inspired by our educational institutions and their teachers so that their intellectual development is supported and augmented by the value systems and culture. HEMA Foundation takes it as a commitment to the society in participating in this huge endeavor. Inviting all the stakeholders to this venture of spreading and integrating values into the learning environment of schools, with all humility, we remain always your well wishers

Thank You,

Mahendra

Mahendra Kabra
Managing Trustee

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Acknowledgement

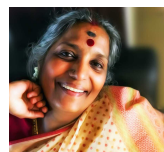
Welcome to HEMA Foundation's "Teacher Manual for Value Integration". I take this opportunity to thank each one of those who participated in it. At the outset I thank the Management of HEMA Foundation, its Managing Trustee Shri Mahendra Kabra and the Trustee and Creative Director, Smt. Anita Maheswari, for their unstinted support and cooperation in making this happen. Our humble pranams to the Senior most Member of HEMA Foundation Padmashree Shri Rameshwarlal ji Kabra, for his abundant blessings. The Associate Director Hetal Desai, the IT department Head, Shri Arvind Pandey, Shri Akash Shah and all other team mates from HEMA Foundation have contributed immensely toward realizing this manual.

There are several people outside the system who have supported this cause by giving their valuable comments and suggestions and my thanks are due to them as well. My sincere appreciations to the authors of this book who have been esteemed Principals, Section heads and Department heads and educators from reputed institutes of the country and they deserve the highest appreciation in envisaging the concept so well. My sincere appreciation to Dr. Shobana Nandakumar Nair, Mrs. Shobha Rajkumar, Mrs. Priya Cibi, Mrs. Sopna T. R and Rashmi Menon, for authoring the manual for Math, EVS, English and Science respectively. It was their untiring work and willingness to modify the documents as and when changes were required or further researches were needed, that this book was made possible.

As the Academic Director of HEMA Foundation and the person who has conceived this idea of value integration, I have gone through this document several times before presenting it to you and am fully aware of the significance of each word used in this document. I am sure the faculty who uses this manual would strictly adhere to the norms of the school Boards and the suggestions given over here. The Central staff of HEMA Foundation is more than willing to take your valuable suggestions and I promise that we shall be able to incorporate them if found suitable in our next publications.

I thank you for all your incredible commitment. All the credits if you find this document useful, would go invariably to all those who wrote the book and those who helped in the realization of the book and all those demerits if any, are purely due to my oversight. Believing that you would find it very useful in reaching out to the students and become inspiring teachers for our younger generations

I remain your sincere



Vijayam Ravi, PhD

Introduction

(must read before the teacher proceeds)

Its 'a Friday evening'. Everyone looks forward to a joyful weekend with family. After a weeklong work, it is a much-needed break. The school campus that was brimming with noises and screams of children, is silent and calm- The evening twilight has set in on the tall buildings, creating beautiful silhouettes. All have shut their tables; cupboards and the office of the school is closed. Principal and staff were slowly proceeding to the gate. They all wished each other a happy weekend. The peon is stepping out. Suddenly it happened. None expected the normal events that take place every day would take a turn so unexpectedly. School watchman came rushing to them to announce that there has been a riot in the city and he said he could see few students along with some other miscreants sabotaging public and private properties and hurting people on streets, hooting and howling. He added that it is not safe now to walk out. That the rioting group included their students as well. The miscreants included some of their old students too. And they were all those 'good' students when they were inside the school campus.

That left the teaching staff and the leaders stunned for a while. For a moment many of them looked at the school building just like that, which is their Almamater, and it stood so tall and elevated with a pride of creating thousands of glorious citizens in the past. Each one had a question mark in their eyes. None spoke. There was a dumb silence. Each one silently started replaying what they have been doing in the classrooms all along. There was an unbelief, inexplicable feeling reflected in their eyes. Did we make any difference to our students today? Did we teach our children to live or did we teach only Math, Science and language?

This is a serious question that all teaching faculty must ask themselves-

Did we teach subjects? Or did we teach children?

Professional standards for teaching academic subjects and transferring the right knowledge to the students have been the main objective of teaching all along, across the universe. All the latest teaching and learning revolutions that are happening in the classrooms and the students are evaluated for their skill development. Education is the vehicle for development of human being. Situations turned out to be grim when the pandemic engulfed the world with its outstretched arms. Every nook and corner of the world reeled under pressure with the pain and uncertainty that was caused by this pandemic. The ambiguity around, the uncertainty, complexity and insecurity around the schools was huge that none could fathom a way to come out of it. Teachers started looking toward blended learning in a hybrid classroom situation as a solution to reach students. All the more a reason for us, to do introspection about what we were doing till yesterday in the classrooms.

Yes, we taught our students Math, English, Languages, Social sciences, Sports, Music, Art and Craft and everything else-but values. We boasted ourselves as the top schools

with more students falling into the distinction list in terms of marks. Every year we sent out to the world, thousands of students with less skills and values but more of academics and marks. We were happy. Schools were happy. But we realize today that only some of those schools have been teaching students and not teaching subjects alone. Teaching subjects has a goal post and that is the academic credentials in terms of marks, but teaching students per say has another purpose altogether and that is -Touching their lives. We were confused and placing our balls in the wrong goal' posts. Result? The riots on the street, misbehavior, calamities, destruction, suicide and a valueless society in the making! Yes, certainly we imparted knowledge of academic subjects, however while this intellectual development is transmitted, there was room for us -the teachers for integration of values into these subjects. Few schools include moral science or value education in the curriculum and the teachers do teach the kids values like an academic subject and most of the schools assess the moral science in a written examination. It is very doubtful whether the students have really gained anything out of this process. Chances are bright that they end up considering the value education as just another subject. Teaching values through books was not a mistake, but assessing the children on marks was the issue. So, students when they completed their moral science examination, and received their 'pass marks', they quietly 'passed on' the values to the dustbins.

They say that the society's growth and degradation depend to a large extent the way the students are produced by the schools. The economic prosperity of a Nation depends to a large extent on living style and value systems of the society and there is every reason to believe that when the crime rate in a country goes high, the economic prosperity has declined in the society. The thinking, the culture of coexistence, working as teams and maintaining the art of tolerance, if these are removed from the society, it is very difficult to revive the Nation. India has been such a rich country with its values and it is a very painful scenario to watch how our younger generation is missing out on values. To a large extent the responsibilities can be passed on to the Macaulay's education system, parents and schools. If the schools make deliberate attempts to impart academic subjects and create excellence in that, the student's generation that gets molded out of the schools would certainly prove to be an asset in creating wealth and prosperity for the nation. However, if the schools do not impart values to the students, the nation will end up in a huge disaster after some time in terms of its moral fibre.. Wealth and success alone do not bring happiness to the society or an individual. Yes, it may bring some kind of satisfaction and one can always get a pleasure out of it. But very soon, this feeling becomes very transient and the mind would look for something else. This is human nature and it happens because the purpose of human life is not imparted to the students in schools. And when the assessment is done, that subject is also done.

Is this the purpose of education? Swami Vivekananda conceives education as the process where the innate potential of the human being is revealed. The innate nature of a human being is peace and joy. The riots on the street shows totally opposite virtues. Then where did the schools go wrong?

The riot on the street by students is not the debate here. It may be right or it may be wrong. The question is of larger dimension. It is of citizenry, safety, security and morality of a Nation, of the Globe! But why does such a behavior happen? Why do our students or our citizens behave in such an unruly manner that is a pain to others? When did our children or our citizens who passed out of the portals of our school, become so very intolerant? What is the fundamental cause for such an unrest in the minds of students, or generally speaking mankind as a whole? The intellectual quotient is very much in place. But when the spiritual quotient and emotional quotient are misplaced, the human beings sometimes behave weirdly. They lose cool, the power to think and act. Most often human beings react.

Did we, at schools, teach our students to act, or react?

Did we, at schools, teach the students values? Or imbue values in them?

Did we teach the students only subjects? Or did we touch their lives?

The Context to Value integration with subjects:

It is in this context of these questions, that the thought of integrating values with academic subject teaching dawned. Education and values are no two different subjects. They are mutually interwoven. As a teacher, the biggest role is to prepare their students behave like human beings with all values intact. All academic subjects may give them an opportunity to excel in life, but the values learnt help them to live as human being. Since the teacher is an integral part of education and the inspiration in the life of the children, they have to turn toward integrating values while they teach subjects. Value integration does not mean quoting a value and discussing it, rather it is an effort to lead the students to see a personal meaning in whatever the teacher teaches in all subjects. It depends to a large extent on the creativity of the teacher to highlight the value that is hidden in all subjects, including the languages. Value means a person's personal principles or standards of behavior the judgement of how important that value is to him in his life. In nut shell we can say, "Value is a preferential behavior". What the teacher needs to do in class is to help the kids choose 'his/her preferential behaviour'

The fundamental shift that needs to happen here is this.

At the centre, is the value and all subjects are contributing to the stabilization of the value. Therefore, the teaching has to be intertwined with those values from the subjects and the teachers reach to the students in a very subtle way. Each Subject-be it Science, Math Or languages, or social science, or Non-academic subjects, have got something very fundamental to convey to the people who spend time to learn those subjects. And if we look at those subjects from a very objective perspective, we can clearly see what they are all dying to convey to the children. Math talks about precision, value of time, sharing caring, multiplying happiness and joy and several likes. Science talks about hard work and resilience and the will power to fail and still work hard to achieve. Languages give the

feelings of expression, love, compassion and what not. So, when a student goes out of the school portals, he would have assimilated within him values like precision, punctuality, rationality, truth, compassion, love, caring, sharing, determination, courage to fail, spirit of enquiry et etc. Along with similar such values, the content gets learnt by the kids.

What benefits do Value integration bring to the students?

1. The students acquire several time honoured personal and collective values for life
2. Along with the cognitive development assured by modern education, integrating values in academic subjects prepares the children to develop their social and emotional lives
3. The approach of integration of values in teaching subjects, help the students enrich students' intellectually, physically, socially, morally, spiritually and artistically.
4. Schools can witness more of academic diligence with students showing increased attentiveness in the classroom and show capacity to do independent work
5. The school ambience also will see less of conflicting situations as the students start demonstrating greater empathy and responsibility
6. The student teacher relationships drastically improve and it becomes more trusting
7. Students feel a sense connectivity with others and belongingness

The argument

Teachers are the crucial ingredients in getting the values incorporated into the system and there is no two way about it. At present teachers are focused on completing their lessons on time amid all challenges and they do not have the extra time for doing any research for incorporating the lessons with values. Education and imparting values are no two different subjects. They are one. Additionally, thrusting a subject of value addition always attracts criticisms, primarily from the teaching community since they believe that it is an additional work and have to prepare more.

This argument is in place and cannot be ruled out and that is why HEMA foundation pitches in for help.

What does HEMA foundation offer to teachers?

This particular attempt from HEMA Foundation is to address this conflicting issue in education. HF is striving to reach out to teachers with ways and means to incorporate or integrate values while they teach academic subjects so that additional burden is not on them, while they address a major concern of education.

Values can never be taught, values can only be caught

Every subject has material knowledge that is needed for existence. What goes unnoticed more often is the subtle knowledge that the subjects try to convey. Any subject-Language, Math or science-all stand there for spreading virtues and values alongside the material knowledge. It is an integral part of learning the subject.

How and why are the values integrated by HF?

There is a very sound reason for HF to adopt the project of value integration into academic subjects and it is justified when any one reads the deliberations made in the NEP-2020 -NEP talks passionately about the integration of values, skills, and essential subjects to make the learning holistic. Let us refer to the clause 4.28, and it reads as follows: “Students will be taught at a young age the importance of “doing what’s right” and will be given a logical framework for making ethical decisions. In later years, this would then be expanded along themes of cheating, violence, plagiarism, littering, tolerance, equality, empathy, etc., with a view to enabling children to embrace moral/ethical values in conducting one’s life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. As consequences of such basic ethical reasoning, traditional Indian values and all basic human and Constitutional values (such as seva, ahimsa, swachhhata, satya, nishkam karma, shanti, sacrifice, tolerance, diversity, pluralism, righteous conduct, gender sensitivity, respect for elders, respect for all people and their inherent capabilities regardless of background, respect for environment, helpfulness, courtesy, patience, forgiveness, empathy, compassion, patriotism, democratic outlook, integrity, responsibility, justice, liberty, equality, and fraternity) will be developed in all students.”

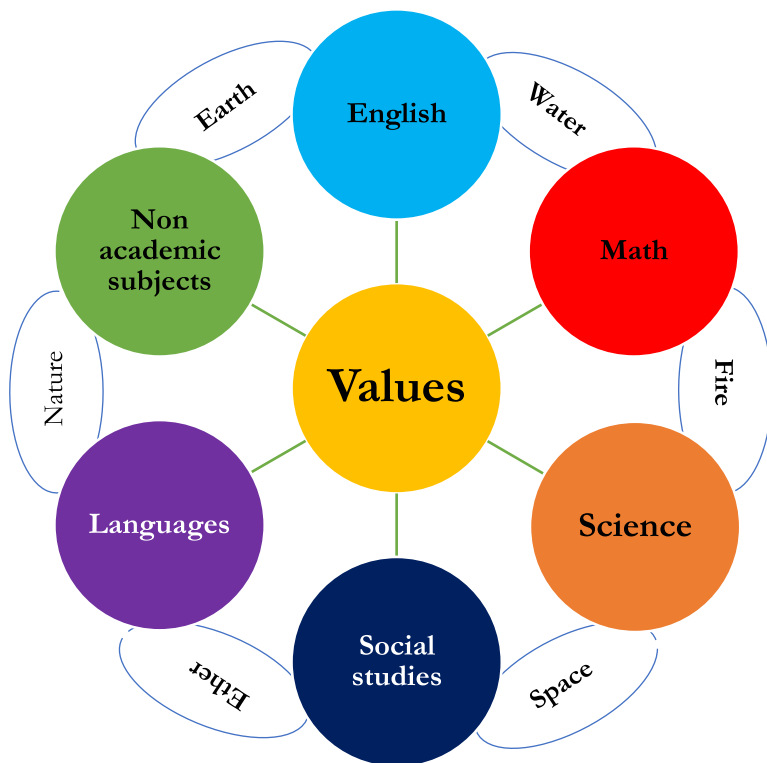
The new NEP and therein the NCERT insist on integration of values with essential subjects. Nature is the mother of all knowledge- Every learning that takes place with human beings is connected through the mind and intellect. While giving food for thought at the intellectual level, teachers have to supplement the emotional aspect through developing the mind. Mind develops by seeing, observations and hearing from sources that make sense to it. Human brain and human mind need to go hand in hand to make rational decisions and emotional attachments. If there are no emotions to any material knowledge learnt, it will remain a subject only. The love for the subject comes, when one extrapolates it to the application of it both at the material and emotional level. The emotional intelligence that gets originated while an academic subject is being taught is as powerful as the academic learning. Because it signals imagination and creativity and these are faculties associated with the mind. The rational brain which is provided with intellectual information about the academic subjects processes the knowledge with the help of the emotional brain-which is the mind. When no food is given to the emotional brain, it gets impoverished. Therefore, a balancing act needs to be done by teachers while imparting knowledge on academic subjects to incorporate the value or virtue that the subject is trying to convey to the reader or learner.

While the teacher teaches a topic ‘Patterns’ in Math, remember that the teacher has to touch the value of precision, discipline and punctuality. The whole universe gives us innumerable patterns and they all follow a certain order. That order brings discipline and it helps you see things in the right perspective. Similarly, the teacher, while discussing about geography, and earth in particular, what can be brought out is the virtue of evolution and the stability given by the earth. Earth is an evolved planet. The innate stability, the order, the growth and silence involved in this process are all virtues that can

be imparted to the students. On similar lines, the ecosystem, the biology, atmosphere, the plants, animals, air, water, aesthetics, and beauty-all talk about values and virtues of truth, tolerance and love, coexistence, interdependence, compassion and honesty.

Integration of values with academic subject teaching is an effort of HEMA Foundation to reach to the teachers with the varied ways of dealing with academic subjects and making it very interesting for the students to learn.

Whom does this manual serve?



The next thing that HF is trying to incorporate is Skills along with values. Skills are also considered to be an integral part of learning and hence while a value is highlighted the skills are also touched upon.

The additional advantage that teachers who use this manual of HF is that, the chart of the flow of lessons can be as such adopted in real teaching sessions without the need for doing a lesson plan again. The pattern of a school lesson plan used for imparting academic session is given incorporating the values integrated in it.

The perfect way of starting an academic lesson in a normal classroom situation so that the students get glued to the teacher's skills of teaching, is assured in the manual

through a context text-either by way of a story or an activity or discussion that rouses the interest of children

The description of the lesson ends with assignments for doing individually, at home or in class and this comes as a huge relief for the teachers

There is also a descriptive summary in the beginning of the text manual where in the topic, the core values, the skills and the activities that can be done and also the materials required for the same are all given so that the teacher gets a quick idea about how to go about the same.

HF, thus, is trying to travel that path of imbibing values to children along with the teachers!

Organization of the manual-How to read the manual?

The teacher will have to read and understand the manual as follows:

This teacher manual follows a certain structure that is not replacing the academic journal of the teacher. On the contrary, serves as an additional support as to how the teacher can link those values that are very relevant for a human life with the teaching of the subjects.

It has two parts:

A descriptive summary: this is a sheet in the beginning of each manual, showing what are the core values, sub values and skills that are linked with the topics and describes what activities can be undertaken to teach the values through subject integration and also shows what all education materials are required. Teacher has to glance through this to get a fair idea about how many values are integrated in total and understand this part first

The second part is the actual manual where the method of integration is dealt with the main academic concept.

The structure of the manual goes as follows: Start reading from introduction

1. **Introduction:** This gives what the lesson is about and what values, skills can be integrated here and the significance of it
2. **Learning objectives:** This plan talks about what are the academic and value driven objectives of learning the lesson
3. **Process and Action:** Here the way how the lesson has to be undertaken and it is shown in the form of a flow chart for quick understanding mentioning the activities at each stage. It starts with the context which actually serves as the introduction of the class to the new topic.
4. **Activities and related discussion:** Here the activities are dealt with in detail with discussion questions that lead to both academic and value driven integration. It is through these the teacher is able to deliver the total lesson effortlessly.
5. **Assignments:** Gives assignments that can be done individually, at home, or as group in the class.

The activities given can be chosen by the teacher as and when needed or as per the time available. It is not mandatory that the teacher does all activities.

Conclusion:

It is a proven fact that any particular value learnt becomes a habit when one practices it consistently. The purpose of integration of values with academic subjects is to learn the values along with the academic concepts and so whenever the academic concepts are tested, the value learnt is reiterated. The creativity and imagination of teacher make the lessons interesting to the students and HEMA Foundation presents this Value Integration Teacher Manual for the benefit of the teaching and student community.

Jai Hind

Conceived and presented by

Vijayam Ravi, PhD

Academic Director

HEMA Foundation

"वसुधैव कुटुंबकम्"

Vasudhaiva Kutumbakam ("vasudha", the earth; "iva", is ; and "kutumbakam", family). This Sanskrit phrase literally translates to mean that the whole world is one single family. The Sages have said that the entire world is truly just one family connected with thoughts, emotions, humanity and humility.



सर्वे भवन्तु सुखिनः सर्वे सन्तु निरामया ।
सर्वे भद्राणि पश्यन्तु मा कश्चित् दुःखभाग् भवेत् ॥

May all be prosperous and happy. May all be free from illness.
May all see what is spiritually uplifting. May no one suffer in anyway.
Om peace, peace, peace.



Vision

We aim to cultivate a conscious understanding of human values in individuals in order to help them coexist peacefully and harmoniously.



Mission

Our mission is to awaken the spirit of value based living in all individuals at school, organizational and community levels through well researched and structured programs resulting in a responsible, effective and harmonious existence for all



INDEX

01 Unit 1

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

02 Unit 2

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	8
VI. Resources	8

03 Unit 3

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

04 Unit 4

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	1
IV. Activities & Related Discussion	3
V. Assignments	8
VI. Resources	8

05 Unit 5

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	7

06 Unit 6

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

07 Unit 7

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	8
VI. Resources	8

08 Unit 8

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	7

09 Unit 9

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

10 Unit 10

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	7

11 Unit 11

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

12 Unit 12

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	7

13 Unit 13

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	1
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	6

14 Unit 14

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	7

15 Unit 15

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	7
VI. Resources	8

16 Unit 16

I. Introduction	1
II. Learning Objectives / Outcomes	1
III. Process & Action Plan	2
IV. Activities & Related Discussion	4
V. Assignments	6
VI. Resources	7

Unit 1

Topic	Values / Life skills integrated & imbibed	Activities
Rational Numbers	<p>Core Values considered : Righteousness and Morality</p> <p>Other Sub-Values: impartial, respect, honor, kindness</p> <p>Life skills: computing, thinking, listening, reasoning,</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Discussion & worksheets to revise the previous knowledge of students. 2.. Discussion and Story narration to inculcate in students the importance of righteousness and morality 3..Discussion of mythological story to inculcate in students to stick to the right path 4. Assignment Study of mythology stories and quote one story or one incident which has influenced them the most.

Materials / Resources needed

Value Integration:-

- 1.Work Sheets to conduct context activity
- 2.Facilities and Equipment to show videos
- 3.BB, Pen, Duster
- 4.Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities and games are incorporated in such a manner that children learn the concept of rational numbers along with their addition, subtraction, multiplication and division operations. Rational numbers teach inclusivity & diversity but while studying properties of rational number students learn how one can approach a situation or solve a problem in different ways. In addition to this the teacher can teach students the importance of being righteous by empathizing on the message that, just like the various properties of rational number, the path that one chooses will lead one to success but it is equally important to achieve this success in a morally correct manner. Righteousness is the quality or state of being morally correct and justifiable. Students should understand that the journey is as important as the destination

.

The key discussions are:

1.By discussion & worksheets teacher shall revise the previous knowledge of students.

2..By discussion and Story narration with students teacher shall inculcate in students the importance of righteousness and morality and how it becomes a chain action.

3..By discussion of mythological story with students teacher shall inculcate in students that stick to the right path and eventually you shall reap the benefits of your moral behavior by gaining the respect of your peers.

4. Assignment

Study of mythology stories and quote one story or one incident which has influenced them the most.

Unit 1**Rational numbers****Righteousness and Morality****I. Introduction**

Numbers that can be represented in the form of p/q , where q is not equal to zero are known as Rational Numbers. Rational numbers include all types of numbers which students have studied like natural numbers, whole numbers, integers, decimals & fractions. By the inclusion of fractions & integers it becomes rational numbers which solve many problems in mathematics & real life. Since rational numbers contain all type of numbers it gives diversity of applications. It is one of the most critical topics in Maths. Previous grades covered basic operations on rational numbers. This topic in grade 8 explores some properties of operations on the different types of numbers seen so far.

Rational numbers teach inclusivity & diversity but while studying properties of rational number students learn how one can approach a situation or solve a problem in different ways. In addition to this the teacher can teach students the importance of being righteous by empathizing on the message that, just like the various properties of rational number, the path that one chooses will lead one to success but it is equally important to achieve this success in a morally correct manner. Righteousness is the quality or state of being morally correct and justifiable. Students should understand that the journey is as important as the destination.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Define rational number in order to identify whether the given number is a rational number or not. Apply the properties of natural numbers, whole numbers and integers with respect to all the arithmetic operations and extend them for rational numbers
- Define the additive and multiplicative identity & additive and multiplicative inverse of rational numbers using prior knowledge of integers and fractions.
- Apply Distributive property of multiplication over addition for rational numbers and simplify a given expression.
- Extend the concepts of number line and represent rational number on the number line.

- Calculate and find rational numbers between any two rational numbers and prove that there are infinite rational numbers between any two given rational numbers.
- Learn the importance of being righteous & Morality in every walk of life.

III. Process & Action Plan

In simpler words, any fraction with a non-zero denominator is said to be a rational number. Motivation for mathematics, increased focus of a student, and plenty of examples for whole numbers, rational can be made by using:

- Car racing. Speed of Formula 1 cars (256.78 km/hr), time of arrival, fuel consumption (72.59 L/km), engine temperature (985.23 C), laps counts (2.5), tire rubber temperature, pit time (58.5 sec), randomness of pit times (probability distribution, average, expectation), track length (10.25km), compare tire diameter, volume with the length of the track.
- Pets and other animals. How much food they drink and eat (150.75 g of raw meat).
- Airplane flight deck instruments, altitude, speed.
- Car driving instruments, dashboard, fuel amount, speed, rpm, engine temperature

Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:

A.
Introduce the **context** activity:
Discussion & worksheets. Ref-A1, A2 & A3

B. Carry out the varied **activities** in class (given below)
in the sequence specified.

1.
**Righteousness &
Morality**
Chain of Righteousness
story narration &
Discussion.
Ref-B1

2.
Righteousness &
Morality Lord is
with the righteous
discussion from
Mythology.
Ref-B2

C. Aid generalization of the concepts learnt, through **assignments**
(given below).

1.
Study of Mythological stories
and quote one story influenced
them on righteousness.
Ref-C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the core approach – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The core values being considered are Righteousness and Morality along with other sub-values like impartial, respect, honour, kindness

The unit also provides the scope to develop the following life skills in the students: thinking, listening, reasoning, computing

IV. Activities & Related Discussion

A: The context activity for the teacher to start:

A1: Multiply or Divide as indicated

a) $\left(-\frac{4}{7}\right)\left(-\frac{3}{7}\right)$

b) $\frac{\left(\frac{11}{7}\right)}{+\left(\frac{2}{5}\right)}$

c) $\frac{-3}{2} \times \frac{1}{6}$

d) $\frac{5}{6} \div \frac{3}{8}$

e) $(+3.2) \div (-3.9)$

f) $(-1.8) \times (-6.7)$

g) $3.9 \div (-4.5)$

h) $(-1.1) \times (-1.1)$

i) $\left(+\frac{3}{5}\right)\left(-\frac{4}{6}\right)$

j) $\left(-\frac{7}{8}\right) \div \left(-\frac{3}{4}\right)$

k) $\left(-\frac{2}{3}\right) \times \left(\frac{6}{5}\right)$

l) $\left(-\frac{5}{14}\right) \div \left(-\frac{7}{10}\right)$

A2: Which rational Number is greater?

a) $\frac{1}{3}, \frac{4}{9}$

b) $\frac{22}{25}, \frac{21}{24}$

c) $-\frac{2}{5}, -.41$

d) $\frac{4}{3}, \frac{23}{18}$

e) $0.01, \frac{3}{200}$

f) $4.7, 4.71$

g) $-\frac{6}{11}, -\frac{5}{9}$

h) $0.2, -0.22$

A3: Represent all numbers on the same number line

a) 0.72

b) 0.81

c) $23/100$

d) 0.06

e) $3/5$

B: Value Based Activities:

B1: Importance of being Righteous

Teacher shall explain to students that just like how we use rules and properties to solve rational numbers, we need to follow certain rules & guidelines in life, being righteous means to be right, especially in a moral way. Religious people often talk about being righteous. In their view, the righteous person not only does the right thing for other people but also follows the laws. Heroes like Martin Luther King are often called righteous. Teacher shall narrate a story to students

Chain of Righteousness. By Michael Acera

Once upon a time, there was a boy who always likes to listen to his mother's story about the legend of the statue standing beside their humble house. The statue's name was Miriad, he was a legend of righteousness in that very village where the boy lives. The statue of Miriad is being preserved to be a model of the rising generations and to symbolize the greatness of their village. People who walk by the statue give their respect through bowing themselves in front of Miriad's statue. It became tradition in their village that every man who died honorably will be glorified as Miriad the legend, through sculpting their names on the statue's body and will imprint there as long as the earth stands. The boy wondered how Miriad gain so much respect and honor from the villagers. One night He asked his mother about the subject to answer his questions about the legend Miriad and how he gained his glory from the people of this village. "He was just a simple and upright man," the mother was saying. "He served his fellow selflessly, putting others first as priority before his," she added. "Well, I can also do that," the boy proudly told his mother. "That is the reason why they made Miriad a statue, for you children to emulate and not to forget." the mother counseled.

One morning the boy saw a crying orphan about his age standing under a mango tree. "What is the reason of your weeping?" the boy asked. "I am hungry and weary. I was trying to get myself some fruit from this mango tree and suddenly I fall on the ground." the orphan was explaining. "Let me do it for you", the boy smilingly uttered. He started to climb up the tree and take its fruits as much as he could. After a while, the boy went down from the tree and gave all the mangoes to the orphan. The orphan did not expect the boy's kindness to him. "Thank you very much," he said. "No worries," the boy responded. "Who taught you to climb a tree?" asked the orphan. "Miriad taught me." He answered. Then the boy walked away with his dream that someday his name will be written on the statue of Miriad the legend.

- **Discussion:**

If we strive to live righteously, we will sculpt a wonderful statue in the heart of others because our righteous actions will continue to be with them, forever and they shall pass on the same kindness to other people in need of the same.

Lord is with the righteous

The biggest strength of the Pandavas was the presence of Lord Krishna on their side. With the Lord on their side, none could defeat them. But why was the Lord on their side? How could He be partial to one set of people? These are questions we may be tempted to ask. The Lord is impartial. He stands always on the side of dharma. He is with the righteous. He does not discriminate against anyone. In all His acts of punishing someone or rewarding someone, He is guided by only one principle- that He should always remain on the side of what is right, said V.S. Karunakarachariar, in a discourse

Discussion:

The age-old battle of righteousness versus wickedness is iterated in these stories. No matter how many detractors you have around you, always stick to the right path and eventually you shall reap the benefits of your moral behavior by gaining the respect of your peers.

Ref:<https://www.thehindu.com/features/friday-review/religion/religion-lord-is-with-the-righteous/article6922398.ece>

V. C: Assignments

C1: Study of mythology stories and quote one story or one incident which has influenced them the most.

Resources

References:

1. <https://www.sunnyskyz.com/feel-good-story/2302/Chain-Of-Righteousness>
2. NCERT Textbook, Reference books, (R.D Sharma , R.S. Aggarwal)

Unit 2

Topic	Values / Life skills integrated & imbibed	Activities
Linear Equations with One Variable	<p>Core Values considered : Equality, Balance & Responsibility</p> <p>Other Sub-discipline, happiness, peace, harmony</p> <p>Life skills: problem solving, critical thinking, and logical reasoning</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Discussion & solving worksheets, to revise the previous knowledge of students 2. Discussion and Q&A method to demonstrate the secrets & benefits to lead a successful & balanced life 3. Assignment: <ol style="list-style-type: none"> 1. Ask students to set their goals, have a habit of preparing a to do list and how to priorities it and make an action plan

Materials / Resources needed

Value Integration:-

1. Worksheet to context activity
2. Facilities and Equipment to show videos and space for conducting activities
3. BB, Pen, Duster
4. Ncert Text Book, Reference books, (R.D Sharma , R.S. Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities, stories and games are incorporated in such a manner that students realize Everything under the sun focuses on a balance. When you are living with balance in your life, you are living with peace and harmony every day. Balance comes in physical forms, emotional forms, and a spiritual form. Striking a balance helps you lead a happy and contented and disciplined life, it ensures your growth as an individual and secures your mental peace and wellbeing. It helps you dream bigger: By maintaining a healthy balance, one can secure your future. Therefore it is each ones responsibility to maintain a healthy balance in all walks of life

The key discussions are:

- 1.By doing a discussion& solving worksheets, teacher shall revise the previous knowledge of students
2. By discussion and Q&A method teacher demonstrate the secrets & benefits to lead a successful & balanced life
3. Assignment:
 - 1.Ask students to set their goals, have a habit of preparing a to do list and how to priorities it and make an action plan

Unit 2**Linear equations with One Variable****Equality, Balance & Responsibility****I. Introduction**

Algebraic expression involves variables, constants and some mathematical operations like addition, subtraction or multiplication, division. A linear equation that involves one variable and the highest power of variable is only 1. An equation is an expression that equates two expressions. It says that the value of the expression on one side of the equality sign is equal to the value of the expression on the other side. We assume that the two sides of the equation are balanced. We perform the same mathematical operations on both sides of the equation, so that the balance is not disturbed and we get solution.

When you are living with balance in your life, you are living with peace and harmony every day. Balance comes in physical forms, emotional forms, and a spiritual form. Striking a balance helps you lead a happy and contented and disciplined life, it ensures your growth as an individual and secures your mental peace and wellbeing. It helps you dream bigger: By maintaining a healthy balance, one can secure your future. Therefore it is each ones responsibility to maintain a healthy balance in all walks of life

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Identify the variable(s) and the highest power of the variable in a given algebraic equation and distinguish whether it is a linear equation in one variable or not. Substitute the given values of variable and verify whether it is the solution of the equation or not.
- Write simple contextual problems as linear equations in one variable and find its solution
- Solving Equations which have Linear Expressions on one Side and Numbers on the other Side and having the Variable on both Sides.
- Simplify the given linear equation in one variable and solve them. Use variables in order to solve puzzles and daily life problems.

- Translates a real-life situation in the form of a linear equation and create a generalized problem statement. Identify a solution by maintaining equality and bringing balance to lead a peaceful life.

III. Process & Action Plan

Living a balanced life means determining what is most important to you and spending your time and energy accordingly. Finding balance comes from giving time and energy to the things that build you up and give your life. And likewise, eliminating the things that bring you down and stress you out. In real life, the applications of linear equations are vast. To tackle real-life problems using algebra, we convert the given situation into mathematical statements in such a way that it clearly illustrates the relationship between the unknowns (variables) and the information provided. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:

A.
Introduce the **context** activity:
Solving work sheets Discussion.
Ref-A1 & A2



B. Carry out the varied **activities** in class (given below)
in the sequence specified.



1.
**What is balance
in life**
Discussion and
explanation.
Ref-B1

2.
**Benefits of
balancing life**
Group Discussion and
explanation.
Ref-B2



C. Aid generalization of the concepts learnt, through **assignments**
(given below).



1.
Goal setting by preparation
To do List, prioritise &
Action Plan,
Ref-C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Equality, Balance & Responsibility* along with other sub-values like *discipline, happiness, peace, harmony*

The unit also provides the scope to develop the following life skills in the students: *problem solving, critical thinking, and logical reasoning*

IV. Activities & Related Discussion

A: The context Activity for the teacher to start:

A1: Make equations for given statements.

- 4 less than thrice a number x is 14
- A number x divided by 4 gives 3
- 7 less than a number x is 4
- Four fifths of a number is greater than three fourth of the number by 4.
- X exceeds 3 by 9

A2: Solve the following

1. Write the statements "If you subtract 5 from 6 times a number, you get 7." in the form of equations:

- $6x - 5 = 7$
- $5x - 6 = 7$
- $x - 5 = 7$
- $x - 6 = 7$

2. Write the statements "One third of a number plus 5 is 8" in the form of equations:

- $3m + 5 = 8$
- $m + 5 = 8$
- $\frac{1}{3}m + 5 = 8$
- $\frac{1}{3}m + 8 = 5$

3. Which is a solution of the equation $x + 4 = 6$?

- $x = 2$
- $x = 3$
- $x = 4$
- $x = 6$

4. Which is a solution of the equation $3x - 14 = 4$?

- (a) $x = 2$
- (b) $x = 3$
- (c) $x = 4$
- (d) $x = 6$

5. Write the statements "2 subtracted from a number is 8" in the form of equations:

- (a) $x - 8 = 2$
- (b) $x - 2 = 8$
- (c) $x + 2 = 8$
- (d) none of these

Everyone is driven by their goals in life. When we have lots of desires and wants these are clamouring inside us and we are open to feeling let down and disappointed, and balance is not possible.

What should you do?

Why can you not have all your desires fulfilled?

It is important that we learn to manage expectations and strive for a balanced, disciplined & peaceful life.

We should accept things that life throws at us and see them as opportunities to learn and grow into stronger people, we can become more balanced. Balanced people are those who cope equally with things that flatter and that hurt them, they accept praise and criticism equally, they are not affected by events that happen around them that are either happy or sad.

Teacher shall discuss and suggest some key elements required for a balance life and its benefits.

Firstly, we need to think clearly about what “balance of life” means to you.

What is in your mind?

What do you want?

Identify what affects you most and what you really want.

A balanced life is divided into two aspects. Internal balance of mind, heart & health and External balance of work, study social relationship, family & fun. As life changes, each aspect will have a different meaning to you and will hold different levels of priority for you. You should try to understand these essential elements and how they affect you so that you can strike a balance among these factors.

Set Priorities for Your To-do List

Write down your to-do list, divide the items of the list into different categories and prioritize them in order of time, importance. Be specific about what really matters to you. With this understanding, we can prioritize these items from “the very important” to “the unimportant” to clarify the situation and to define your values with great clarity. It helps you more easily to choose and make the correct decision about what to do first and lead you to the right path and stay on course.

Set Your Smart Goals and Create an Action Plan and a Timeline to Take Action

After setting priorities, you should set goals which give you the whole picture and direction of what to do with focus. It keeps you closer and closer to moving toward to balance. More, you should create an action plan with steps that need to be taken and a timeline to meet the goals so that you can get the best results possible. Moreover, review your progress and adjust your action plans weekly or monthly to see how they exactly will meet goals or deadline.

Deal with One Goal or Item At One Time and Say No to Multitasking

Many things and situations happen every day and require your attention. However, to focus on one thing at one time is quite essential. By saying no to multitasking can avoid less pressure and anxiety,

Knowing Your Weakness and Limits to Empower Yourself

To clearly examine yourself, your life, your mind, and feeling helps you find out the weakness like lack of concentration, doubts, and negative thoughts that keep you away

from sticking to your plan and pushes you off track Getting to know your weakness and limits can avoid depression and empower yourself to continue onward.

Enjoy the Journey.

Be kind to yourself, live in the moment and always have a goal to aim for, make it achievable yet challenging, keep it fresh and varied, and most of all enjoy the journey. It is not only about meeting the goals but also about grabbing every single moment of happiness. So wonderful memories you have and the lessons you learn are much more meaningful than just accomplishing the goals in life.

“Wisdom is your perspective on life, your sense of balance, your understanding of how the various parts and principles apply and relate to each other.”- Steven R. Covey

Making this process becomes habits, patterns, and practices to break old habits and rules so that you may have a brand new start. If you repeat it in your daily life, you will get your life aligned and stay on track to have a balanced life.

Benefits of a Balanced Life

Teacher shall discuss with students and explain the benefits of balanced life (Teacher shall conduct group discussion and summarise on each point)

Improve your mood: Once you have a balance of life, you would feel more content. It can help you have a sound mind and fight against negative thoughts like sadness. It can help you revitalize and reenergize. You can release your anger or frustration out. This can improve your mood and keep you active.

Improve health and wellbeing: Do you feel exhausted and tired? Do you feel sleepy because you stay up late with games & movies? Do you not have enough sleep and get sick? These are all signs to tell you that your body is not well and you are about to burn out. Therefore, you need to take break and plan to spend time wisely If you spend too much time working and feel tense, there would be consequences. More stress or suffering would lead to illness. That is why you need to find your balance back and get enough rest and health.

More efficient and productive: Imagine that you are completely occupied in studies, classes and having no personal life. That would lead struggle in your mind. You cannot concentrate on what should be done because you keep thinking about other things about studies. That makes you work slowly and inefficiently. For example, you just finish an examination you've been working on for weeks. After the exam is done, you need to spend time in your personal life or family life. After you have a break and get more energy back, I believe you look at things in a fresh way and study more productively and efficiently.

Enjoy yourself: Are you tired of the same work? Do you have no passion at all? It is pretty common to hear what people talk about. Why is that and how does it happen? You do not have to live in that way. Try to enjoy yourself no matter you are at work or play. Try to switch off and have a good time during your leisure time. Try to switch on and focus on your work. All you have to do is to work hard and play hard. Let yourself enjoy the whole process.

More social life: The truth is that you miss so much precious moments that you should have with your family and friends. What one should do is spend more time with people that matter to you and enjoy the company of each other. Moments spent with family and loved ones cannot be re-created by work or study.

Summary: The benefit of having a work-life balance is that you can live a life with no negative thoughts and no struggle. You do not have to get stuck in a life that you don't want. Practice balancing your life and enjoy it.

<https://www.balanceoflife.xyz/how-to-create-the-balance-of-life/>

V.C: Assignments

C1: Ask students to set their goals, have a habit of preparing a to do list and how to prioritise it and make an action plan

Resources

References:

1. <https://www.balanceoflife.xyz/how-to-create-the-balance-of-life/>
2. <https://www.worksheetsbuddy.com/grade-7-simple-equations-worksheets/>
3. <https://physicscatalyst.com/class-7/simple-equations-worksheet.php>
4. 2. Ncert Textbook, Reference books, (R.D Sharma, R.S. Aggarwal)

Unit 3

Topic	Values / Life skills integrated & imbibed	Activities
Understanding Quadrilaterals	<p>Core Values considered: Inter-relationship, Inter-connectedness and unity in diversity</p> <p>Other Sub-Values: togetherness, strong foundation.</p> <p>Life skills: logical thinking, critical thinking, logical reasoning, interpretation, observation</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Discussion with students and guide them to do a presentation group wise to revise previous knowledge of students. 2. Demonstration of pictures and discussions to encourages & guides students to find the real world applications to nurture healthy relationships and build sustainable connections with people from diverse back grounds 5. Assignment: Prepare a family tree

Materials / Resources needed

Value Integration:-

1. Pictures of family tree of quadrilaterals for the context activity. Pictures of applications of Quadrilaterals in different places
2. Facilities and Equipment to show videos & conducting games
3. BB, Pen
4. Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities and games are incorporated in such a manner that children learn the importance of inter-relationship, inter-connectedness and unity in diversity.. A quadrilateral can be defined as a closed, two-dimensional shape which has four straight sides. Depending upon its unique property we give different names to the quadrilaterals like square, rectangle, rhombus, parallelogram, kite, trapezium etc. A lot of quadrilaterals are used in our daily life. Each quadrilateral is unique and different in its own way; however, they are independent with their own set of properties and purposes. Comparing the same with life, we see that it is important to build relationships with diverse sets of people. It is important to be connected to people who are from diverse backgrounds and relationships because they bring a unique mindset and perspective towards life that one can always learn from, thereby enhancing the value of the relationship

The key discussions are:

1 By discussing with students and guide them to do a presentation group wise teacher shall revise previous knowledge of students.

2. By demonstration of pictures and discussions teacher encourages & guides students to find the real world applications & how it is connecting and relating with real life and teach them to nurture healthy relationships and build sustainable connections with people from diverse back grounds

5. Assignment:

Prepare a family tree and study the qualities of grandparents, parents and grandchildren and how they are interconnected. And find out how the qualities are different from grandparents to parents and grandchildren.

Unit 3**Understanding Quadrilaterals****Inter-relationship, Inter-connectedness and unity in diversity****I. Introduction**

In geometry, a simple closed curve made up of only line segments is called a polygon. We give different names to these polygons depending upon the number of sides. A quadrilateral can be defined as a closed, two-dimensional shape which has four straight sides. Depending upon its unique property we give different names to the quadrilaterals like square, rectangle, rhombus, parallelogram, kite, trapezium etc. A lot of quadrilaterals are used in our daily life. In fact, many of the things we see in our daily life resemble the regular mathematical shapes like circle, quadrilateral, triangle, etc. The list has countless examples, we cannot imagine the world without quadrilaterals. Wherever you see four sides, quadrilateral is involved there.

Each quadrilateral is unique and different in its own way; however, they are independent with their own set of properties and purposes. Comparing the same with life, we see that it is important to build relationships with diverse sets of people. It is important to be connected to people who are from diverse backgrounds and relationships because they bring a unique mindset and perspective towards life that one can always learn from, thereby enhancing the value of the relationship. Students learn the value of inter-relationship, inter-connectedness and unity in diversity from this lesson.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value-based goals:

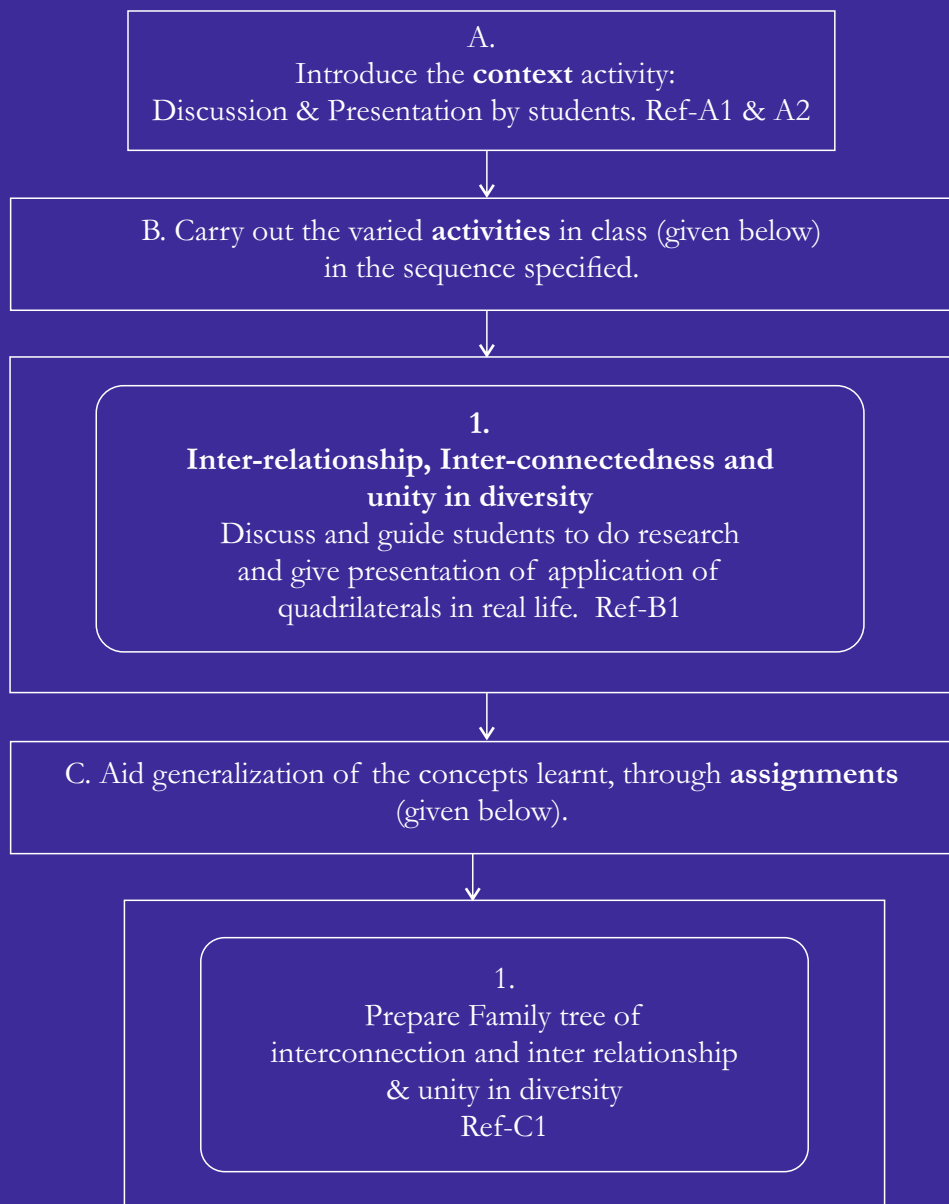
- Identify polygons, diagonals, interior and exterior regions, difference between convex and concave polygons and regular & irregular polygons.
- Understand the angle sum of interior angles of a quadrilateral is 360° and sum of all exterior angles of a polygon is 360° . Apply the properties and find the measure of the unknown angle in each quadrilateral.
- Classify the quadrilaterals as trapezium, kite, rhombus, rectangle, square and parallelogram as per the properties.
- Discuss the properties of a parallelogram in order to describe the relation between its opposite sides, angles and diagonals.

- Discuss the properties of a rhombus and classify it as special case of kite and parallelogram.
- Discuss the properties of a square and show it as special case of parallelogram, rhombus and rectangle.
- Students learn the value of inter-relationship, inter-connectedness and unity in diversity from this lesson.

III. Process & Action Plan

Quadrilateral is a four-sided polygon having four sides and four angles. That includes square, rectangle parallelogram, trapezium, rhombus and kite, etc within it. Quadrilaterals are used in electronic devices like mobiles, laptops, computers, TVs, etc. From laptop keyboard to the monitor screen you are viewing, quadrilaterals are involved. The laptop which is a rectangle shape placed on a square-shaped table requires rectangle shaped floor to stand. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Inter-relationship, Inter-connectedness and unity in diversity* along with other sub-values like *togetherness, strong foundation*.

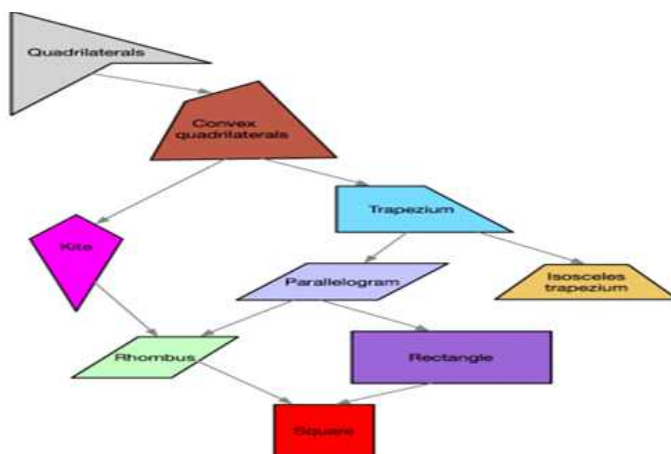
The unit also provides the scope to develop the following life skills in the students: *logical thinking, critical thinking, logical reasoning, interpretation, observation*.

IV. Activities & Related Discussion

A: The Context Activity for the teacher to start:

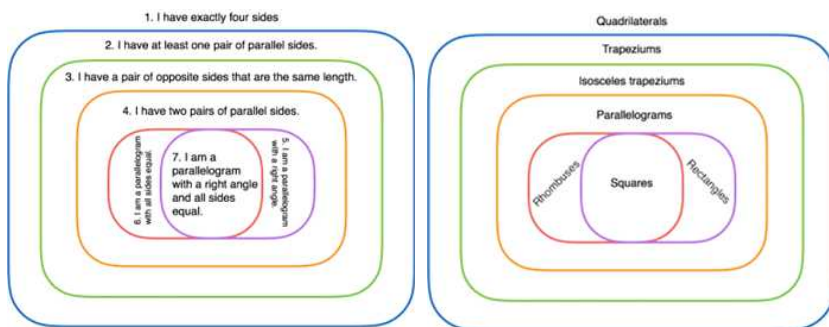
A1: Teacher shall divide students in 7 groups; each group will be given one shape. Ask them to describe the shape like number of sides, number of corners/angles, length of sides, measure of angles, how many sides are equal, how many angles are equal etc. Each group will present to the class. Teacher shall give 5 minutes for each group to write the information. Then allow them to present their shape to the class with the properties they have noticed.

A2: Teacher shall explain nested Diagrams and family tree of quadrilaterals.



A3: Each region now contains a class of shapes.

What are the names of each class of shapes? Teacher shall frame different questions and elicit the name of the quadrilateral.



<https://amiealbrecht.com/2017/10/03/a-lesson-plan-for-quadrilaterals/>

B: Value Based Activities:

Teacher shall discuss regarding the application of quadrilateral in the real world. Teacher shall divide the class into seven groups and ask them to find other real-world applications where a quadrilateral has been used and the scientific reason for using any shape.

Teacher can further entrust students with the task of finding how different shapes are connected and how this connection makes it durable and strong. Each group is expected to present in the class.

Basic Quadrilaterals

Technically, a quadrilateral simply means "four sides" but the sides have to be straight, and 2 dimensional. This basically means that there have to be four edges and vertices (corners). Here are some of our models in the real world; an outdoor pool and a picture frame.

Special Parallelograms: Rectangles and Rhombi

A rectangle is a quadrilateral with all right angles. It also has the same properties as a parallelogram. A rhombus is a quadrilateral with all equal sides. It is also considered a parallelogram. A rhombus has opposite angles that bisect each other. Here are some of our examples in real life: An example of a rectangle would be a plug outlet. An example of a rhombus could be seen in heavy machinery such as a crane.

Special Parallelograms: Squares

Squares have four sides that are all the same length. What makes squares different from other parallelograms, is that all the angles are equal and measure 90 degrees. Sides across from each other are always parallel. Below are some of our models in real life, a street pedestrian sign and floor tile:

Non-Parallelograms: Trapezoid, Isosceles Trapezoid

These non-parallelograms are different from any other quadrilateral simply because their opposite sides and angles are not congruent. For an isosceles trapezoid, in addition to one pair of opposite sides being parallel, the legs are congruent, each pair of base angles is congruent, and the diagonals are congruent. Here are some models of our trapezoids out today: a table and a window.

Non-Parallelograms: Kite



Kites are quadrilaterals that have four sides and have diagonals that bisect each other. Here are some examples of kites that can be flown in the sky:



Quadrilaterals: All Around the World

Around the world, people have something very much in common, sports. Every sport uses quadrilaterals in some way, whether it's the field, court, or the materials. For example, a basketball court. It is in the shape of a rectangle and has right angles as well as all the other properties a rectangle is associated with.




Quadrilateral Global Application

Without quadrilaterals in our world today, we would be nowhere. We use quadrilaterals a lot more than we realize in everyday simple situations. For example, technology. Computers, cell phones, and television are things that have a huge impact on our lives.




Teacher should summarize to students just like how quadrilaterals range from simple to more complex shapes and have their own unique properties that make them independently valuable, similarly people come from diverse backgrounds and their perspective can add value to every relationship.

Teachers should emphasize that students should nurture healthy relationships and build sustainable connections with people from diverse backgrounds.

https://prezi.com/x8bbulo_zjhh/quads-in-the-real-world/?frame=0d3d41bbdc0980621d07f1ecfea8b1c2e7561f1d

V.C Assignments

C1: Prepare a family tree and study the qualities of grandparents, parents and grandchildren and how they are interconnected. And find out how the qualities are different from grandparents to parents and grandchildren.

Resources

References:

1. https://prezi.com/x8bbulo_zjhh/quads-in-the-real-world/?frame=0d3d41bbdc0980621d07f1ecfea8b1c2e7561f1d
2. <https://amicalbrecht.com/2017/10/03/a-lesson-plan-for-quadrilaterals/>
3. 2. Ncert Textbook, Reference books, (R.D Sharma , R.S.Aggarwal)

Unit 4

Topic	Values / Life skills integrated & imbibed	Activities
Practical Geometry	<p>Core Values considered : Precision, Accuracy & Beauty</p> <p>Other Sub-Values: stability, beauty.</p> <p>Life skills: observation, critical thinking, logical reasoning.</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Conduct quiz to revise students' previous knowledge and prepare them for the new topic practical geometry 2. Demonstration & explanation of application of practical geometry in different areas of real life from Vedic period 3. Assignment Explore critical applications of quadrilaterals in fields such as medical, defense, space, software development, art and other fields.

Materials / Resources needed

Value Integration:-

1. Facilities and Equipment to show videos
2. BB, Pen
3. Ncert Text Book, Reference books, (R.D Sharma , R.S. Aggarwal)
4. Worksheets for conducting Quiz context activity & pictures of different application mentioned in TM.

Description (of the points of discussion)

Value Integration:-

In this chapter the activities and games are incorporated in such a manner that children learn construction of geometrical objects or practical geometry is an important branch of geometry. While learning practical geometry and doing constructions students learn the significance of beauty and precision. Anything built with precision and accuracy will be stable, beautiful and long-lasting. Quadrilaterals are effective tools for architecture and are used in the design of buildings and other structures as they provide necessary rigidity, strength and stability.

The key discussions are:

1.By Conducting Quiz & Discussion teacher revise students previous knowledge and prepare them for the new topic practical geometry

2.By demonstrating and explanations teacher take students different instances where the application of practical geometry used in real life from Vedic periods. Teacher make students experience the significance of precision, accuracy, stability & beauty

3.Assignment

Explore critical applications of quadrilaterals in fields such as medical, defense, space, software development, art and other fields.

Unit 4**Practical Geometry****Precision, Accuracy & Aesthetics****I. Introduction**

In this chapter, students learn to construct quadrilaterals based on parameters such as: dimensions for sides and diagonals for angles. There are specific ways and rules for construction of quadrilaterals. While learning practical geometry and doing constructions students learn the significance of beauty and precision. Anything built with precision and accuracy will be stable, beautiful and long-lasting. Quadrilaterals are effective tools for architecture and are used in the design of buildings and other structures as they provide necessary rigidity, strength and stability.

II. Learning Objectives / Outcomes

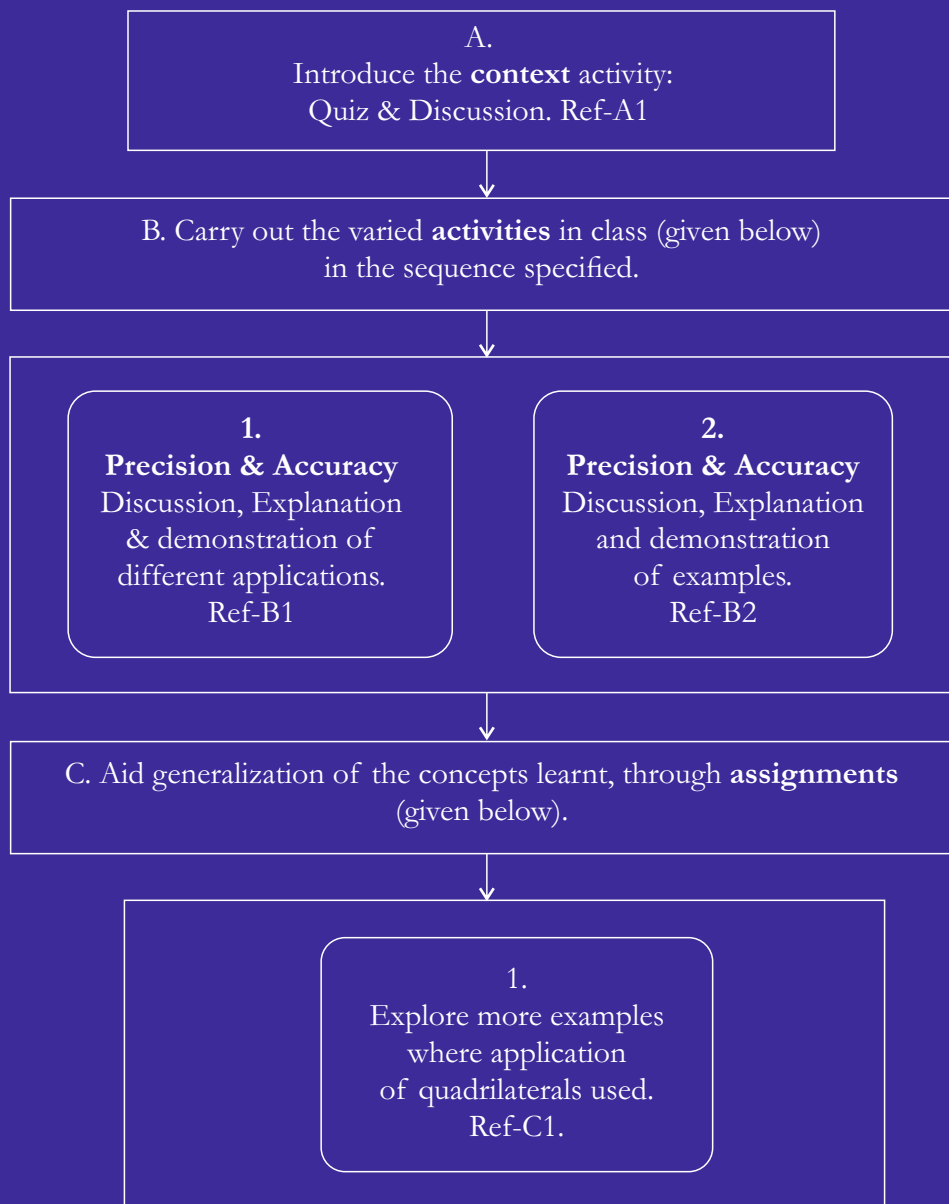
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Construct a quadrilateral when four sides and one diagonal are given
- Construct a quadrilateral when two diagonals and three sides are given
- Construct a quadrilateral when two adjacent sides three angles are given
- Construct a quadrilateral when three sides and two included angles are given
- Construct quadrilateral when other special properties are known.
- Understand the importance of Precision, accuracy and aesthetics in one's life.

III. Process & Action Plan

Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Precision, Accuracy & Aesthetics* along with other sub-values like *stability, beauty*.

The unit also provides the scope to develop the following life skills in the students: *observation, critical thinking, logical reasoning*.

IV. Activities & Related Discussion

A: The Context Activity for the teacher to start:

Teacher will conduct a Quiz contest in the class: Who am I?

1. Who am I?

I am a quadrilateral

Both pairs of my opposite sides are parallel

Both pairs of my opposite sides are congruent

Both pairs of my opposite angles are congruent

My consecutive angles are supplementary

My diagonals bisect each other but my diagonals are not congruent

2. Who am I?

I am a parallelogram

My diagonals are congruent

I have all right angles.

3. Who am I?

I am a parallelogram

My diagonals are perpendicular

All my sides are congruent

My diagonals bisect my angles.

4. Who am I?

I am a parallelogram

I am a rectangle

I am a rhombus

My diagonals are perpendicular and congruent.

I am a quadrilateral

The angles that connect my bases are supplementary.

I am a trapezoid

I have one pair of my opposite sides that are congruent

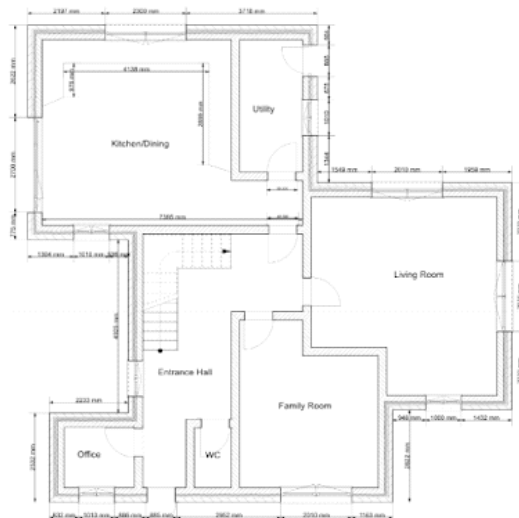
I am a quadrilateral

I have two pairs of consecutive sides that are congruent

Uses of Quadrilateral in our life:-

Teacher discusses and explains how quadrilaterals shapes are used with precision in different fields to create things with accuracy, inherent stability & beauty.

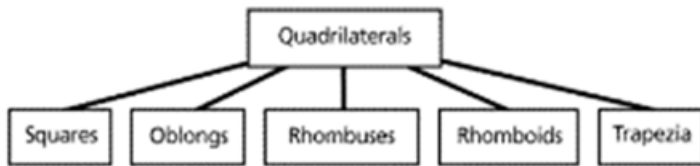
- a) In architecture quadrilaterals are the most common shape used in architecture. Triangles and quadrilaterals can both make amazing shapes. Here is an architectural design of a house and as you can see that it involves only the use of different shapes of quadrilaterals.



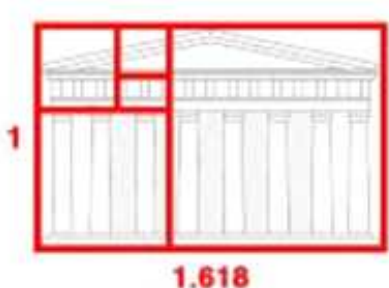
Quadrilateral during Vedic Time:-

Vedas are rich source of knowledge. During this period the rituals to please gods by means of Yagna were high. The rituals were an extremely important part of the ancient Hindu religion. Fire altars were constructed to perform yagna and they were made with precision in different shapes and size. Geometrical rules found in the Sulvasutras, therefore, refers to the construction of squares and rectangles, the relation of the diagonal to the sides, equivalent rectangles and squares, equivalent circles and squares, conversion, of oblongs into squares and vice versa, and the construction of squares equal to the sum or difference of two squares. In such relations a prior knowledge of the Pythagorean Theorem, that the square of the hypotenuse of a right-angled triangle is equal to the sum of squares of the other two sides, is disclosed.

Sulba means pieces of Chord or string and Sutra means formula. The Sulba sutras are the mathematical discoveries by famous Indian rishis turned mathematicians at about 1000 BC to 200 BC, Using a piece of chord for constructions of various fire sacrifice altars.



- b) The vast majority of properties are bounded by quadrilaterals. Nearly all papers and magazines are quadrilateral, as the footprints of most boxes, the shapes of many rooms, the walls of all houses and the floor in most of the cases are in the shape of quadrilaterals. A general quadrilateral with all sides of different lengths and no parallel sides may not be suitable for such tiling when it is repeated. We tend to use/choose those shapes that are suitable for packing and tiling. The famous Parthenon temple in Athens has also been based on the theory of Golden rectangle



- c) Diagonal of a rectangle divides it into two congruent triangles and the idea of congruency especially in triangles had been used by Egyptians to build The Great Pyramids of Giza. The idea of congruency of triangles initially from diagonal of quadrilaterals also helped Leonardo Da Vinci to paint the world famous 'Mona Lisa'!!!! The Mona Lisa painting is of dimension 73 cm x 53 cms which is obviously a rectangular shape. Some mathematicians believe that the Leonardo da Vinci used the principle of Golden rectangle while painting Mona Lisa. A group of researchers from University of California, San Diego and the University of Toronto discovered that the distance between a woman's eyes and the distance between her eyes and her mouth are the key factors in determining how attractive she is to others and this ratio is nothing, but the Golden ratio discussed above.
- d) The properties and rules governing geometric shapes known as quadrilaterals are used to create floor plans for new buildings, or to create buildings or spaces through engineering and architecture. These distinctive polygon shapes are composed of a couple of triangles, and these two triangles can be arranged in different shapes such as diamonds, rectangles. Since these shapes are so common, quadrilaterals are also used in graphic art, sculpture, logos, packaging, computer programming and web design: in fact there are few areas of daily life where there are no examples of quadrilaterals.



Grand Arche de la Defense, Paris



Crain Communication building, Chicago

The Grand Archie de la Defense, Paris based on a square and its looks like a Shadow of a 4D cube. The Archie is in the approximate shape of a cube (width:110m, Height:110m, depth:110m) whereas the second building is Illinois with a top in shape of Rhombus.

e) There are many quadrilaterals around us, tables, gates and roads are most quadrilaterals



in everyday life.

Discussion

Through all the above examples, the teacher should emphasize on how quadrilateral is so adaptable and can be molded to serve many applications in several fields of design, the availability of a wide array of quadrilaterals with their own properties and applications teach one to think critically and adapt to situations to find the best possible solution.

The teacher should emphasize that it is important for one to think critically to apply one's knowledge of things in a precise and accurate manner. The aim is to not just develop a solution that is technically or functionally sound but should be aesthetically elegant. This applies to everything a student will go on to do in life such as building a product.

V: C: Assignments

C1: Explore critical applications of quadrilaterals in fields such as medical, defense, space, software development, art and other fields.

Resources

References:

1. <http://mathspearl.blogspot.com/2016/10/quadrilateral-during-vedic-time.html>
2. <http://mathspearl.blogspot.com/2016/10/uses-of-quadrilateral-in-our-life.html>
3. NCERT Textbook, Reference books, (R.D Sharma , R.S.Aggarwal)

Topic	Values / Life skills integrated & imbibed	Activities
Data Handling	<p>Core Values considered : Honesty, Responsibility, Confidence & Interpersonal Skills</p> <p>Other Sub-Values: accuracy, discipline, teamwork, respect, courage, honesty, consistency, decision making, cooperation.</p> <p>Life skills: planning, organization, observation, recording, analytical, interpretation, drawing, computation</p>	<p>Value integration Activities:-</p> <p>1.Discussion and solving worksheets in the class room & Interpretation of a bar graph</p> <p>2.Assignment topics for research and taking the report and presentation</p> <p>3.Assignment:</p> <p>Survey on any project of social cause and present their observations and recommendations to class.</p>

Materials / Resources needed

Value Integration:-

1. BB, Pen, Duster,
2. Facilities and Equipment to show videos.
3. NCERT Text books, reference books (R.D.Sharma, R.S Agarwal)
4. Worksheet of bar graph with questions & Picture or poster of data handling cycle.

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated to teach students how the data is collected and the ways in which it can be represented will enhance the skills of the individuals. Data handling is a set of skills, which includes: Collecting data using a planned methodology, organizing data, recording and representing data with precision and accuracy. Analyzing data to draw conclusions. Sharing data in a way which is useful to others. Through this lesson the teacher can teach students the importance of being honest and responsible as these are key values that are required for data collection, analysis and reporting. This chapter also discusses about probability. Probability is measure of the chance that an event will occur. This lesson teaches students the value of courage, in life one is always calculated the odds of risk while taking any decision and for to go ahead with their decision requires courage. Through this lesson learners acquire many qualities and values like confidence, honesty, decision making and responsibility while handling data

The key discussions are:

1. By discussion of data handling cycle and solving worksheets in the class room & Interpretation of a bar graph teacher shall revise the previous knowledge of students.
2. By assigning topics for research study , giving right guidance & encouragement for the report and presentation teacher shall instill the value of responsibility ,honesty, decision making ,&confidence among students

3. Assignment:

Teacher shall encourage students to do individual survey on any project of social cause and present their observations and recommendations to class.

Unit 5**Data Handling****Honesty, Responsibility, Confidence & Interpersonal Skills****I. Introduction**

Data handling discusses to the process of gathering, recording and presenting information in a way that is helpful to others for instance, in, tabulation tables, graphs or charts. Data handling is a set of skills, which includes: Collecting data using a planned methodology, organising data, recording and representing data with precision and accuracy. Analysing data to draw conclusions. Sharing data in a way which is useful to others. Through this lesson the teacher can teach students the importance of being honest and responsible as these are key values that are required for data collection, analysis and reporting.

This chapter also discusses about probability. Probability is measure of the chance that an event will occur. This lesson teaches students the value of courage, in life one is always calculated the odds of risk while taking any decision and for to go ahead with their decision requires courage. Through this lesson learners acquire many qualities and values like confidence, honesty, decision making and responsibility while handling data.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Represent the given data using the most suitable representation and interpret them applying the knowledge of different types of graphical representation (namely pictograph, bar graph and double bar graph) of data
- Tally marks and organize given raw data in a frequency distribution table, and prepare a grouped frequency distribution table for large, ungrouped data.
- Construct histogram and represent the given grouped data and Explain the elements of the given histogram and interpret it.
- Construct a circle graph with the given data and Infer a variety of information from a given circle graph
- List all the possible outcomes of an experiment and define the equally likely outcomes, calculate the probability of a given event.
- Learn the importance of values such as Honesty, responsibility, confidence, courage and interpersonal skills.

III. Process & Action Plan

Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:

A.
Introduce the **context** activity:
Discussion & solve work sheet. Ref-A1 & A2

B. Carry out the varied **activities** in class (given below)
in the sequence specified.

1.
**Honesty, Cooperation, Responsibility
& Interpersonal skills.**
Discuss and guide students to do survey on
different topics and submit report& Presentation
Ref-B1

C. Aid generalization of the concepts learnt, through **assignments**
(given below).

1.
Survey to find out
a solution for a social cause
of student's choice
-Ref-C1.

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are responsibility, *honesty, confidence, Responsibility & Interpersonal Skills* along with other sub-values like *accuracy, discipline, teamwork, respect, courage, honesty, consistency, decision making, cooperation.*

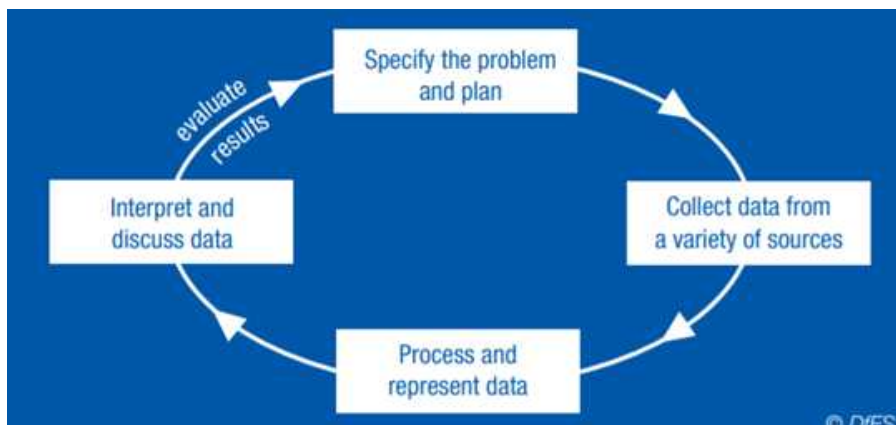
The unit also provides the scope to develop the following life skills in the students: *planning, organisation, observation, recording, analytical, interpretation, drawing, computation*

IV. Activities & Related Discussion

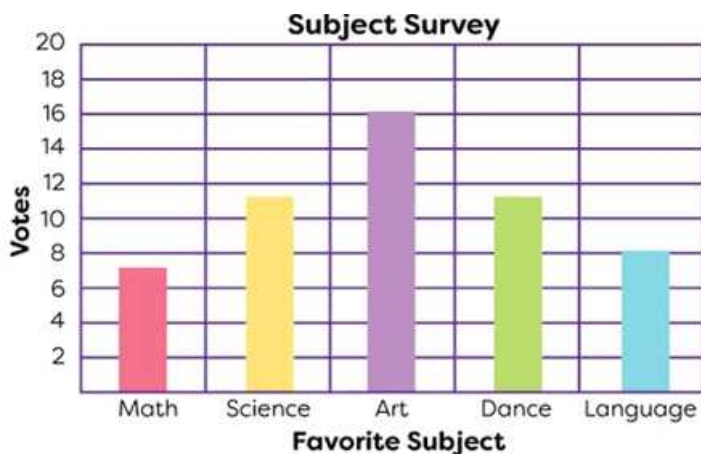
A: The context Activity for the Teacher to start:

A1: Revision of steps of the data handling Cycle

This diagram shows how handling data can be seen as a series of linked stages. Teacher shall elicit the steps and explain the steps in detail.



A2: Study the bar graph .Use the information from the graph to answer the question below



1. Which subject got the most votes?

2. How many votes did Dance get?

3. How many votes did Art get?

4. How many more votes did Language get than Science?

5. How many more votes did Math get than Art?

Ref: <https://in.pinterest.com/pin/821766263248488408/>

B: Value Based Activity

B1: Teacher shall divide students in 4 groups and assigned them the following activity and instruct them to do a presentation in the class

Group-I Collect English Marks from final report of Std VII.

Group-II Collect Mathematics Marks from final report of Std VII.

Group-III Sports performance (Game wise)(Foot Ball, Cricket, Basketball, Yoga, Gymnastics)

Group IV Cultural Performance (Dance, Music, Drawing, Painting, and literary activities)

Collect information, record by using tally marks, represent by using histogram and pie graph and ask the class to interpret by asking questions.

Step 1 : Planning: During this period look at your topics on Then you are going to draw up a plan of how to complete this task accordingly (Remember to include time constraints)

Step 2 : Collecting data: Collect the data during recess, or any available free time /on phone calls. Write all that down and bring that research to class within 2 days

Step 3 : Recording Data: Choose two methods of recording that information that was collected Remember the different colors. Frequency table (with the tally), Class frequency table.

Step 4: Comparing Data: Form a group with your classmates and discuss your data. Write down the common traits amongst everyone in the group. Select one learner from the group to share your findings. It must be finished within two days.

Step 5: Displaying Data: Now using your own data that you collected on Day 1. You must represent that information on a pie chart (remember to show all calculation.) Then choose another method, such as a bar graph, histogram, etc. And display the data again.

Step 6 : Interpreting Data: Frame questions & Answer the questions: so that you can submit the report to your class teacher and other respective teachers with proper action plan.

Step 7: Conclusion: Write a short Report (10 – 15 lines) about what you learnt from this activity. Remember to write what you liked and what you did not like about the entire activity

From this activity students learn to conduct a survey with confidence, collect information from people, record the information systematically with discipline and present it in a graphical manner with utmost responsibility and honesty.

During the survey while collecting the information from each other students realize the importance of cooperation & interpersonal skills and to be honest while giving answers. At the end of the presentation students learn to prepare meaningful questions for interpretation of the graph.

V. C: Assignments

C1: Teacher shall encourage students to do individual survey on any project of social cause and present their observations and recommendations to class.

Resources

References:

1. Ncert Textbook, Reference books,(R.D Sharma , R.S.Aggarwal)
2. <https://in.pinterest.com/pin/821766263248488408/>

Topic	Values / Life skills integrated & imbibed	Activities
Square Square root	<p>Core Values considered : 1. Optimism& Hard work</p> <p>Other Sub-Values: determination, confidence, grit, team work, cooperation, kindness</p> <p>Life skills: presentation, research, communication</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Discussion and using worksheets of puzzles teacher shall revise the previous knowledge of students. 2. Discussion & Presentation about personality who have made a mark in this world by optimism & Hard work 3. Assignment: Individual research study on any living personality who has become successful by optimism, hard work & determination.

Materials / Resources needed

Value Integration:-

- 1.Puzzle work sheets, for the context activity
- 2.Facilities and Equipment to show videos & conducting games
- 3.BB, Pen
- 4.Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that students learn just like when squaring a number doubles its value similarly when one combine's optimism & hard work together, it will yield double the rewards. However, by square rooting a number it reduces its value, similarly laziness and a weak mindset will always be detrimental to one's progress

The key discussions are:

1. Discussion and using worksheets of puzzles - teacher shall revise the previous knowledge of students.
2. Discussion about personalities who have made a mark on this world by optimism and hard work teacher shall divide students into groups and assigned topics to students to study more and do presentation to the class to instill in students self confidence, optimism and hard work
3. Assignment:
Individual research study on any living personality who has become successful by optimism ,hard work& determination.

Unit 6**Square and Square roots**
Optimism and Hard work**I. Introduction**

Squares are numbers, generated after multiplying a value by itself. Whereas **square root** of a number is value which on getting multiplied by itself gives the original value. Hence, both are vice-versa methods. Squares and square roots both concepts are opposite in nature to each other. If 'n' is a number then its square is represented by n raised to the power 2, i.e., n^2 and its square root is expressed as ' \sqrt{n} ', where ' $\sqrt{\quad}$ ' is called radical. The value under the root symbol is said to be radicand. The square numbers are widely explained in terms of area of a square shape. The shape of a square is such that it has all its sides equal. Therefore, area of square is equal to (side x side) or side^2 . This lesson will lead students through finding square roots by starting with squaring a number and finding the area of a square and then working backwards. Students will recognize perfect squares and be able to estimate the square root of number that is not a perfect square.

This lesson teaches us that just like when squaring a number doubles its value similarly when one combine's optimism & hard work together, it will yield double the rewards. However, by square rooting a number it reduces its value, similarly laziness and a weak mindset will always be detrimental to one's progress.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

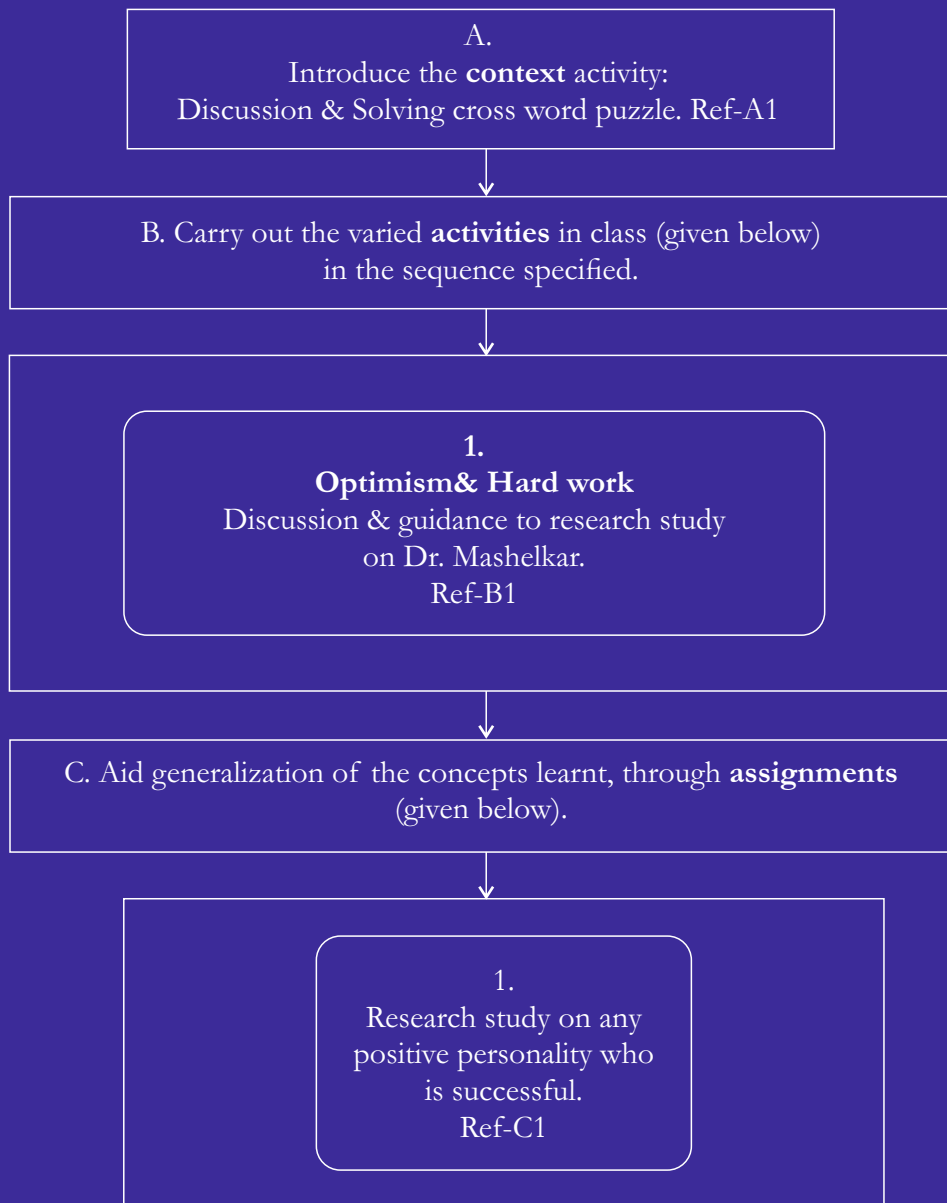
- Define perfect squares and classify the given numbers as perfect squares or non-perfect squares
- Use the rule that there are exactly $2n$ non-perfect square numbers between the squares of the number n and $(n+1)$ and find how many numbers, lie between the squares of the given two consecutive numbers.
- Use the rule that a perfect square number (n^2) can be written as the sum of first n odd natural numbers and distinguish between square and non-square numbers.
- Use Pythagoras theorem and find the Pythagorean triplet
- Apply inverse operations on a given perfect square and deduce square root of this number

- Use method of repeated subtraction and find the square root of the given square number.
- Use prime factorization method and find the square root of the given perfect square determine whether the given number is a perfect square or not.
- Use long division method and find the square root of the given perfect square number, find the square root of the given decimal number.
- Use estimation and approximate the value of the square root of the given number to the nearest whole
- Understand when squaring a number doubles its value similarly when optimism & hard work is combined it doubles the yield of the reward. However, by square rooting a number it reduces its value, similarly laziness and weak mindset is detrimental to one's progress.

III. Process & Action Plan

Square roots are used in many places in daily life. There are also many jobs that use square roots and the Pythagorean Theorem. Three examples are carpenters, architects, and engineers. There are many uses of farmer to apply square and square roots in daily life situations like measurement of field, calculate area. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

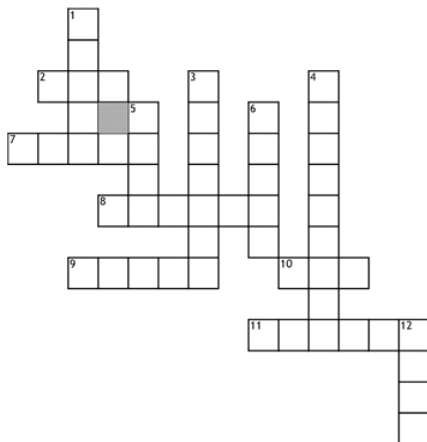
The *core values* being considered are *Optimism and Hard work* along with other sub-values like *determination, confidence, grit, team work, cooperation, kindness*.

The unit also provides the scope to develop the following life skills in the students: *presentation, research, communication*

IV. Activities & Related Discussion

A: The Context Activity for the teacher to start:

A1: Solve the puzzle by using the previous knowledge of exponents & powers



Across

2. If a number is squared, that tells you to multiply the number by itself _____ times.

7. If a number is cubed, it tells you to multiply the number by itself _____ times.

8. If you see a 3 with a little 4 above it you would say it is three to the _____ power.

9. What is another way to say to the third power?

10. What is anything to the zero power?

11. What do you multiply the bottom number by as many times as the exponent says?

Down

1. Five cubed could also be written five to the fifth _____.

3. What is another way to say to the second power?

4. Even though they have special names, squares and cubes are still _____.

5. What is zero to any power?

6. Three to the eighth power would be $3 \times 3 \times 3 \dots$ how many times?

12. What exponent would you use for $4 \times 4 \times 4 \times 4 \times 4$? 4 ____

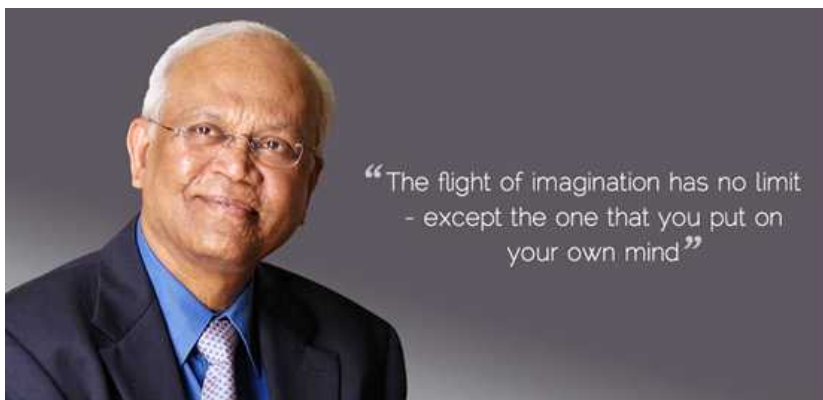
B1: Value Based Activities:

Teacher shall discuss about personalities who have made a mark on this world by optimism and hard work.

This life history is given for the reference of teachers. Teacher shall give different topics of his milestones for the students to research and make a presentation in the class for the learning benefit of themselves and for other students.

Topics for study

- **Group-I Dr. Raghunath Mashelkar** - Educational struggles and how he conquered all difficulties with hard work & optimism, grit & determination and pursued all his passion & highest degrees.
- **Group-II Dr. Raghunath Mashelkar** – Personality who has influenced guided and motivated him to become so successful in his life.
- **Group- III Dr. Raghunath Mashelkar** - Contributions to India and to the world & different prestigious positions held by him.
- **Group- IV Dr. Raghunath Mashelkar** – Awards and recognitions received.
- **Group- V Dr. Raghunath Mashelkar** – Refer Speeches, videos & interviews of Dr. Mashelkar where students can relate, reflect his optimism& motivation.



Dr. Raghunath Anant Mashelkar is one of India's most eminent scientists. He is known for his contributions to India's National Chemical Laboratory and Council of Scientific & Industrial Research, multiple 'Mashelkar Committees', and a successful campaign against foreign patents on Indian traditional knowledge. His mantras of 'Inclusive Innovation, More from Less for More' and 'Gandhian Engineering' have been a constant source of inspiration for corporates and youth alike. Born on 1st January 1943 in Mashel, Goa, Ramesh (as he is known to his near and dear) lost his father at the tender age of six. However, his mother Late Mrs. Anjani Mashelkar was committed to doing the best she could for him. It was her determination and foresight that pushed them to move

to Mumbai in search of a better livelihood and education. Here they lived in a chawl (a type of shared tenement) and often struggled to make ends meet. He went barefoot to a municipal school and would sometimes be unable to afford a notebook to write his answers in. However, he demonstrated excellence even amidst adversity. He was the brightest student in the school and continuously excelled in his academics. After successfully completing 7th grade, he was set to take admission at Union High School, Mumbai. At Union High School, young Raghunath's teacher Mr. Bhave recognized his talent and motivated him to stay focused in life, using the example of a convex lens which can concentrate the sun's rays and even spark a fire. It was this striking example that inspired Raghunath to become a scientist. He cleared his board examinations with flying colours – ranking 11th in Maharashtra – despite having studied by the light of a street lamp! Young Raghunath had a curiosity so insatiable that he would often sit outside the Majestic Bookstall in Girgaon, reading new books and quickly returning them because he had no money to buy them. After his board exam, he contemplated giving up on further education due to financial constraints. However, the encouragement by his mother and financial support from the Sir Dorabji Tata Trust helped him secure a seat in the prestigious Jai Hind College. As always, he worked hard and stood 2nd in the inter-state examinations. In fact, Jai Hind College awarded him the honor of its most distinguished alumnus in 2003.

Motivated by the bright future for the chemical industry in India, he joined UDCT (Now Institute of Chemical Technology), Mumbai to pursue his bachelor's degree in Chemical Engineering. After earning his degree, he had the option to go abroad to pursue his master's degree with a generous scholarship. Instead, he decided to continue his work at UDCT as a postgraduate under the mentorship of Prof. MM Sharma in the area of mass transfer in chemical reactions. He went on to complete his PhD under the guidance Prof. Sharma, finishing his thesis in just three years. His outstanding work earned him a fellowship at Salford University. Here, his guide encouraged him to work in an unrelated field – rheology. Dr. Mashelkar took up the challenge and over time, he made a name for himself as a distinguished Indian researcher.

In 1975, he was asked by Dr. B.D. Tilak (the then director of NCL) to meet Dr. Nayudamma (the then director general of CSIR) at London. In this meeting, Dr. Nayudamma spoke to him about India's untapped potential for excellence in science and technology, and the scarcity of talent in this area. His words inspired Dr. Mashelkar to work in the science, technology and innovation sector of India. He put aside his personal gains – India was considered a 'dead end' back in those days by most – and returned to his homeland.

After establishing himself at the National Chemical Laboratory (NCL) in Pune, he became its director in 1989. Under his leadership, research at NCL shifted focus to cater to the requirements of the industry. This was a revolution in itself! After India's economy was liberalized in 1991, he oversaw the collaboration of NCL with companies in India and abroad, setting a trend which many others followed. He also played a pivotal role in

transforming CSIR (Council of Scientific and Industrial Research) after he became its Director General in 1995. He strived to unify the efforts of the 40 diverse laboratories, establishing a one-team culture and improving internal collaboration, and took CSIR to new heights.

Dr. Mashelkar is probably best known to the common man through his crusade against the US patents on turmeric, neem and basmati rice. Arguing that the healing properties of turmeric are well known as traditional knowledge in India, Dr. Mashelkar fought a 14 month long legal battle to revoke the patent and emerged victorious. This victory was so significant that it changed the way patents were classified, and earned him the moniker of ‘The Warrior of Haldighati’.

Throughout his career, he has written 25 books, 284 research papers, and has been awarded honorary doctorates by 44 universities from India and abroad. He has also actively served the Government of India by chairing 12 highly empowered 'Mashelkar Committees', and has been a member of the Scientific Advisory Council to the Prime Minister. His contributions to the nation and to science at large have been honored by a plethora of awards, the most significant being the Padma Vibhushan, the Padma Bhushan, the Padma Shri, the Business Week Star of Asia Award, and the Shanti Swaroop Bhatnagar Prize for Science and Technology. He is the third Indian engineer to be inducted as a Fellow of the Royal Society, UK and the first Indian to be elected as a fellow of National Academy of Inventors, US.

Currently, Dr. Mashelkar is the President of the Global Research Alliance, which is the world's largest network of publicly funded R&D institutes that work together to achieve millennium development goals. He is also the Chairperson of the National Innovation Foundation of India, which aims at promoting grassroots innovations to solve some of society's biggest problems. He is an ambassador and evangelist for innovation and R&D across the world and serves on the boards of many leading companies. He lives in Pune, India with his family.

Ref:<http://www.mashelkar.com/>

V. C: Assignments

C1: Individual research study on any living personality who has become successful by optimism, hard work & determination.

Resources

References:

1. Ncert Textbook, Reference books, (R.D Sharma, R.S. Aggarwal)
2. <http://www.mashelkar.com/>

Topic	Values / Life skills integrated & imbibed	Activities
Cube Cube root	<p>Core Values considered : Passion, Optimism& Hard work</p> <p>Other Sub-Values: integrity, humanity, determination, love, respect, confidence,</p> <p>Life skills: presentation, research, communication</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1.Discussion and using worksheets teacher shall revise the previous knowledge of students. 2.Discussion & Presentation about personality who have made a mark in this world by optimism & Hard work 3.Assignment: Set goal for life and prepare a step-by-step plan on how to achieve it.

Materials / Resources needed

Value Integration:-

- 1.Puzzle work sheets, for the context activity
- 2.Facilities and Equipment to show videos & conducting games
- 3.BB, Pen
- 4.Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that students learn just like when cubing a number triples its value similarly when passion, optimism & hard work is combined it yields triple the reward. However by cubing a number it reduces its value, similarly laziness and weak mindset detrimental to your progress.

The key discussions are:

1. Discussion and using worksheets - teacher shall revise the previous knowledge of students.
2. Discussion about personalities who have made a mark on this world by optimism and hard work teacher shall divide students into groups and assign topics to students to study more and do presentation to the class to instill in students self confidence, optimism and hard work
3. Assignment:
Set goal for life and prepare a step-by-step plan on how to achieve it which helps them to be successful

Unit 7**Cube and Cube roots****Optimism and Hard work****I. Introduction**

The chapter starts by citing an interesting story about India's great mathematician Ramanujan. In this chapter, students will learn about cube, cube roots and many interesting facts about them. A cube is a solid figure which has all sides equal. These are called perfect cubes or cube numbers. Each of them is obtained when a number is multiplied by taking it three times. The cube obtained when a number is multiplied by itself three times is called perfect cubes or cube numbers.

Cube and cube roots are needful for many jobs in our daily life. They are used in carpentry, architecture, engineering, and designing buildings, flooring, and technology. This lesson teaches us optimism and hard work just like when cubing a number triples its value similarly when passion, optimism & hard work is combined it yields triple the reward. However by cube rooting a number it reduces its value, similarly laziness and weak mindset detrimental your progress.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

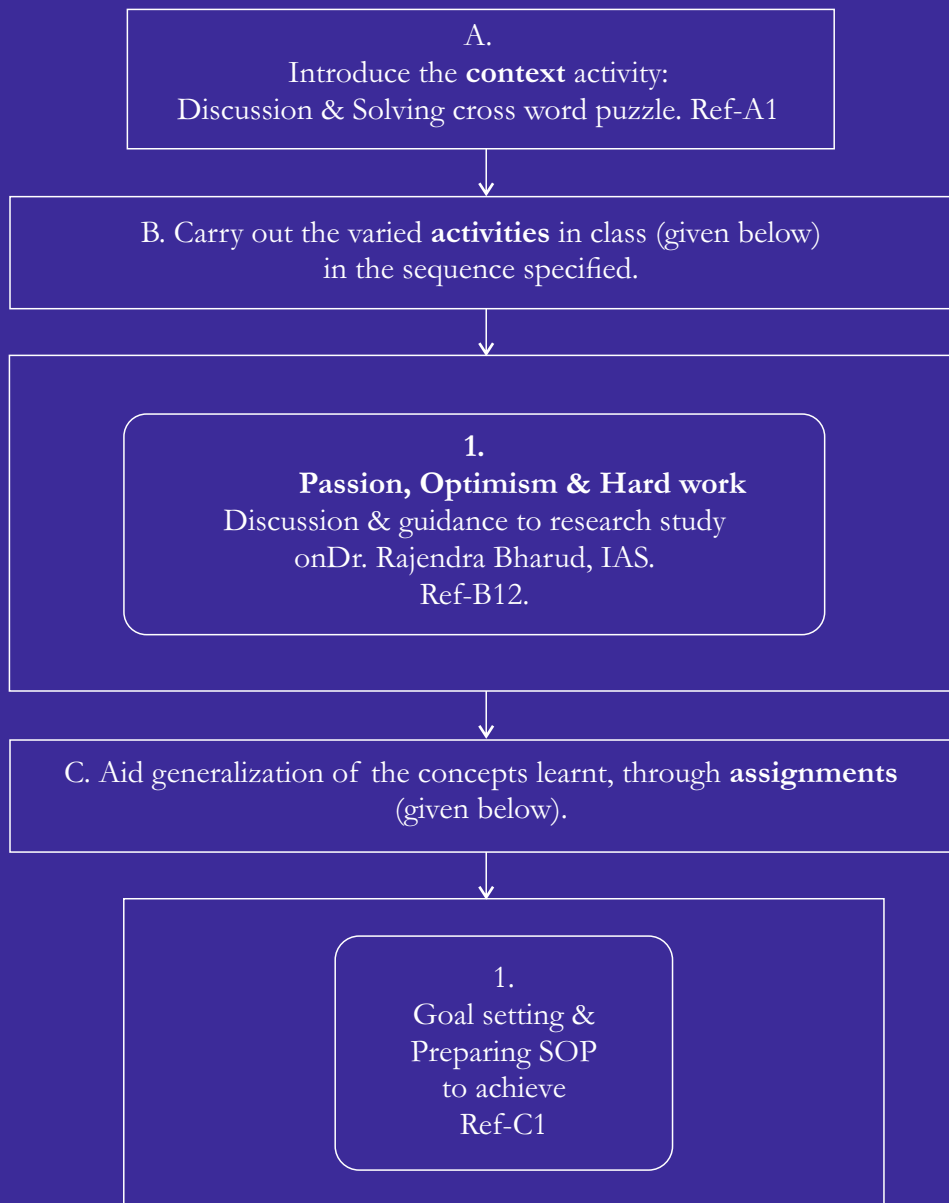
- Define perfect cube / cube number and classify the given numbers as cube numbers or non-cube numbers
- Observe the pattern of cube of even numbers and generalize that cubes of even numbers are even and cube of numbers with one's digit as 1, 2, 3, 4... etc. and explore the one's digit of their perfect cubes.
- Add n consecutive odd numbers and get the sum equal to n^3
- Use prime factorization and rule out a number as a perfect cube. Use prime factorization on the given number and find the smallest number to be operated (all the four arithmetic operations) on given number to get a perfect cube
- Use prime factorization and find the cube root of a given number. Use estimation and find the cube root of a given perfect cube.
- Apply different methods in order to find the squares, cubes, square roots and cube roots of a given number.

- Understand when cubing a number triples its value similarly when optimism & hard work when combine together triples the reward. However, by cube rooting a number it reduces its value, similarly laziness and weak mindset is detrimental to one's progress.

III. Process & Action Plan

Cube roots are used in many places in daily life. We are surrounded by various geometric shapes all around. The mobile phone that we hold, the computer screen that we watch, and the bed on which we sleep, all are geometric in shape. Snakes and ladder which is one of the most-played games of childhood depends on what numeral comes when we roll the dice, which, in turn, is a cube. **Kepler's Law of Planetary Motion** use cube root function. The distance of the planet from the sun in millions of miles is equal to the cube root of 6 times the number of Earth days it takes for the planet to orbit the Sun, squared. The length of a year on Mars is 687 Earth- days. Thus $d = \text{cube root of } 6(687)^2$ Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Passion, Optimism and Hard work* along with other sub-values like *integrity, humanity, determination, love, respect, confidence,*

The unit also provides the scope to develop the following life skills in the students: *presentation, research, communication*

IV. Activities & Related Discussion

A: The Context Activity for the teacher to start:

A1: Solve the work sheet by using the previous knowledge of exponents & powers and Square & square roots

1. A perfect square number can never have the digit.....at the units place

- a) 1 b) 4 c) 8 d) 9

2. Which of the following numbers is a perfect square?

- a) 141 b) 196 c) 124 d) 222

3. Square root of 5625=?

- a) 55 b) 65 c) 75 d) 85

4. Square root of 0.00059049 = ?

- a) 0.243 b) 0.0243 c) 0.00243 d) 0.000243

5. Express 729 as a power of 3.

- a) 3^8 b) 3^6 c) 9^3 d) none of these

6. The value of $(-1)^{55}$

- a) -1 b) 1 c) 0 d) None of these

7. Simplify and write in exponential form of $2^5 \times 2^5$

- a) 2^3 b) 2 c) 128 d) None of these

8. The exponent in the expression 3^7 is

- a) 1 b) 7 c) 0 d) 3

9. Value of $(3^0 + 2^0) \times 5^0$ is

- a) 1 b) 25 c) 0 d) 2

10. The Base in the expression 8^{10} is

- a) 10 b) 2 c) 8 d) 800

Ref: <https://www.worksheetsbuddy.com/grade-7-exponents-and-powers-worksheets/>

B1: Value Based Activities:

Teacher shall discuss about personalities who has made their mark by Passion, optimism and hard work.

Life story of Dr. Rajendra Bharud. IAS: An example of Pure Passion, Hard Work and Optimism.

<https://www.youtube.com/watch?v=ubxBnGX1GP8-> Speech in Marathi By Mr. Dr. Rajendra Bharud. IAS: about his life story

<https://mattersindia.com/2020/08/tribal-who-wrote-history-of-hope/>

<https://www.thebetterindia.com/236223/ias-hero-tribal-poor-exam-pass-first-attempt-mmbs-officer-inspiring-mother-support-maharashtra-ros174/>

This life history is given for the reference of teachers. Teacher shall give different topics of his milestones for the students to research and make a presentation in the class for themselves and for the other students to learn.

Topics for study

- Group-I Dr. Rajendra Bharud-IAS- Educational struggles and how he conquered all difficulties with hard work & optimism, grit & determination and pursued all his passion
- Group-II- Dr. Rajendra Bharud-IAS Personalities who has influenced guided and motivated him to become so successful in his life.
- Group- III Dr. Rajendra Bharud - IAS – Initiatives taken for the benefit of humanity

- Group- IV Dr. Rajendra Bharud - IAS –Refer Speeches, videos& interviews, Books written by of Dr. Rajendra where students can relate, reflect on his passion, optimism & motivation.

When Bharud became an Indian Administrative Service officer in 2013, he proved to the world that even the poorest of the poor can dream big and fill it with sheer determination and hard work.

When Bharud cracked the prestigious and tough IAS exam, he had another equally important document in hand – MBBS degree of a medical doctor. However, he chose to follow the civil service so that he could help the poor like his community members.

“Do not feel depressed about your situation in life. Do not think about only the problems. Think about solutions, and how you can overcome your problems. That will make you stronger. And it is the only way to move forward, and succeed,” mentions Dr Rajendra Bharud, the District Magistrate of Nandurbar district in Maharashtra.

Now 32, he is serving as the District Collector of Nandurbar in Maharashtra, western India. He has narrated the story of his struggle in a book “Dream Flight”.

He spoke to journalist Madhuri Pethkar about his life. Excerpts:



Rajendra Bharud with his mother Kamalabai.

Hi, I am Dr. Rajendra Bharud. I was born in Samode village in Sakri Taluka. A Bhil tribal. My father had passed away before I was born and there was no man of the house, so to speak. We were steeped in poverty. There was no money even to take photographs and so till date I don't know how my father looked. No land, no property. We used to live in a hut made of sugarcane leaves. But Maay (Mother) was made of sterner stuff and never sat brooding over our condition. She had two sons to take care of and so she started working towards that.

She started making liquor from flowers and selling it. Men used to come to our hut and consume the liquor. She later told me that, as an infant, sometimes when I cried she

used to give me a couple of drops of the same liquor so that I would sleep off. Cos it was business time and she didn't want to disturb the customers. As I grew up, I started running errands to get peanuts or such snacks for the customers.

My Mother was a determined woman and she ensured that both of us went to school. I used to go to the zilla parishad school and though I had no pens or books (no money to buy) I enjoyed studying. We were the first kids from our tribe/village to go to school and nobody gave education any importance.

Once, during exams I was studying and a customer asked me to get him some peanuts and I bluntly refused. He laughed at me saying 'as if you are going to be a doctor or engineer.' I was hurt. But Maay retorted telling him that I will. Maay's confidence gave me a certain will and determination to pursue studying and I decided to give it all I can.

Later on I got admission for CBSE (Central Board of Secondary Education) in another school, in Akkalkuva taluka, 150 km away from our village and I had to move there for further studies. Maay had come to drop me. Both of us cried a lot as she bid me goodbye to return home.

Being on my own was difficult but I realized that I should not waste this opportunity. That gave me more determination to make it good, made me study harder and that resulted in me getting 97 percent in 12th grade. I got admission in Mumbai's G S Medical college on merit and received several scholarships. That took care of my education and hostel fees and Maay used to send me some money for my sundry expenses. She continued her liquor business as that was the only source of income for us.

As studies continued, I also decided to appear for UPSC (Union Public Service Commission) exams and so in the final year of MBBS, I was studying for two exams even as my internship was on. As far as Maay was concerned, she knew I was studying to become a doctor. She had no idea about anything else. What is UPSC, or why one gives that exam, how it will help was all beyond her small world. I wanted to be a collector and she didn't know about even the local officials like a tehsildar.

Finally as the year ended, I had my MBBS degree in one hand and the results of having cracked the UPSC in the other. And as I came back home to our small village, quite a few important people had come to welcome me. Political leaders, the district collector, local officials, all came to congratulate me. Maay was nonplussed and didn't understand what had happened.

I told her that I had become a doctor. She was really happy. I also told her that I would not be practicing medicine as I had also become a collector now. She didn't know what that was but realized that it was something big. In fact none of the villagers realized what it meant. Though all of them were happy that 'our Raju' has become big and some even congratulated me for becoming a Collector.

I am now posted in Nandurbar district as a district collector and Maay is now with me. There's a lot to do here as this is a fairly backward district with lots of Adivasi and tribal population. I look forward to building all the necessary infrastructure for their development.

A lot many times I am asked as to how I reached here in spite of all the hurdles in my path. Right from childhood it was a struggle. Eating twice a day was a big deal. Our toys were mango seeds or sticks. Swimming in the river and climbing the hills was how we spent the childhood. That made me physically and mentally strong.

Who was with me? My strength – my Maay. And the locals, who were all equally poor. They too went hungry like us, they too played the same games. So the concept of being poor never really touched me.

Until I came to Mumbai for studies. The difference was stark. But I never envied the well off or cursed my luck. All I realized was that if my situation or condition had to change, I will have to do it myself. And I studied, exercised, studied. Yes, I missed a lot that normal kids or teenagers get in life, but I prefer to look at what I have got now.

A Bhil tribal boy, Rajendra Bharud, an IAS officer at the age of 31, first from the tribe, my village, my area. Today I have everything that I could have dreamed. And most importantly, after seeing me rise from the small village to this position has created awareness among my people of what they can do or achieve. That itself is a huge reward.

Dr Rajendra's journey towards becoming an IAS officer is a shining example of determination and single-minded focus, and nothing short of inspirational, but he wears the praise lightly. "It wasn't easy, but I was willing to put in the hard work, and it got me through," he concludes.

V. C:Assignments

CI: Set goal for life and prepare a step-by-step plan on how to achieve it.

Resources

References:

1. Ncert Textbook, Reference books,(R.D Sharma , R.S.Aggarwal)
- 2.<https://mattersindia.com/2020/08/tribal-who-wrote-history-of-hope/>
- 3.<https://www.thebetterindia.com/236223/ias-hero-tribal-poor-exam-pass-first-attempt-mmbs-officer-inspiring-mother-support-maharashtra-ros174/>
4. <https://www.worksheetsbuddy.com/grade-7-exponents-and-powers-worksheets/>

Topic	Values / Life skills integrated & imbibed	Activities
Comparing Quantities	<p>Core Values considered : Relationship, Judgement</p> <p>Other Sub-Values: decision making, happiness, trust, love.</p> <p>Life skills: observation, computing, problem solving, and critical thinking, listening, logical thinking</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1.Solving worksheets in the class room& discussion teacher shall revise their previous knowledge of students. 2.Discussion of different relationships and organizing group discussion 3. Story narration & Group Discussion with students regarding Judgement 5.Assignments <p>Prepare a list of dream, and fears. Teacher shall help them to dream & guide them how to achieve with the help of counsellor</p>

Materials / Resources needed

Value Integration:-

- 1.Workk sheet to conduct context activity&
- 2.Facilities and Equipment to show videos
- 3.Pen,Board,Duster
- 4.NCERT Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that children learn comparison between two or more like quantities in the same units. This lesson teaches the importance of relationship, and judgement. By comparing things, students will be able judge or able to take right decisions at right time.

The key discussions are:

1.By solving worksheets in the class room& discussion teacher shall revise their previous knowledge of students.

2.By discussion of different relationships and organizing group discussion teacher inculcate the value of healthy & happy relationships to live happy forever

3.By Story narration & Group discussion with students regarding judgement teacher shall encourage students to observe, appreciate and take right decisions without fear without judgement

5.Assignments

Prepare a list of dream, and fears. Teacher shall help them to dream & guide them how to achieve with the help of counsellor

Unit 8
Comparing Quantities
Relationship & Judgement

I. Introduction

A ratio is a comparison between two or more like quantities in the same units. One of the most basic real-life applications of Mathematics we come across is when we deal with quantities. **Comparing Quantities** is a part of our daily life. We come across terms like percentage, ratio, profit & loss, interest, Tax etc, when dealing with quantities. Comparison or comparing is the act of evaluating two or more things by determining the relevant, comparable characteristics of each thing, and then determining which characteristics of each are similar to the other, which are different, and to what degree. In this chapter, we will study everything about comparing quantities. This lesson teaches the importance of relationship, and judgement. By comparing things, students will be able judge or able to take right decisions at right time.

II. Learning Objectives / Outcomes

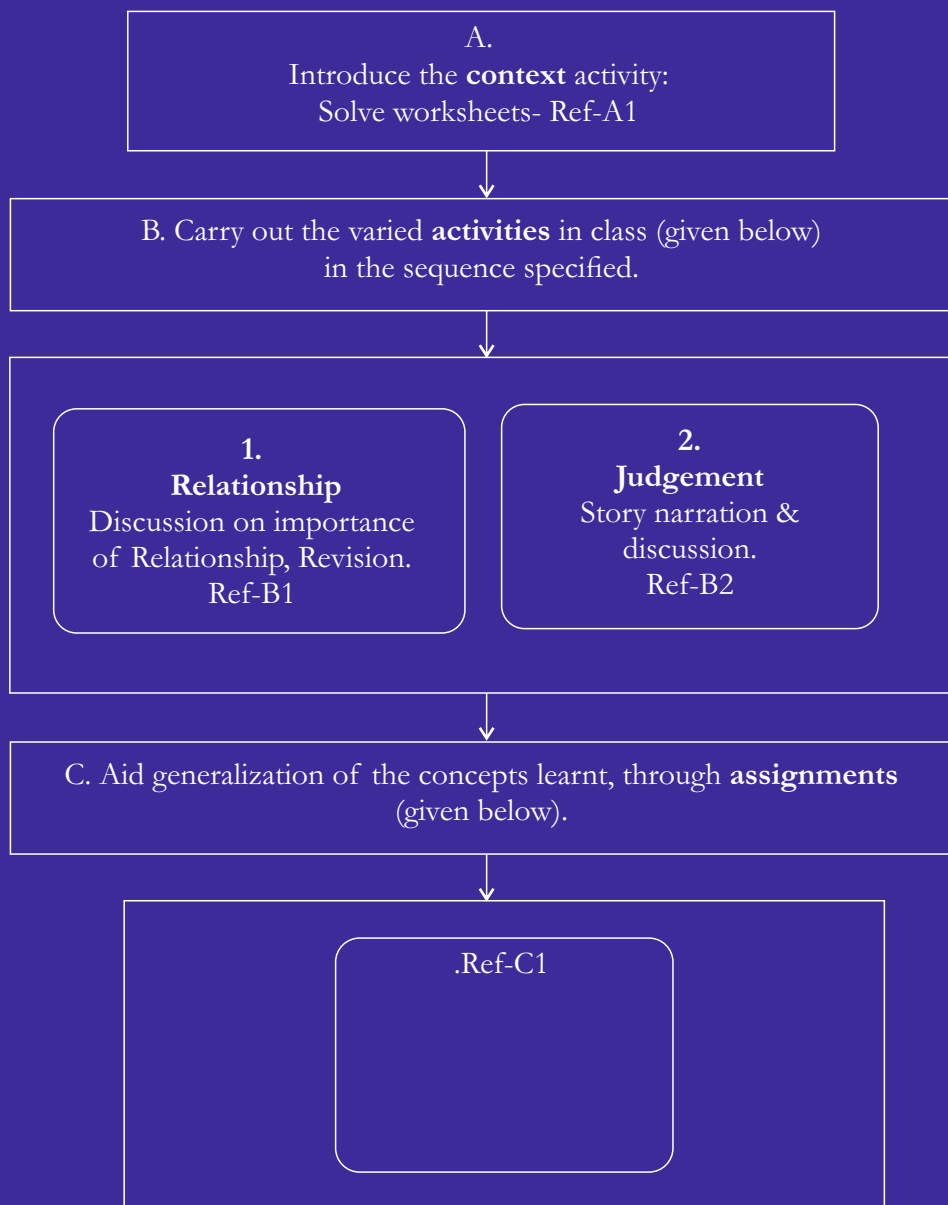
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Convert ratios to percentage and apply the formula for discount and discount percentage and solve the given problem on percentage & discount
- Calculate the discount in given situations and comment whether the seller has made a profit /loss in the given transaction
- Define and compare simple interest and compound interest and comment on the situations where either of the two are applied
- Calculate the simple interest & Compound Interest and find the total amount to be paid by the debtor
- Use formula of simple interest and deduce the formula to calculate the compound interest
- Define the terms 'compounded annually', 'compounded half yearly' and 'compounded quarterly' and give examples and differentiate between the three.
- Use formula of compound interest and solve problems related to increase (or decrease) in population and increase (or decrease) in the price of an item in intermediate years
- Learn the importance of relations, & judgement

III. Process & Action Plan

Comparing quantities is the foundation to understand the various concepts in mathematics as well as in science. In our daily life, we handle lots of situations. Sometimes we have to measure and compare these quantities. The comparison is a common activity among us. Sometimes we compare our height, sometimes marks, sometimes speed, sometimes distance, and so many. This list of quantities extends. We can only compare two same quantities. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Relationship & Judgement* along with other sub-values like *decision making, happiness, trust, love*.

The unit also provides the scope to develop the following life skills in the students: *observation, computing, problem solving, and critical thinking, listening, logical thinking*

IV. Activities & Related Discussion

A: the context Activity for the teacher to start:

A1:

1. Find the ratio of 3 km to 300 m.

- (a) 10 : 1
- (b) 1 : 10
- (c) 1 : 5
- (d) none of these

2. The car that I own can go 150 km with 25 liters of petrol. How far can it go with 30 liters of petrol?

- (a) 125 km
- (b) 150 km
- (c) 250 km
- (d) none of these

3. Find the ratio of Speed of a cycle 15 km per hour to the speed of scooter 30 km per hour.

- (a) 2 : 1
- (b) 1 : 2
- (c) 4 : 5
- (d) None of these

4. 72% of 25 students are good in Hindi, how many are not good in Hindi?
- (a) 16
 - (b) 14
 - (c) 18
 - (d) 7
5. There are 25 radios, 16 of them are out of order. What percent of radios are out of order?
- (a) 75%
 - (b) 64%
 - (c) 60%
 - (d) none of these
6. A survey of 40 children showed that 25% liked playing football. How many children not liked playing football?
- (a) 90
 - (b) 60
 - (c) 30
 - (d) none of these
7. Out of 15,000 voters in a constituency, 60% voted. Find the number of voters who did not vote.
- (a) 9000
 - (b) 6000
 - (c) 3000
 - (d) none of these
8. A school team won 6 games this year against 4 games won last year. What is the per cent increase?
- (a) 75%
 - (b) 50%
 - (c) 60%
 - (d) none of these

9. How much will an item cost if 10% discount is given on the marked price ` 100

- (a) 90
- (b) 110
- (c) 95
- (d) 85

10. The price of a scooter was ` 34,000 last year. It has increased by 20% this year. What is the price now?

- (a) ` 40,800
- (b) ` 32,300
- (c) ` 40,000
- (d) none of these

11. Express each of the following percentage as fraction in the simplest form:

1. 12.5%

2. 75%

<https://www.worksheetsbuddy.com/grade-7-comparing-quantities-worksheets/>

B: Value Based Activity:

B1: Importance of Relationship

Teacher shall revise with students as in previous class they have studied about relation between quantities for comparison or composition.

- ☞ The same is applicable in life. To have a happy, healthy, and long lives, people need to have happy and healthy relationships. These relationships are absolutely necessary for any of us to survive, learn, work, love, and procreate. Human relationships take many forms but the most intense, most pleasurable and most painful are those relationships with family, friends and loved ones. The positive relation keeps one happy and peaceful.
- ☞ The healthy and successful relationship is based on four pillars. They are communication, trust, respect, and love.
 - Communication in a relationship is important to share your feelings and build trust as well
 - Respect in any kind of relationship is important. As said, if you give respect you get respect.
 - Relationships need trust, love & attention to survive and grow strong.

- ☞ Human is a part of society. To have a happy, healthy, and long lives, people need to have happy and healthy relationships. Relationships take time to create and when they grow strong they are forever and you can claim you are in a position of 'happily ever after'.
- ☞ Teacher shall further divide students into groups and ask them how they can make these relationships healthy and organize a group discussion in the class by giving different relationship topic of their choice.
- ☞ We are conditioned from a young age to expect a certain path in life. When we deviate from this path, it's not long before others who haven't start throwing their opinions into the mix. As social creatures, it's understandable that we react to other people's opinions of us, but it's essential to understand the reasoning behind it.
- ☞ Elicit examples from students of their experience or they have seen some others experience or a story they heard.
- ☞ A lot of people don't deviate because of their own fears. Fear of failing, fear of judgment, fear of not fitting in. But how would we ever advance if everyone 'stayed in their own lane'. We need people who are brave enough to reach new frontiers, to change the norm, and carve their own path through this world.
- ☞ Elicit examples from students May be their experience or they have seen some others experience or a story they heard. Teacher shall encourage students to take right decisions without fear, without judgement and tell them
- ☞ If you take one thing from this story, remember: You will become what you believe you are.

<https://consciouspanda.com/short-stories-make-think/>

V. C: Assignments

C1: Ask students to prepare a list of their dream, and their fears Teacher shall help them to dream & guide them how to achieve with the help of counsellor

Resources

References:

1. <https://consciouspanda.com/short-stories-make-think/>
2. <https://www.worksheetsbuddy.com/grade-7-comparing-quantities-worksheets/>
3. NCERT Textbook, Reference books,(R.D Sharma , R.S.Aggarwal)

Topic	Values / Life skills integrated & imbibed	Activities
Algebraic Expressions & Identities	<p>Core Values considered : Interconnectedness & Interdependence & Equality</p> <p>Other Sub-Values: cooperation, love, respect, confidence, harmony, friendship.</p> <p>Life skills: problem solving, logical reasoning, and critical thinking</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Worksheets to revise the previous knowledge of students. 2. Story Narration & discussion with students relate to real life situations 3. Assignment: Create a drawing of Inter –connectedness, harmony and equality as per students Imagination.

Materials / Resources needed

Value Integration:-

1. Work sheets to conduct context activity
2. BB, Pen, scissor, color pencils.
3. Facilities and Equipment to show videos.
4. NCERT Text books, reference books (R.D. Sharma, R.S Agarwal) pen, board, Duster.

Description (of the points of discussion)

Value Integration:-

In this chapter the activities incorporated in such a way that while learning algebraic expressions students learn the importance of inter-connectedness and inter-dependence as when we connect two or more terms with addition, subtraction, multiplication, together it becomes an algebraic expression. Similarly when we connect or depend with other people or the community which give us a feel of unity & togetherness. While teaching identity teacher shall explain the importance of $LHS=RHS$ means equality, is a characteristic trait everyone needs to follow in life

The key discussions are:

- 1.By using worksheets teacher revise the previous knowledge of students.
- 2.By narrating a story & discussion with students teacher relate to positive values in each relationship and working together in a mutually harmonious way by utilizing everyone's strength to achieve a common goal.
- 3.Assignment:
 - 1:Create a drawing of Inter –connectedness, harmony and equality as per students Imagination.

Unit 9**Algebraic Expressions & Identities****Inter-connectedness, Inter-dependency, Equality****I. Introduction**

Algebra is a fascinating and essential part of mathematics. It provides the written language in which mathematical ideas are described. Expressions are central concept in Algebra. An algebraic expression in mathematics is an expression which is made up of variables and constants, along with algebraic operations. We can also obtain expressions by connecting variables with themselves or with other variables by using addition, subtraction, multiplication and division. Algebraic identities are equality which is true for all values of the variable. These identities are the algebraic expressions, which defines that the Left-Hand Side (LHS) and the Right-Hand Side (RHS) of the equation is equal for all the values of the variable. Students will learn to prove these identities using distributive law and multiplications techniques and simplifies the problems

While teaching teacher shall instill inter-connectedness and inter-dependence as when we connect two or more terms with addition, subtraction, multiplication, together it becomes an algebraic expression.(Polynomial) Similarly when we connect or depend with other people or the community which give us a feel of unity & togetherness. While teaching identity teacher shall explain the importance of $LHS=RHS$ means equality, is a characteristic trait everyone needs to follow in life.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

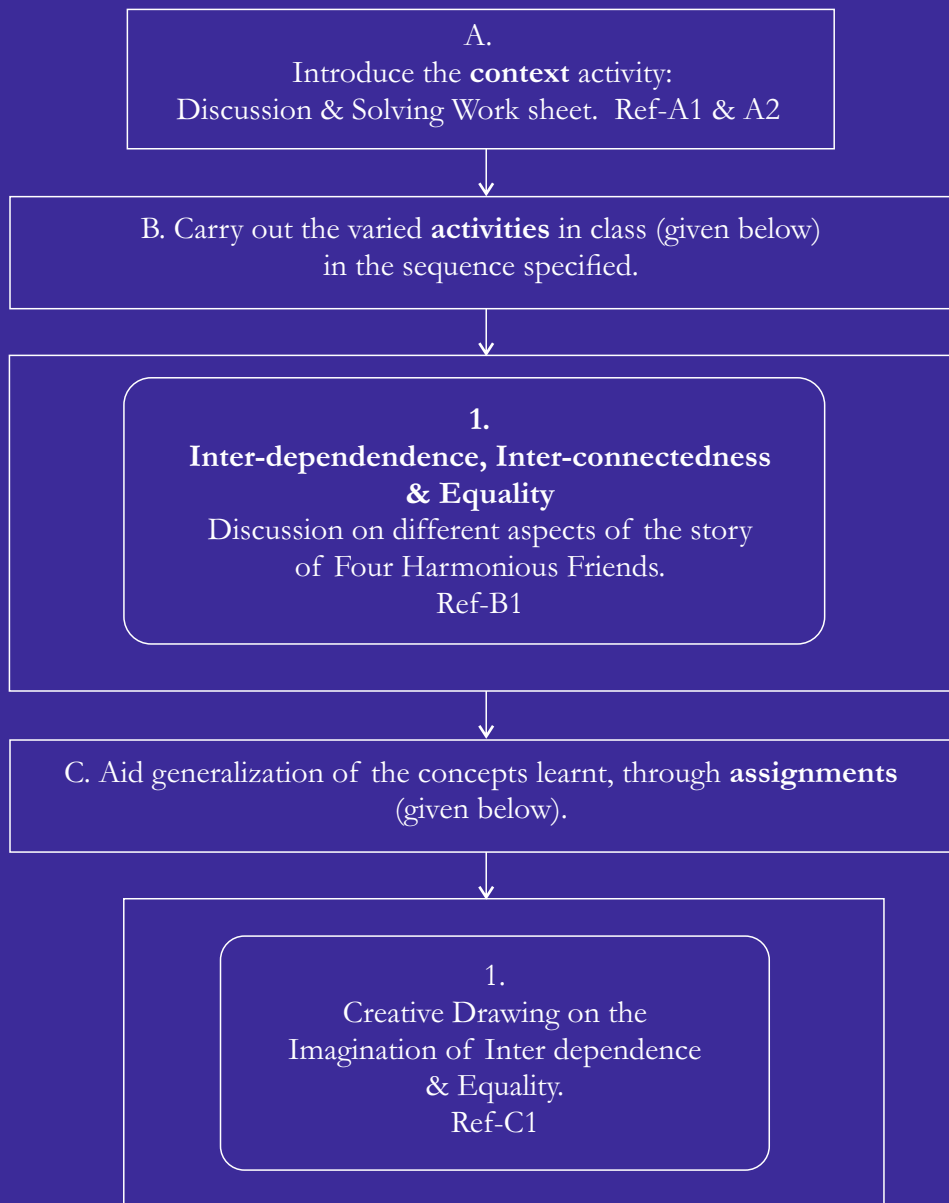
- Count the number of terms in an algebraic expression and classify them as monomial binomial, trinomial or polynomial in general
- Identify like and unlike terms in algebraic expressions and add or subtract the given algebraic expressions
- Use rules of exponents and powers and multiply a monomial by a monomial, Extend the multiplication of monomial by a monomial and obtain the product of any number of monomials
- Use distributive property of multiplication over addition and subtraction and obtain the product of a monomial and a binomial and monomial and a trinomial

- Simplify the algebraic expressions and find the value of expression for the given value of the variable. Use distributive law of multiplication and obtain the product of two binomials, a binomial and a trinomial
- Define and compare equation and identity and classify a given question into either of the two
- Use multiplication of binomials and explore and verify the standard identities for squares of binomials. Use identities and simplify the given algebraic expressions and find the product of the given numbers
- understand the benefits of interconnectedness & Interdependence and importance thereof.
- Follow the characteristic trait equality which everyone needs to follow in life.

III. Process & Action Plan

It is not only mathematicians but even most academicians, educationists, scholars, and professionals from all other walks of life unanimously agree on the versatility of algebra. You can liken algebra to an all-purpose tool or a magic wand that can help deal with everyday problems of life. Algebra is also considered as a 'trump card' for success in any business. Let us take an example; a person runs an online toy store, algebra is what will come in handy for him to calculate his profit margin on any given item and make up his mind whether that item is worth stocking. Algebra would also help him in calculating the lowest price he can sell an item and still make a glaring profit from it. Identities help to simplify the problems. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Inter-connectedness, Inter-dependendness, Equality* along with other sub-values like *cooperation, love, respect, confidence, harmony, friendship*.

The unit also provides the scope to develop the following life skills in the students: *problem solving, logical reasoning, and critical thinking*

IV. Activities & Related Discussion

Solve the work sheet by using the previous knowledge of Algebraic Expressions

A: The Context Activity for the teacher to start:

A1: Write down the expression for each of the following using Algebra

1. Subtract 12 from b
2. Divide c by 4 and add 7
3. Multiply k by 3 and subtract 7
4. Subtract y from 8 and then divide by 4
5. Add 1 to x and square the answer

A2: Write the correct algebraic expression for each word problem

1. I have 5 pens. A friend gives me n more pens. How many pens do I have now?
2. I have a box of p chocolates. I ate 9 of them .How many chocolate left with me?
3. There are 25 blue and red marbles in a bag, n marbles are red. How many are blue?
4. There are c cyclists in a cycle race. $\frac{3}{4}$ cyclists finish the race. How many cyclists did not finish?
5. There are b people on a bus. At the next stop, 7 people get off and 10 more get on. How many more people are there on the bus now?

B1: Value Based Activities:

Teacher shall discuss and revise inter connectedness & interdependence which students have learned in std VII (Algebraic expressions)

Algebraic expressions and identity teaches inter connectedness and interdependence as the monomials connected with algebraic operators it becomes binomial, trinomial and

monomial with one variable, two variables, three variables etc. Here when we combine the terms we learn about togetherness and harmony. When we use identities we inculcate equality and teach them to simplify a problem and get solution. Teacher shall narrate a short story to students and analyze the story and discuss with them all the values.

Story of Four Harmonious Friends: Symbol of Connection Interdependence & Equality

September 7, 2006 *by nexus novel*

This story perfectly demonstrates harmony, interdependence, co-operation and friendship, equality between four animals who become close friends. In Bhutan, the story gives a national identity for people to live in harmony with nature, for people to co-operate with each other even with cultural differences, and for families to work together. A conservation ethic has arisen based on it that influences Bhutan's national policies. The story is a familiar Tibetan motif derived from the Jataka tales of Buddha's former lives

In terms of a symbol understanding of this beautiful allegory: The elephant represents our body, the monkey represents the restless mind, the rabbit represents emotions, and the bird is the soul. Here is the story adapted from Buddhist Channel:

Once in a forest in Varanasi, four animals: An elephant, a rabbit, a monkey, and a partridge disputed about the ownership of a tree where all of them had fed. The elephant claimed, "Well, this is my tree because I saw it first."

To this the monkey replied: "Now, elephant do you see any fruits on this tree?"

The elephant agreed that the tree was without any fruit.

The monkey continued: "That's because I had been feeding on the fruits of the tree long before you ever saw it."

Next the rabbit spoke up: "I fed on the leaves of this tree when it was just a small sapling before the monkey ate its fruit and way before the elephant ever saw it."

Finally the partridge who had been watching the argument, came forward and asserted: "The tree belongs to me because the tree wouldn't have grown if I hadn't spit it out as a seed. I helped plant the seed that grew into this huge tree before the rabbit fed on it, or the monkey ate its fruit, or the elephant saw it."

The elephant, monkey, and rabbit, conceded that the partridge was the first to know the tree. So all of bowed to the partridge and regarded it as their elder brother.

The four animals became friends and decided to share the tree together in peaceful harmony, enjoying the beauty of the tree's fragrance, the nourishment of its fruits, and the bounty of its shade. They worked together to obtain fruits: The fruits on the ground and on the lowest branches, the partridge and rabbit found by working together. The monkey climbed the tree and dropped the fruits for everyone to share but only the

elephant could reach the highest branches with his trunk. The four animals worked co-operatively and with their combined strength, each one benefited and no one went hungry.

Other animals in the forest often saw them together with the partridge on top of the



rabbit who was held up by the monkey who rode on top of the elephant. Since then, they were called “The Four Harmonious Brothers.” The four animals were looked upon as an example of peace, harmony, co-operation, interdependence and friendship.

Discussion:

This is a simple story that the teacher can teach the class, through this story students understand the importance of working together in peace and harmony. Finding positive values in each relationship and working together in a mutually harmonious way by utilizing everyone’s strength to achieve a common goal.

<https://nexusnovel.wordpress.com/2006/09/07/story-of-four-harmonious-friends-symbol-of-connection-interdependence/>

V. C: Assignments

C1:Create a drawing of Inter –connectedness, harmony and equality as per students Imagination.

Resources

References:

1. Ncert Textbook, Reference books,(R.D Sharma , R.S.Aggarwal)
- 2.<https://nexusnovel.wordpress.com/2006/09/07/story-of-four-harmonious-friends-symbol-of-connection-interdependence/>

Topic	Values / Life skills integrated & imbibed	Activities
Visualizing Solid Shapes Shapes	<p>Core Values considered : Equality & Perspective-Taking</p> <p>Other Sub Values: simplicity, Curiosity.</p> <p>Life skills: Communication, Technological skills, Research skills, decision making, and high thinking.</p>	<p>Value integration Activities:-</p> <p>1 Discussion ,worksheets to revise the previous knowledge of students</p> <p>2.Narration of an incident of Mr.& Mrs. Leland Stanford faced in real life & discussion</p> <p>3. Assignment: Quote an incident or story about perspective taking.</p>

Materials / Resources needed

Value Integration:-

1. Work sheet for the context activity
2. Facilities and Equipment to show videos& presentation
3. BB, Pen
4. Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that helps students to realize that a three-dimensional object or shape can look differently from different positions (or sides) so they can be drawn from different perspectives, this is called visualizing a solid shape. This chapter gives us an insight, “Don’t judge a book by its cover” means one shouldn't prejudge the worth or value of something by its outward appearance alone. One should not form an opinion on someone or something based purely on what is seen on the surface, because after taking a deeper look, the person or thing may be very different than what one had anticipated. Perspective-taking is the act of perceiving a situation or understanding things from several angles or points of view.

The key discussions are:

1. By discussion & worksheets, teacher shall revise the previous knowledge of students
2. By narrating an incident of faced by Mr. & Mrs. Leland Stanford in real life & discussion teacher shall instill in students the quality of “Don’t judge a book by its cover”. And give a message treat every one equally
3. Assignment:
Quote an incident or story about perspective taking.

Unit 10**Visualising Solid Shapes**
Perspective-Taking & Equality**I. Introduction**

In previous class students have learnt about plane shapes and solid shapes. Plane shapes have two measurements like length and breadth and therefore they are called two-dimensional shapes whereas a solid object has three measurements like length, breadth, height or depth. Hence, they are called three-dimensional shapes. Also, a solid object occupies some space. Two-dimensional and three-dimensional figures can also be briefly named as 2-D and 3-D figures. You may recall that triangle, rectangle, circle etc., are 2-D figures while cubes, cylinders, cones, spheres etc. are three-dimensional figures. A three-dimensional object or shape can look differently from different positions (or sides) so they can be drawn from different perspectives, this is called visualising a solid shape. In this chapter, you will classify figures in terms of dimension.

In our day-to-day life, we see several objects like books, balls, ice-cream cones etc., around us which have different shapes. This chapter gives us an insight, “Don't judge a book by its cover” means one shouldn't prejudge the worth or value of something by its outward appearance alone. One should not form an opinion on someone or something based purely on what is seen on the surface, because after taking a deeper look, the person or thing may be very different than what one had anticipated. Perspective-taking is the act of perceiving a situation or understanding things from several angles or points of view.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value-based goals:

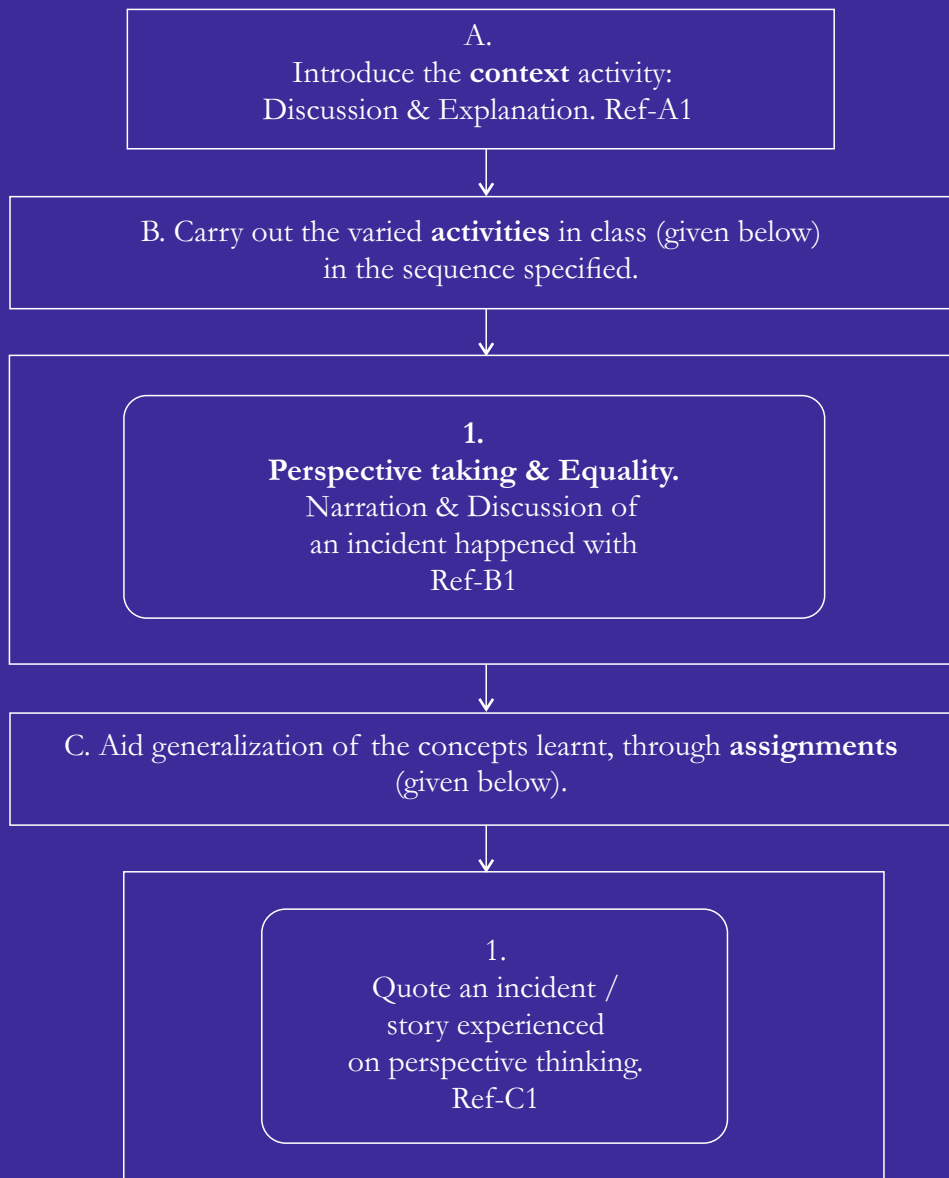
- Compare 2D shapes and 3D shapes and classify a given shape into either.
- Identify different shapes in nested objects and match the object with its shape
- Visualize 3D objects and draw them from different perspectives. Discuss the given front, top and side view of an object and identify the object.
- Discuss the elements in a map and differentiate between a map and a picture. Read and interpret simple map and answer questions based on them.
- Choose appropriate scale and use symbols to denote landmarks and draw a simple map
- Identify faces, edges and vertices in a given solid and classify it as a polyhedron or a non-polyhedron

- Count vertices, edges and faces in 3D figures with flat faces and verify Euler's formula
- Learn perspective-taking & equality.

III. Process & Action Plan

Almost each and everything around us can be considered a 3D shape. These objects surround Roofs of houses d our daily lives. A lot of times, they go unnoticed. Ice cream cone, Christmas tree, Pyramids of Giza, Dice, Rubik's Cube, Ice and sugar cube, the lunch box, Cubicles, Battery, Water tanks, Gas cylinder, Bricks, Mattresses, Fridge, Mobile Phone, Ball, Planets, Sun, Moon, Igloo, Domes in architecture, each and everything around us is a solid shape. The laptop, phone, or tablet you are reading this on is a solid shape. Similarly, the chair, bench, or couch you are sitting on is also a 3D shape. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

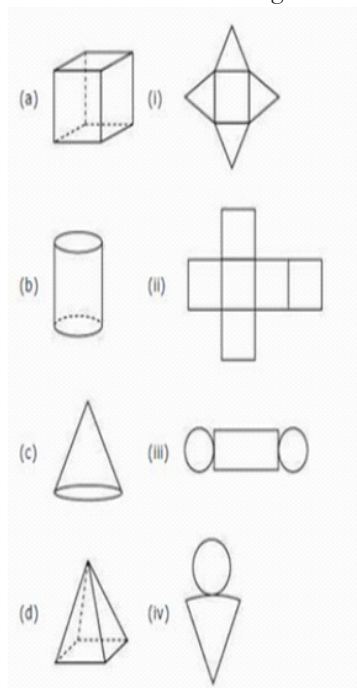
The *core values* being considered are *equality & Perspective* along with other sub-values like students *simplicity, curiosity*

The unit also provides the scope to develop the following life skills in the *Communication, Technological skills, Research skills, decision making, and high thinking.*

IV. Activities & Related Discussion

A: The context Activity for the teacher to Start

A1: Match the Following



Shape	Type of shape	Name of the shape
(A)	(i) 3-dimensional	(a) Sphere
(B)	(ii) 2-Dimensional	(b) Cylinder
(C)	(iii) 3-dimensional	(c) Square
(D)	(iv) 2-dimensional	(d) Circle
(E)	(v) 3-dimensional	(e) Cuboid
(F)	(vi) 3-dimensional	(f) Cube
(G)	(vii) 2-dimensional	(g) Cone
(H)	(viii) 3-dimensional	(h) Triangle

Ref: <https://www.zigya.com/>

B: Value Based Activities:

B1: An event which can be correlated to the phrase “Don't judge a book by its cover”(Perspective taking & Equality).Teacher shall narrate the incident:

Do Not Judge A Book By Its Cover. :

A lady in a faded gingham dress and her husband, dressed in a homespun threadbare suit, stepped off the train in Boston and walk timidly without an appointment into the Harvard university President's outer office.

The secretary could tell in a moment that such backwoods, country hicks had no business at Harvard and probably didn't even deserve to be in Cambridge.

"We want to see the president,' the man said softly.

'Hell be busy all day,' the secretary snapped.

"Well wait,' the lady replied.

For hours the secretary ignored them, hoping that the couple would finally become discouraged and go away. They didn't and the secretary grew frustrated and finally decided to disturb the president, even though it was a chore she always regretted.

"Maybe if you see them for a few minutes, they will leave,"

she said to him

He sighed in exasperation and nodded. Someone of his importance obviously didn't have the time to spend with them, but he detested gingham dresses and homespun suits cluttering up his outer office.

The president, stern faced and with dignity, strutted toward the couple.

The lady told him, "We had a son who attended Harvard for one year. He loved Harvard. He was happy here. But about a year ago, he was accidentally killed. My husband and I would like to erect a memorial to him, somewhere on campus."

The president wasn't touched... He was shocked.

"Madam," he said, gruffly, "we can't put up a statue for every person who attended Harvard and died. If we did, this place would look like a cemetery."

"Oh, no," the lady explained quickly, "we don't want to erect a statue. We thought we would like to give a building to Harvard."

The president rolled his eyes. He glanced at the gingham dress and homespun threadbare suit and exclaimed, "A building! Do you have any earthly idea how much a building costs? We have over seven and a half million dollars in the physical buildings here at Harvard."

For a moment the lady was silent.

His president was pleased. Maybe he could get rid of them now.

The lady turned to her husband and said quietly, "Is that all it costs to start a university? why don't we just start our own?"

Her husband nodded..

The president's face wilted in confusion and bewilderment Mr. and Mrs. Leland Stanford got up and walked away, traveling to Palo Alto, California where they established the University that bears their name, Stanford university, a memorial to a son that Harvard no longer cared about.

You can easily judge the character of others by how they treat those who they think can do nothing.

<http://www.english-for-students.com/do-not-judge-a-book-by-its-cover.html>

OR

Never Judge A Book By Its Cover (a small story)

A girl by name Deepa went to school in the neighboring village where she wasn't known well.

For three weeks, she came to school late and every time the teacher punished her.

On the fourth week, Deepa didn't attend school at all and many thought she had *GIVEN UP* on school due to the everyday punishment.

However, Deepa reported again on fifth week and this time she came earlier than everybody.

When the teacher came to class, Deepa was punished for not attending school the previous week but the teacher was also kind enough to commend her for coming early that day, stating that the punishments had finally yielded some results.

Just then

, Deepa. asked if she could say something and the teacher gave her permission.

She started :

“ _I've been raised up by a single mother without a brother or a sister. Five weeks ago, my mother fell ill and was hospitalized. The three weeks I came late, I had to prepare something for her every morning and pass by the hospital to deliver the same. Unfortunately, my mother passed away last week and that's the reason I didn't come to school. We buried her last Friday. Today I came early since I didn't have to prepare anything or even pass by the hospital. And now that she is gone, I will always be here early_”

As she sat down, no one in the whole class was able to hold their tears, the teacher was not spared either.

Moral:

How many times do we judge others for things we know not?

We ask questions like :
When will you buy a car?
When will you build a house?
etc....

Do we attempt to understand their situations or we just judge from the case scenarios?

Some situations are not relative and what we think could be very far from the truth.

Do not assume you know what others go through or that people move in the same pace or direction as you. Life is far from than. Be kind always. Be nice to others always.

Ref: <https://medium.com/@Dr.Suraj/never-judge-a-book-by-its-cover-a-small-story-c49f296aaedb>

Discussion:

Through the above stories, the teacher should emphasize the importance of treating every person with respect irrespective of how they look or how they behave, because one never knows what the other person has been through. The teacher should also teach the value of being perceptive of the situation and be open minded when it comes to approaching a given situation or problem. Doing so will enable identify efficient ways of handling any situation.

V. C: Assignments

C1: Quote an incident or story about perspective taking.

Resources

1. NCERT Textbook, Reference books,(R.D Sharma , R.S.Aggarwal

Topic	Values / Life skills integrated & imbibed	Activities
Mensuration	<p>Core Values considered: Precision & Accuracy, Self-Discipline & Self Awareness</p> <p>Other Sub-Values: Self-control, beauty, stability.</p> <p>Life skills: problem solving, reasoning, critical thinking, logical thinking computation.</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Worksheets are used for revision and test the previous knowledge of students. 2. Discussion and SWOT Analysis to instill self awareness & Self Discipline 3. Discussion on precision & Accuracy and its benefits and how it is played a significant role and yielded a better result 4. Assignment: Prepare a report on Significance of Accuracy & Precision in the field of construction (Buildings, Roads, Bridges, Railway Tracks, etc.) of student's choice.

Materials / Resources needed

Value Integration:-

1. BB, Pen, board, Duster.
2. Worksheets to conduct context activity
3. Facilities and Equipment to show videos & presentations
4. NCERT Text books, reference books (R.D.Sharma, R.S Agarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities and games are incorporated to help children learn that real-life utility of the concept is in several fields such as mapping, architecture, and surveying. Measurement of volumes required for packaging milk, liquids, solid edible food items or non-edible items. Measurements of surface areas required for estimation of painting houses buildings etc. Volumes and heights are useful in knowing water levels and amounts in river or lakes and construction of overhead tanks. Therefore, while learning Mensuration students learn the importance of Discipline along with precision & accuracy. If the calculations are not accurate & precise then there will be always problem in every field or activities. At the same time, they learn self-discipline & self-awareness because if we do not take care of limitations and parameters then it can lead to errors.

The key discussions are:

1. Worksheets are used for revision and test the previous knowledge of students.
2. By discussion & SWOT Analysis teacher instill self-awareness and how to achieve self discipline to make it a habit in their daily life.
3. By discussion teacher instill precision & Accuracy and its benefits and how it is played a significant role and yielded a better result in daily life situations
4. Assignment:
Prepare a report on Significance of Accuracy & Precision in the field of construction (Buildings, Roads, Bridges, Railway Tracks, etc.) of student's choice.

Unit 11**Mensuration****Precision & Accuracy, Self-Discipline & Self Awareness****I. Introduction**

Mensuration is the branch of geometry which deals with the measurement of area, length or volume of different geometrical shapes such as triangle, trapezium, rectangle, cylinder etc. Mensuration is directly useful in important activities like, Measurement of agricultural fields, floor areas or site areas required for purchase/selling transactions. Measurement of volumes required for packaging milk, liquids, solid edible food items or non-edible items. Measurements of surface areas required for estimation of painting houses buildings etc. Volumes and heights are useful in knowing water levels and amounts in river or lakes and construction of overhead tanks. Therefore, while learning **Mensuration** students learn the importance of Discipline along with precision & accuracy. If the calculations are not accurate & precise then there will be always problem in every field or activities. At the same time, they learn self-discipline & self-awareness because if we do not take care of limitations and parameters then it can lead to errors.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

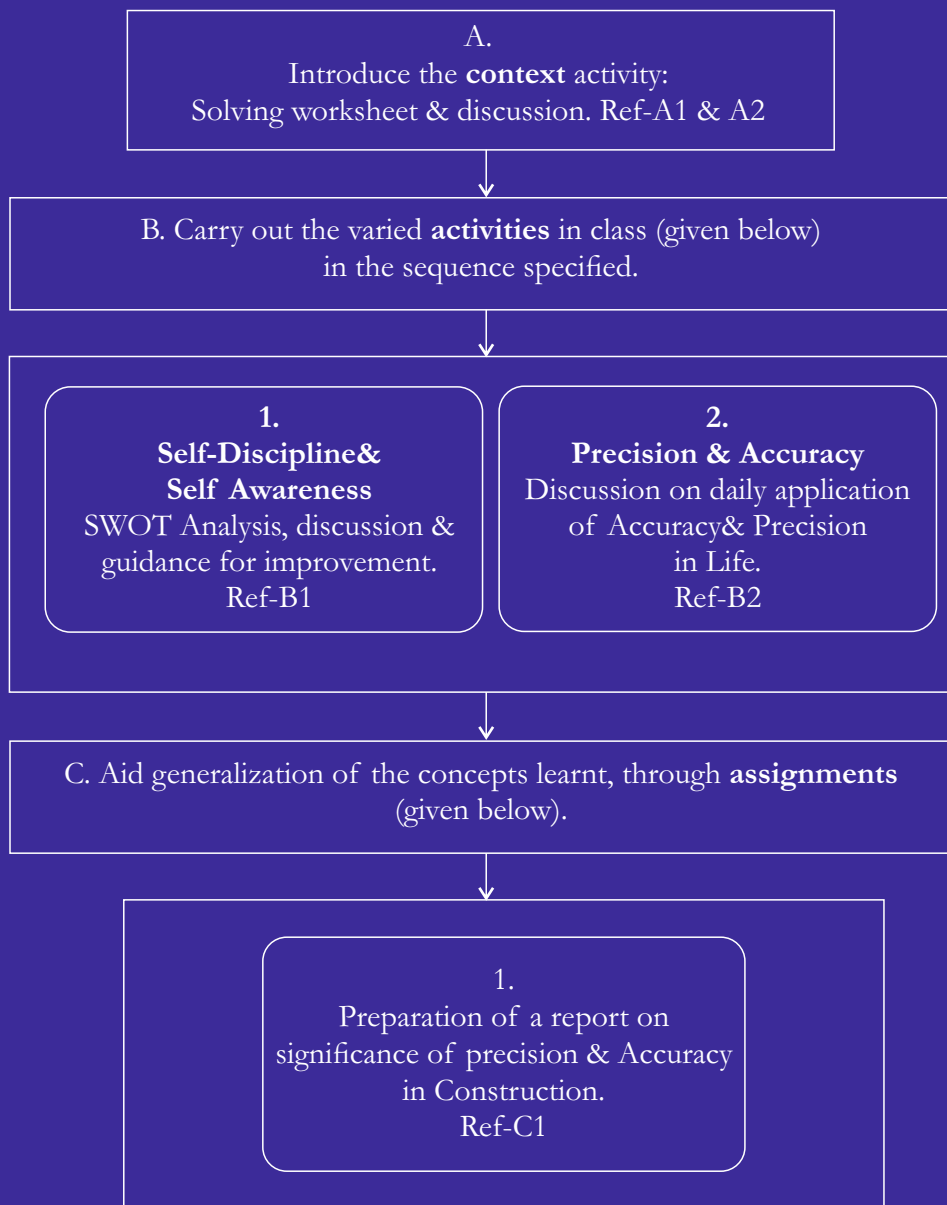
- Calculate area and perimeter of circle, square, rectangle, and triangle and calculate area and perimeter of adjoint shapes.
- Breakdown a given trapezium into known figures (triangles, squares, rectangles) and derive the formula for the area of a trapezium. Calculate the area of a given polygon after breaking down the polygon in multiple ways and compare the values and comment on it
- Illustrate 2-D representation of a cuboid, cube and cylinder and compute the surface areas by breaking them in to areas of known figures and to determine the cost of painting /covering their surface.
- Calculate the volume of a given cube, cuboid, cylinder and infer the quantity of any substance it can hold.
- Modify the values of l, b, h and r, h to examine the effect it has on the value of the surface area /volume of a cuboid & cylinder.

- Calculate the volume of a given cuboid, cylinder and determine the time taken to fill it with a liquid at a given rate.
- Learn the importance of precision & accuracy in every activity.
- Realize the use of self-discipline & self-awareness to avoid any mistakes or errors in life.

III. Process & Action Plan

Mensuration tells us about the lengths of sides, heights and perimeters, measures of angles, surface areas and volumes of 2-dimensional plates and 3-dimensional solids. For example: Amount of carpet required for a particular room, Fencing needed for the perimeter of a garden, Volume of soil needed to fill in a ditch, The distance around a circular race track, Travel and roadmap reading, Amount of fuel needed for a given journey, Gift wrapping, Finding capacities of containers, tanks. In cooking, we use measurements for volume when following recipe books. Tools such as measuring jugs may be used to determine volumes. When making a cake for example we may need tins of a specific width and length for a particular recipe. We may also need to account for the weight of the dry ingredients using a measuring scale. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

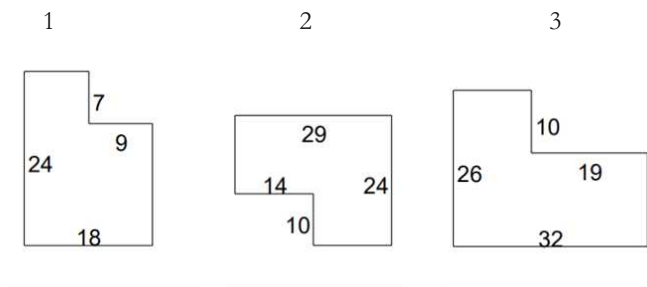
The *core values* being considered are *Precision & Accuracy, Self-Discipline & Self Awareness* along with other sub-values like *Self-control, beauty, stability*.

The unit also provides the scope to develop the following life skills in the students: *problem solving, reasoning, critical thinking, logical thinking computation*.

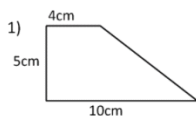
IV. Activities & Related Discussion

A: The context Activity for the teacher to start:

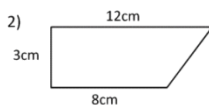
A1: Find Perimeter and area



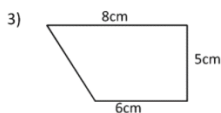
A2: Find the area of trapezoids by splitting up into rectangles and Triangles. They are not drawn to scales



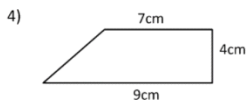
Area = _____ cm²



Area = _____ cm²



Area = _____ cm²



Area = _____ cm²

<https://www.math-salamanders.com/image-files/math-practice-worksheets-trapezoid-area-1.gif>

B: Value Based Activities:

B1: Self-Discipline & Self Awareness

Teacher shall discuss the relation between self-discipline, self-control & self-awareness with students which they have already studied in previous class. Then explain to them that Self-control is not possible without self-awareness. It is a double-edged sword. If you use it right, it can be sharpened weapon to help you to win the fight. But if you do it wrong, it will hinder you from your goal achievement .So we need our self-awareness to help us rein our self-control to make sure we are on the track of our goal achievements.

Teacher shall discuss with students and ask students to do introspection about their weak points and strong points and list them in a paper which will help them to know self, Teacher shall take a **SWOT** Analysis in class and guide students how they can prepare for themselves.(Students might have already know Swot Analysis which is taught in Std VI) After teaching them about self-awareness teacher guide by discussing with students how to achieve self-discipline.(Which is already discussed in Std VI), but teacher shall customize as per the need of students

Set your goals: – The first step towards leading a disciplined life is to set goals. Goals give you a clear idea about what needs to be achieved. One must always set a timeline for your goals. This serves as a driving force and motivates you to work hard. It is a good idea to set both short term and long term goals and create a well thought out plan to achieve them.

Do meditation:- Meditation is one of the best ways to channel our energy in the right direction. It helps maintain focus, acquaints us with our inner self and furthers better self-control. It is the stepping stone for a disciplined life. Meditating for half an hour every day can help in inculcating self-discipline.

Set a Routine:- Those who set a routine and follow it daily lead a more disciplined life. It is suggested to list all the tasks that you require accomplishing in a given day. Write them in the order of their priority, set a timeline for each and act accordingly. This is a good way to lead an organized and disciplined life.

Stay away from distractions: - In this technology-driven world, there are numerous things that can distract us and take charge of our lives. Our mobile phones, television, and chatting apps are some of the new age things that are a big hindrance in practicing self-discipline. No matter how determined we are to study, work or sleep on time, we tend to get distracted at the beep of our phone. Social media platforms, chatting apps and web series are extremely addictive and hamper work. In order to practice self-discipline, it is important to stay away from these distractions. Put your phone on silent or keep it at a distance when you sit to study or work. Similarly, just put your phone away at bedtime and instead pick a book to read.

Reward yourself:- Reward yourself for every goal you achieve. This will motivate you to

work harder to achieve more. This is a good way to trick your brain to inculcate self-discipline.

Take proper sleep:- You can inculcate self-discipline only when you are well-rested. So, it is essential to sleep for eight hours each night. Maintaining a good sleep cycle is also essential. This means that you should try sleeping and waking up at the same time each day. A power nap during the afternoon can help further.

Stay Positive:- Many people want to inculcate self-discipline but are unable to because they somehow believe that it is difficult to achieve. They feel that it is too much to ask for and that they shall not be able to practice it. This is the wrong approach. You can achieve anything in life if you stay positive and believe in yourself. So, you should stay positive. It is a pre-requisite for inculcating self-discipline.

Ref: <https://www.toppr.com/guides/essays/essay-on-self-discipline/>

B2: Precision & Accuracy:

Measurement is essential for us to understand the external world and through millions of years of life, we have developed a sense of measurement. Measurements require tools that provide scientists with a quantity. The problem here is that the result of every measurement by any measuring instrument contains some uncertainty. This uncertainty is referred to as Error. Accuracy and precision are two important factors to consider while taking measurements. Both these terms reflect how close a measurement is to a known or accepted value. Accuracy is the degree of closeness between a measurement and the measurement's true value. Precision is the degree to which repeated measurements under the same conditions are unchanged.

Teacher shall discuss with students and ask those instances they came across where precision and accuracy played a significant role and yielded a better result in daily life situations.

V. C: Assignments

C1: Prepare a report on Significance of Accuracy & Precision in the field of construction (Buildings, Roads, Bridges, Railway Tracks, etc.) of student's choice.

Resources

References:

1. <https://www.toppr.com/guides/essays/essay-on-self-discipline/>
2. <https://www.math-salamanders.com/image-files/math-practice-worksheets-trapezoid-area-1.gif>
3. . Ncert Textbook, Reference books, (R.D Sharma , R.S.Aggarwal)

Topic	Values / Life skills integrated & imbibed	Activities
Exponents & Powers	<p>Core Values considered : Hard work & Positive Attitude & Perseverance</p> <p>Other Sub-Values: optimism, integrity, courage, confidence, determination, patience, calmness, and focus</p> <p>Life skills: problem solving, logical thinking, concentration</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Use Puzzles & Worksheets to revise previous knowledge of students. 2. Discussion with students regarding positive attitude and ask students to correlate it with real life situations & with other traits of character. 3. Discussion & brief description of life story of Mr.Dhirubhai Ambani 4. Assignment: 1: Study & Presentation on famous personalities who pursue the passion with hard work & positive attitude

Materials / Resources needed

Value Integration:-

- 1 Worksheet to conduct context activity
2. BB, Pen, scissor, color pencils.
3. Facilities and Equipment to show videos & presentations
4. NCERT Text books, reference books (R.D. Sharma, R.S Agarwal) pen, board, Duster.

Description (of the points of discussion)

Value Integration:-

In this chapter the activities incorporated in such a way that students learn Exponents and Powers are ways, used to represent very large numbers or very small numbers in a simplified manner. The exponent is a simple but powerful tool. It tells us how many times a number should be multiplied by itself to get the desired result. While teaching exponents teacher shall instill positive attitude & hard work among students. Teacher shall also instill the importance of perseverance among the students by highlighting no matter how tough or negative the circumstances one can always turn it into a positive as we are able to make any negative exponent/power into positive. The more one has positive attitude and willingness to work hard the result will be like exponents and powers, it rewards you manyfold times.

The key discussions are:

1. By using puzzles & Worksheets teacher revise the previous knowledge students.

2. By discussing with students regarding positive attitude and ask students to correlate it with real life situations & with other traits of character.

3. By discussion & brief description teacher narrate the life story of Dhirubhai Ambani and teach students the significance of hard work, and how it is leading to success. Organise a group discussion about different milestones of Mr. Dhirubhai Ambani's Life Journey.

4. Assignment:

1: Study & Presentation on famous personalities who pursue the passion with hard work & positive attitude

Unit 12**Exponents & powers****Hard work, Positive Attitude & Perseverance****I. Introduction**

An expression that represents repeated multiplication of the same factor is called a power. Exponents and powers are ways, used to represent very large numbers or very small numbers in a simplified manner. The exponent is a simple but powerful tool. It tells us how many times a number should be multiplied by itself to get the desired result. One of the most common real world applications of exponents involves taking measurements and calculating multi-dimensional quantities. While teaching exponents teacher shall instil positive attitude& hard work among students. Teacher shall also instil the importance of perseverance among the students by highlighting no matter how tough or negative the circumstances one can always turn it into a positive as we are able to make any negative exponent/power into positive. The more one has positive attitude and willingness to work hard the result will be like exponents and powers, it rewards you many fold times.

II. Learning Objectives / Outcomes

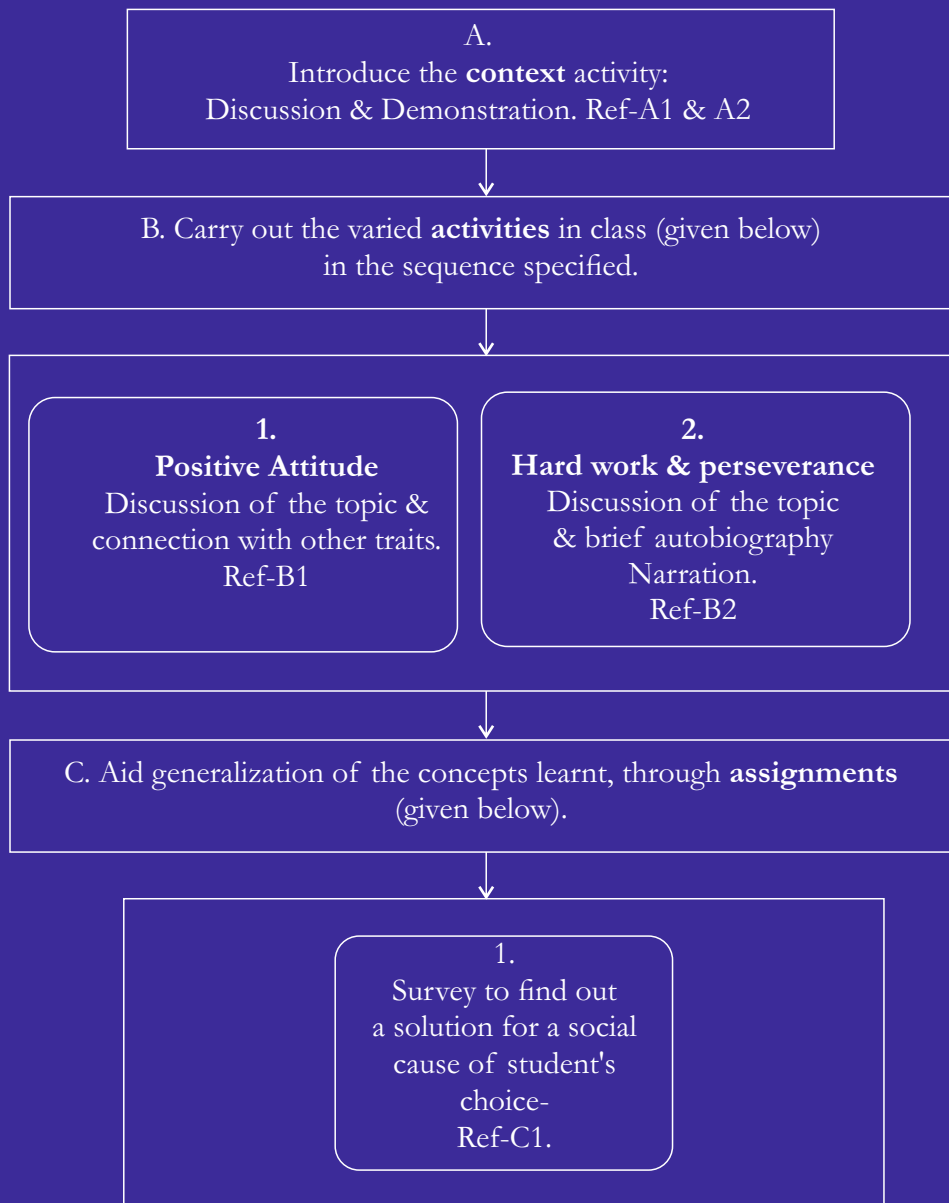
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Apply the first law of exponents and principles of negative exponents and derive the rest of the laws of exponents
- Apply laws of exponents and simplify a given expression.
- Express very large and very small numbers in the standard form and compare and estimate quantities
- Learn that hard work and positive attitude & perseverance give great power and success.
- Learn the importance of values such as Honesty, responsibility, confidence, courage and interpersonal skills.

III. Process & Action Plan

Exponents and powers applied in many areas of our real life. It is used to describe a computer's memory and to measure the strength of earth quakes. Negative Powers of exponents are used to specify very small decimal amounts, such as the distance between Silicon atoms in a Silicon Crystal which is 2.35×10^{-10} . Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

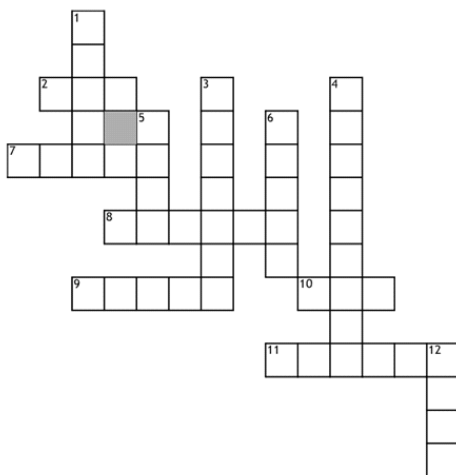
The *core values* being considered are *Hard work, Positive attitude & perseverance* along with other sub-values like *optimism, integrity, courage, confidence, determination, patience, calmness, and focus*.

The unit also provides the scope to develop the following life skills in the students: *problem solving, logical thinking, concentration*

IV. Activities & Related Discussion

A: The context Activity for the teacher to start:

A1: Solve the following puzzles by using the previous knowledge



Across

2. If a number is squared, that tells you to multiply the number by itself _____ times.
7. If a number is cubed, it tells you to multiply the number by itself _____ times.
8. If you see a 3 with a little 4 above it you would say it is three to the _____ power.
9. What is another way to say to the third power?
10. What is anything to the zero power?
11. What do you multiply the bottom number by as many times as the exponent says?

Down

1. Five cubed could also be written five to the fifth _____.
3. What is another way to say to the second power?
4. Even though they have special names, squares and cubes are still _____.
5. What is zero to any power?
6. Three to the eighth power would be $3 \times 3 \times 3 \dots$ how many times?
12. What exponent would you use for $4 \times 4 \times 4 \times 4 \times 4$? _____

A2: Fill In The Blanks

$$5^5 \times 5^3 =$$

$$(-3)^3 \times (-3)^5 =$$

$$5^5 \times 5^2 =$$

$$3^{0.3} \times 3^{0.5} =$$

$$5^2 \times 5^5 =$$

$$3^{\frac{1}{3}} \times 3^{\frac{1}{5}} =$$

$$5^2 \times 4^5 =$$

$$3^a \times 3^a =$$

$$4^2 \times 4^5 =$$

$$3^a \times 3^b =$$

$$4 \times 4^5 =$$

$$a^3 \times b^3 =$$

$$4^3 \times 4^5 =$$

$$a^3 \times a^3 =$$

<https://variationtheory.com/2018/02/13/multiplication-law-of-indices/>

https://wordmint.com/public_puzzles/192704

B: Value Based Activities:

B1: Positive Attitude:

Teacher shall discuss with students regarding positive attitude and elicit different views and summarize (Discussed in Std VII)

- Positive attitude means being optimistic about situations, interactions, and yourself. People with positive attitudes can remain hopeful and see the best even in difficult situations
- Positive attitude helps you cope more easily with the daily affairs of life. It brings optimism into your life, and makes it easier to avoid worries and negative thinking. If you adopt it as a way of life, it would bring constructive changes into your life, and makes them happier, brighter and more successful
- Positive people have more energy and are more self-confident and hopeful. Because of this they tend to set higher goals and expend more effort in order to reach their goals. This helps positive people see multiple solutions to problems and make better decisions
- There are ten specific behavioral traits that are characteristic of a positive-thinking and positive-living person: optimism, enthusiasm, belief, integrity, courage, confidence, determination, patience, calmness, and focus.

Teacher shall ask students to connect each trait with positive attitude with a story or event.

B2: Hard work, Determination & Positive Attitude

Teacher shall discuss with students regarding hard work and its result, summaries and narrate a brief autobiography of great personalities who made a mark in history with their success.

- Hard work is one of the most important things in life, to achieve your goals there is no shortcut and it is only through dedication and determined hard work can one achieve their goals, dreams and aspirations.
- Working hard with determination and passion ensures that we stay one step ahead of everyone and helps us surpass our own limitations to reach new heights.
- Hard work is the most important key to success. No achievements are possible without hard work. An idle person can never gain anything if they sit and wait for the better opportunity to come. The person who works hard creates his own opportunities and thereby can gain success and happiness that he has been working for.

Great personalities who made a mark in books of history for their achievements.

Not everyone on this earth is born with a silver spoon, there are many here whose lives were full of difficulties, hardships, struggles, failures and poverty. But somehow with their persistence, hard work, talent, confidence and their never give up attitude turned their destiny. Some of them achieved success at a very early and few later but from here, their life directly jumped into another track.

Dhirubhai Ambani- Dhirajlal Hirachand Ambani, popularly famous among all as



Dhirubhai Ambani. He is the founder of Indian Conglomerate Multinational Reliance Industries and the first Indian entrepreneur whose company got the listing in Forbes Magazine. He belongs to a middle-class family and his father was a teacher. During his school days, he used to sell bhajia and at the age of 16, he went to Yemen. Here, he got a job in an oil company and served the role of the gas station attendant and clerk. In 1958, he returned to India with an amount of Rs.50,000 and set up a textile company. The

company is now one of the great business houses in India. The position he achieved is only the outcome of his hard work, not his luck.

Teacher shall divide students in to groups and conduct a group discussion in the class about life journey of Dhirubhai Ambani

Teacher shall moderate the discussion and end with the famous quote

“Pursue Your Goals Even In The Face Of Difficulties And Convert Adversities Into Opportunities”. Dhirubhai Ambani

<https://appindianews.com/10-indian-great-personalities-who-marked-the-history-with-their-success/>

V. C: Assignments

C1: Study on famous personalities who pursue the passion with hard work & perseverance and do a presentation

Resources

References:

1. <https://www.moralstories.org/appreciation-of-hard-work/>
2. Ncert Textbook, Reference books, (R.D Sharma , R.S.Aggarwal)
3. <https://appindianews.com/10-indian-great-personalities-who-marked-the-history-with-their-success>

Topic	Values / Life skills integrated & imbibed	Activities
Direct& Inverse Variation	<p>Core Values considered : Relationship of Happiness & Sadness</p> <p>Other Sub-Values: patience, calmness, acceptance, trust & faith, brave</p> <p>Life skills: patience, calmness, acceptance, trust & faith, brave</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1.Discussions & solving worksheet 2.Through discussion and study on the topic given by teacher s 4.Assignment: Study on interconnected/interdependence in school system

Materials / Resources needed

Value Integration:-

1. Worksheets to solve in the class for the context activity
2. Facilities and Equipment to show videos
3. NCERT Text Book, Reference books,(R.D Sharma , R.S.Aggarwal) P

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that While learning the lesson students

learn to relate Life without a sense of proportion is difficult to imagine – it is present in all actions of enlargement and reduction. It is used in the home when thinking about the ingredients for cooking for ten people instead of six. It is used in urban planning when thinking about building plans. It is used by policymakers when considering issues of taxation. It is even used by young children, perhaps implicitly, in working out how many sweets to get for several people or how to share a bag of marbles amongst friends. This lesson teaches that life is a mixture of happiness & sadness Life is filled with happiness, sadness, tears, smiles, laughter and other emotions: but when life gets you down, be strong and have faith. Sometimes you may be happy and sometimes be sad; that is the way of life. Sadness reminds us of the importance of happiness in our life. Sadness gives us the opportunity to ask for change and help us understand the importance of happy times in our life.

The key discussions are:

1.By discussions , by doing a case study teacher revise the previous knowledge of fractions and decimals

2.Through discussion and by quoting an example teacher explain the relationship between happiness and sadness and how it is making human life meaningful.

3.By giving different situations in students life teacher organize a group discussion to find out solutions to convert challenges into opportunities

4.Assignment:

Write a situation where a sad moment of your life you have changed/ could have changed/ can change into a positive emotion

Unit 13**Direct and Inverse Proportion****Relationship of Happiness & Sadness****I. Introduction**

Directly proportional variables are those in which if one variable increases, the other also increases. Inversely proportional variables are those in which one variable decreases with the increase in another variable and one variable increases with the decrease in another variable. It is opposite to direct proportion

Life without a sense of proportion is difficult to imagine—it is present in all actions of enlargement and reduction. It is used in the home when thinking about the ingredients for cooking for ten people instead of six. It is used in urban planning when thinking about building plans. It is used by policymakers when considering issues of taxation. It is even used by young children, perhaps implicitly, in working out how many sweets to get for several people or how to share a bag of marbles amongst friends. This lesson teaches that life is a mixture of happiness & sadness. Life is filled with happiness, sadness, tears, smiles, laughter and other emotions; but when life gets you down, be strong and have faith. Sometimes you may be happy and sometimes be sad; that is the way of life. Sadness reminds us of the importance of happiness in our life. Sadness gives us the opportunity to ask for change and help us understand the importance of happy times in our life.

II. Learning Objectives / Outcomes

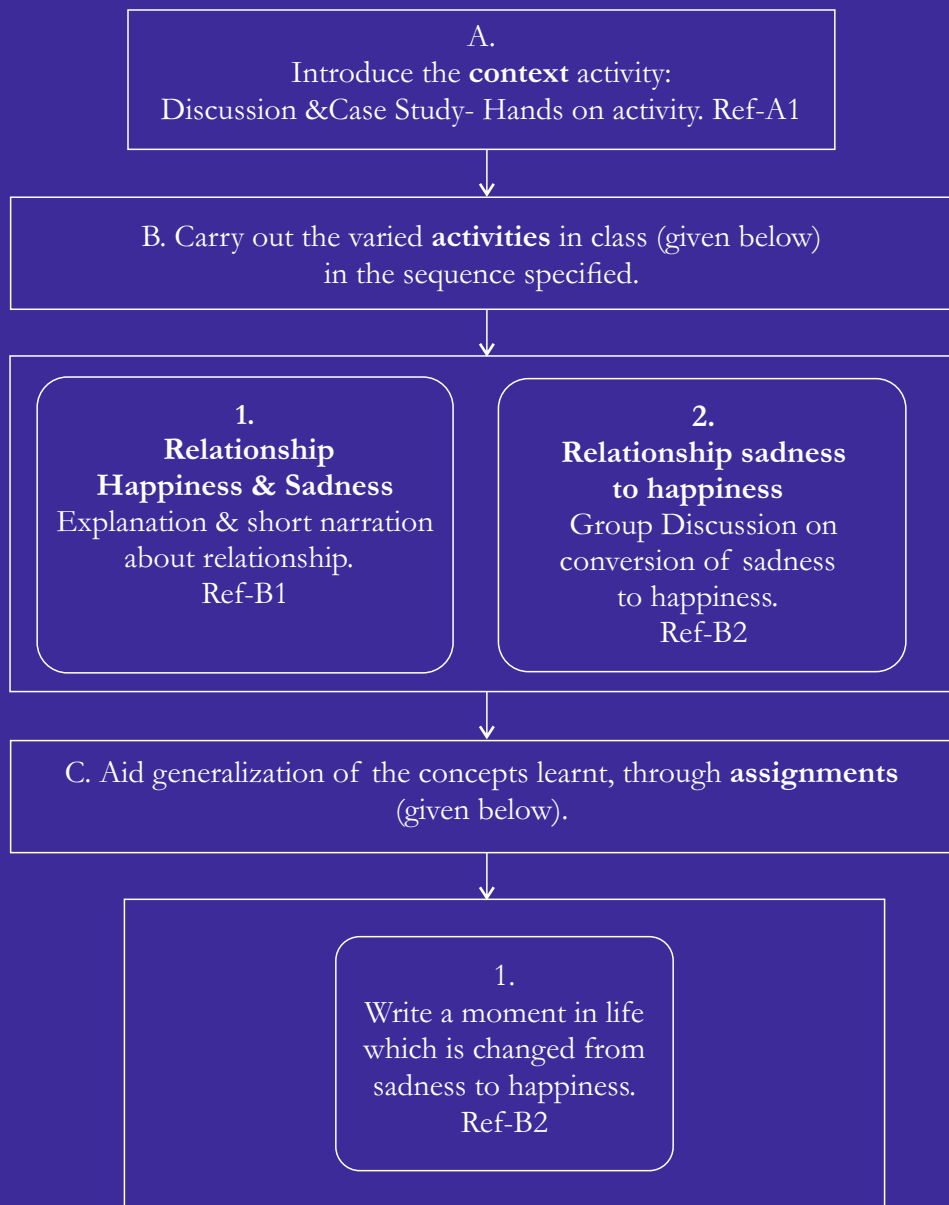
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Observe the relationship between the given two quantities and solve to find constant of proportionality
- Convert the given statement on relationship (directly or inversely proportional) between two quantities.
- Understand that life is unpredictable, but it has a way of maintaining a balance, students learn the importance of patience and strength.

III. Process & Action Plan

There are many quantities present in our deal life which have direct and inverse relation. The numbers of family members are directly expenditures. The cost of electrical bill directly proportional to number of fans running in the house. The marks in study is directly proportional to hardworking. The bank balance is inversely proportional to expenditures. The working days required to complete the work are inversely proportional to number of labours. The number of mistake in work is inversely proportional to practice. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Relationship of happiness & Sadness* along with other sub-values like *patience, calmness, acceptance, trust & faith, brave*.

The unit also provides the scope to develop the following life skills in the students: *logical thinking, problem solving*

IV. Activities & Related Discussion

A: The Context Activity for the teacher to start

A1: Case Study: .Ask students to set up a chocolate shop.

- If the length of chocolate is 3x1x1 the cost is Rs.5/- and 1 box contains 24 chocolates
- If you increase the length & breadth & height of the chocolate do you think the price of the chocolate to increase or decrease
- If you increase the length& breadth& height of the chocolate, will the number of chocolates that can be packed into one box increase or decrease?

Organize class into groups with each group making up a name for their chocolate shop with variety of chocolates.

Size of chocolate	Price of chocolate	No.of chocolates

Ask each student, on their own or in pairs, to think of their chocolate shop and to write as many pairs of quantities they can think of whose values are related to each other.

Ask the students to classify each pair of quantities as:

Direct variation – if one quantity increases, the other does too.

Inverse variation – if one quantity increases, the other decreases.

No variation – a change in one of the quantities does not mean a change in the other quantity

This activity would be done better in groups, so that there could be a greater participation of each student. They had a great time discussing the different parts of the

activity. 'As the price will include the cost of material, then obviously I will increase the price if I increase its dimensions'; 'See if the box is of the same size. How can we put more in that box? Obviously the number will decrease'.

Group-I Collect English Marks from final report of Std VII.

Group-II Collect Mathematics Marks from final report of Std VII

Teacher shall ask them to think about: (a) was there a relationship; and (b) what kind of relationship was it: direct, inverse or none at all. In a whole-class discussion .Teacher shall first for examples of quantities that were in direct proportion, then examples of inverse proportion, then examples where there was no proportional relationship. by the end of the lesson students will have a clear idea of direct & inverse proportion as they have a hands-on experience.!

B: Value Based Activities:

B1: Teacher shall explain like direct and inverse proportion, life of each one of us will have to undergo different situations in life. Our life is a mix of opposites and contraries. It is a combination of such opposing entities as happiness and sorrow, pleasure and pain and enjoyment and stress. No human being can always be happy and nobody can be sad all the time. We as human beings feel dejected whenever something wrong happens with us and we do feel happy when something good happens to us. Difficulties are challenges of life. Give your best always, think positive, be grateful and brave, be patient and never lose your calmness. Teacher shall give an example of rose flower..

Life is a Blend of Thorns and Roses: Relationship between Happiness & Sadness

"But he who dares not grasp the thorn should never crave the rose." — Anne Bronte

Rose is an embodiment of love, passion and beauty. Its fragrance touches our heart and its soft petals soothe our emotions. But whenever we try to hold it, it hurts us with its prickling thorns. It signifies that whenever we want to achieve something big in life, something which gives us happiness and comfort, we have to go through lots of hardships or we have to face bad experiences of life.

Thus happiness and sorrow go side by side. You can never enjoy your success unless you have worked hard. Success comes to those who put in extra efforts to make their dreams come true. To enjoy happiness, you must learn to accept tragedies of life. Tragic and happy moments combine together to make human life meaningful. Stay calm! be focused! Ups and downs of life make life worth-living and meaningful.

<https://www.beaninspirer.com/life-is-a-fusion-of-happiness-and-sorrow-the-balance-of-the-twain-makes-human-life-meaningful-and-worth-living/>

B2: Divide students into groups and teacher shall give situations and ask students to discuss and find solutions to convert challenges into opportunities. Teacher shall customize as per requirement

Group I- Scored less marks in mathematics Examination

Group II-One of your close friend left your school due to transfer of his father's Job.

Group III-Could not win the trophy of a prestigious competition

Group IV- School did not take you in their football team as you were not playing well

V. C: Assignments

C1: Write a situation where a sad moment of your life you have changed/ could have changed/ can change into a positive emotion.

Resources

References:

1. <https://www.beaninspiner.com/life-is-a-fusion-of-happiness-and-sorrow-the-balance-of-the-twain-makes-human-life-meaningful-and-worth-living/>
2. NCERT Textbook, Reference books, (R.D Sharma , R.S.Aggarwal)

Topic	Values / Life skills integrated & imbibed	Activities
Factorization	<p>Core Values considered : Curiosity& Equality</p> <p>Other Sub-equality, goal setting.</p> <p>Life skills: decision making, critical thinking, and problem solving</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1.Solution of different worksheets in the class room to previous knowledge 2 Discussion to demonstrate how complex problems in to smaller blocks help to solve problems easily 3. Group discussion& activity with the help of real life examples 4.Assignment: Ask students to set a goal in their life and make plans on how to achieve it step by step.

Materials / Resources needed

Value Integration:-

1. Facilities and Equipment to show videos.
2. NCERT Text books, reference books (R.D. Sharma, R.S Agarwal)
3. Pen, board, Duster.
4. Work sheets to conduct Context Activity

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated to encourage students to learn the importance of curiosity. Teachers should engage students in a manner that encourages them to be curious about real life applications of this topic such as dividing something into equal pieces, exchanging money, comparing prices etc. Furthermore, the teacher should extend the learning of this topic to life by helping students understand how factorization plays an important role in helping students overcome challenges in life. This requires teachers to emphasize on sharpening one's problem solving skills, critical thinking and strategizing skills so as to break down a tough task into smaller easy to do tasks.

The key discussions are:

1.By solving different worksheets teacher shall revise their knowledge regarding algebraic expressions

2.By discussion teacher elicit that break down of any complex problems into smaller blocks will create curiosity and solve problems easily

3.By group discussion& activity teacher inculcate the significance of equality and application of factors in real life

4.Assignment:

1.Ask students to set a goal in their life and make plans on how to achieve it step by step.

Unit 14**Factorisation****Curiosity & Equality****I. Introduction**

Factor' is a term used to express a number as a product of any two numbers. Factorization is a method of finding factors for any mathematical object, be it a number, a polynomial or any algebraic expression. Factoring an algebraic expression means writing the expression as a product of factors. Algebraic expressions can be factorized using the common factor method, regrouping like terms together, and also by using algebraic identities. Factoring is a mathematical process by which you break up a math phrase into simplified parts. This is true in daily life when we face any complicated or complex problems we need to break it into different parts and solve it on priority basis which help us to solve any problems easily.

This lesson teaches students the importance of curiosity. Teachers should engage students in a manner that encourages them to be curious about real life applications of this topic such as dividing something into equal pieces, exchanging money, comparing prices etc. Furthermore, the teacher should extend the learning of this topic to life by helping students understand how factorization plays an important role in helping students overcome challenges in life. This requires teachers to emphasize on sharpening one's problem solving skills, critical thinking and strategizing skills so as to break down a tough task into smaller easy to do tasks.

II. Learning Objectives / Outcomes

Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Express each term as a product of irreducible factors and find the common factors of the given terms
- Use the method of common factors and factorize the given algebraic expression
- Apply the standard algebraic identities and factorize the given algebraic expressions (for perfect squares)
- Factorize algebraic expressions in the form and express it as a product of its irreducible factors of the form

- Use the common factor method and divide a monomial by a monomial, a polynomial by a monomial
- Divide each term in the numerator by the denominator and divide a polynomial by a monomial
- Use the common factor method and divide a polynomial by a polynomial
- Check the given mathematical statements and find and give reasons for the possible errors in them
- Learn the ability to break down complex problems into smaller blocks and solve easily.
- Develop curiosity on real life applications of factorization.

III. Process & Action Plan

Factoring is a useful skill in real life. Common applications include: dividing something into equal pieces, exchanging money, comparing prices, understanding time and making calculations during travel. While factoring large numbers can feel difficult at first, there are several simple tricks you can learn to quickly find a number's factors. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:

A.
Introduce the **context** activity:
Riddles and Worksheet. Ref-A1, A2, A3 & A4



B. Carry out the varied **activities** in class (given below)
in the sequence specified.



1.
Curiosity, Equality & Problem Solving
Explanation & Discussion of different
situations of real-life examples.
Ref-B1



C. Aid generalization of the concepts learnt, through **assignments**
(given below).



1.
Setting a goal and
prepare steps to
achieve it.
Ref-C1

While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Curiosity*, along with other sub-values like *equality, goal setting*.

The unit also provides the scope to develop the following life skills in the students: *decision making, critical thinking, and problem solving*

IV. Activities & Related Discussion

A: The Context Activity for the Teacher to Start:

A1: Riddles on Prime Factorization

Use the clues to find out the correct number from 8 possibilities

a. 34	b. 23	c. 70	d. 48
e. 75	f. 39	g. 59	h. 36

Q. No. 1

- I am not a prime number
- One of my factors is 3
- I am less than 8^2
- I am not even

Who am I?.....

Q. No. 2

- I am greater than 3^3
- 5 is not one of my factors.
- I am not a multiple of 3
- I am the product of 2 prime numbers

Who am I?.....

GA4:Factorise using Identities.

a) $49x^2 - 9^2 =$

b) $16x^2 - 25 =$

c) $x^2 - 2x + 1 =$

d) $9x^2 - 6x + 1 =$

e) $x^2 - (y + z)^2 =$

<https://www.math-salamanders.com/image-files/prime-factorization-worksheets-riddles-1.gif>

<https://jsuniltutorial.weebly.com/uploads/7/8/7/0/7870542/dps-algebraic-expression-class-8-work-sheet.pdf>

B: Value Based Activity:

Teacher can discuss the factors that affect academic outcomes, and how focusing on factors will result in positive outcome and eventually lead to success. Through this topic the teacher shall help students understand that each goal can be broken down to individual smaller goals or elements. Focusing on each element will help one achieve the overall goal successfully. Similarly whenever we have multiple task or complex issues to handle we need to break it into small pieces priority wise. This helps in simplifying a complex problem into smaller easy to do tasks. In day-to-day life, it is this sense of curiosity which makes people learns new things. In the field of education the teacher is supposed to arouse in the children, curiosity for knowledge. His success depends on his ability to create this sense in the child. Without curiosity, life is dull and drab, meaningless and routine.

B1: Factors- Break down complex problems into smaller blocks and solve easily and create curiosity among students to explore more

Dividing Something Equally

A key time you use factoring is when you must divide something into equal pieces. For example, if 6 people worked together to make brownies, and the pan of brownies yields 24 brownies, it would only be fair if everyone received the same number of brownies. Because 6 is a factor of 24, the brownies divide into equal shares without cutting them into smaller pieces. Dividing 24 by 6 gives a result of 4, so each person gets 4 brownies.

Discussion: Teacher shall ask and elicit from students the value they have learned from this simple number factorization

Teacher shall divide students into groups and give different real life examples to connect with factorization and explore more

Group I: Factoring with Money- Exchanging money is another common function that relies on factoring

Group II: Comparing Prices- while shopping to compare prices per unit one use factoring

Group III: Understanding Time- Time is another opportunity to use factoring in the real world

Group III: Traveling with Factors- Factors are useful when traveling.

<https://sciencing.com/factoring-math-6590887.html>

V.C: Assignments

~~C1: Ask students to set a goal in their life and make plans on how to achieve it step by step.~~

Resources

References:

- 1.Ncert Textbook, Reference books,(R.D Sharma , R.S.Aggarwal)
2. <https://www.math-salamanders.com/image-files/prime-factorization-worksheets-riddles-1.gif>
- 3.https://jsuniltutorial.weebly.com/uploads/7/8/7/0/7870542/dps-algebraic_expression_class_8_work_sheet.pdf
- 4.<https://sciencing.com/factoring-math-6590887.html>

Topic	Values / Life skills integrated & imbibed	Activities
Introduction To Graph	<p>Core Values considered : Honesty, Responsibility, Interdependence</p> <p>Other Sub-Values: Accuracy, confidence, relationship</p> <p>Life skills: logical thinking & reasoning, critical thinking, drawing, observation</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1. Discussion in the class room and by solving worksheets to revise the previous knowledge of students 2. Story narration & discussion to instill honesty among students 3. Discussion& activity to inculcate interdependence & team work 4. Assignment: Teacher instruct students and give assignment 1. Write an essay on Importance of Interdependence

Materials / Resources needed

Value Integration:-

1. Worksheets to conduct context activity
2. Facilities and Equipment to show videos and for conducting activities
3. BB, Pen
4. Ncert Text Book, Reference books, (R.D Sharma , R.S. Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities and games are incorporated in such a manner that students learn that Graph is used to represent the relation between two variables. System of fixing a point with the help of two measurements, vertical and horizontal, came to be known as Cartesian system. Introduction to Graphs is very important for students to develop logical and mental ability.

This lesson teaches students how everything in life is connected and dependent on factors both internal and external in nature, it also teaches one to be honest and responsible as it involves plotting of data in an accurate manner so that decisions based on the output can be correct. This bears a certain level of responsibility to the task.

The key discussions are:

1.By doing discussion in the class room and by solving worksheets teacher shall revise the previous knowledge of students

2.By doing a story narration & Discussion teacher shall instill Honesty among students and teach them honest dealings are always supreme. Money earned by wrong methods will never remain forever.

3. By discussion activity teacher shall inculcate the value of Interdependence and team work among students

4. Assignment:

Teacher instruct students and give assignment

Write an essay on Importance of Interdependence.

Unit 15**Introduction to Graphs****Honesty, Responsibility, Interdependence****I. Introduction**

The purpose of graph is to show numerical facts in visual form so that they can be understood quickly, easily and clearly. Thus graphs are visual representations of data collected. Data can also be presented in the form of a table; however a graphical presentation is easier to understand. This is true in particular when there is a trend or comparison to be shown. Graph is used to represent the relation between two variables. System of fixing a point with the help of two measurements, vertical and horizontal, came to be known as Cartesian system. Introduction to Graphs is very important for students to develop logical and mental ability.

This lesson teaches students how everything in life is connected and dependent on factors both internal and external in nature, it also teaches one to be honest and responsible as it involves plotting of data in an accurate manner so that decisions based on the output can be correct. This bears a certain level of responsibility to the task.

II. Learning Objectives / Outcomes

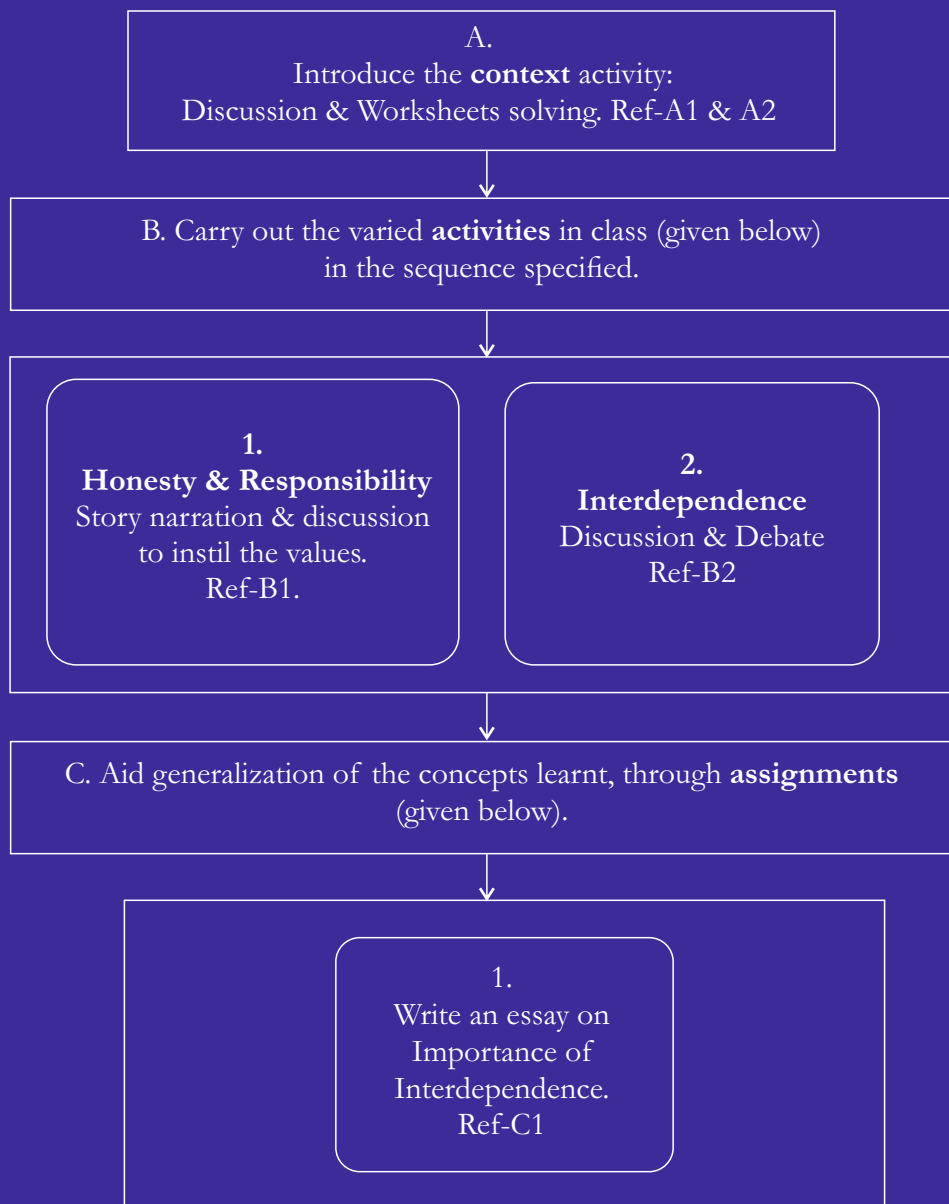
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Draw a line graph and represent the given data that changes continuously over periods of time.
- Interpret the given line graph and answer the given questions.
- Plot a point on the graph and describe its coordinates. Plot the given points on the graph and verify if they lie on the same line or not. Choose an appropriate scale and plot a graph for the given data.
- Construct the line graph and discuss the relationship between independent and dependent variable in a given mathematical or a real life situation.
- Develop logical & mental ability and learn honesty, responsibility and importance of relationship/Interdependence.

III. Process & Action Plan

Whether you are presenting data on a line graph, plotting a route by boat along the coast, or simply finding the location of a car park on a map of a National Park, you will need to understand point coordinates. A point is a single location anywhere. It could be on a straight line (one dimension), on a two-dimensional surface or plane (for example a dot on a sheet of paper) or in three-dimensional space (such as the position of an aircraft in flight at a given instant in time). Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

The *core values* being considered are *Honesty, responsibility & interdependence* along with other sub-values like *Accuracy, confidence, relationship*

The unit also provides the scope to develop the following life skills in the students: *logical thinking & reasoning, critical thinking, drawing, observation*

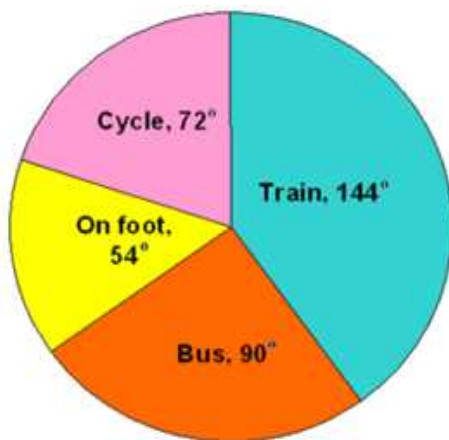
IV. Activities & Related Discussion

A: The Context activity for the Teacher to start:

A1: There are 1000 workers who travel from home to factory. The pie graph shows the proportion of workers using various modes for traveling to work. Study the pie-graph and answers the questions given below:

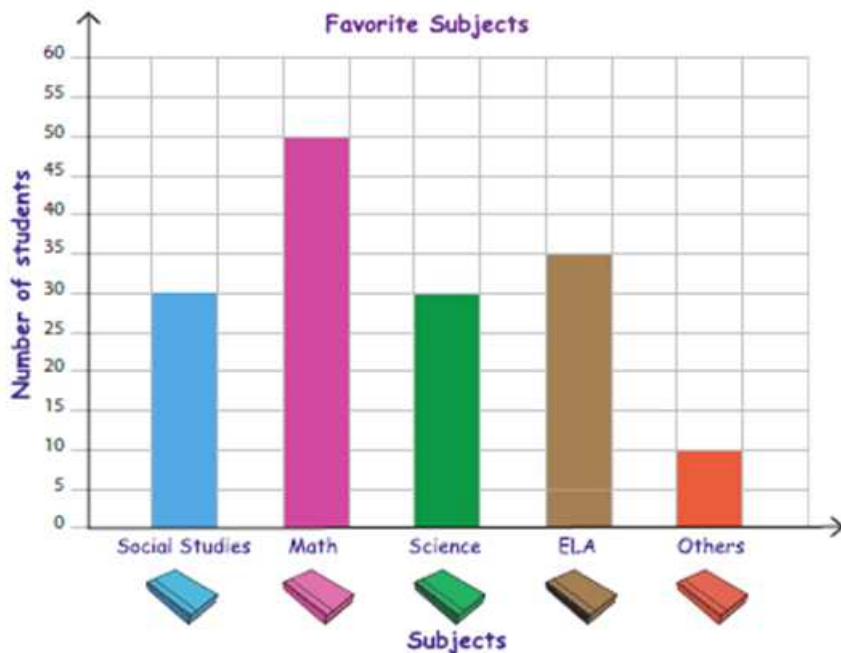
How many workers travel to factory?

(i) By Bus? (ii) By Train? (iii) By Cycle? (iv) On Foot



Ref: <https://www.learncbse.in/data-handling-ncert-extra-questions-for-class-8-maths/>

A2:Survey of favourite subjects done by a teacher for her class is given below. Use the bar graph and answer the following Questions



1. What unit of scale is used to display the popularity of subjects among the students?
2. Which subject is the second most popular?
3. Which subject is less popular Science or ELA
4. Which subject is favourite for 50 students?
5. Which subjects have the same number of votes?

Ref: www.mathworksheet4kids.com

B: Value Based Activities:

B1:A bar graph, histogram & pie diagram are the pictorial representation of the information/data collected for the common man to understand. Therefore while collecting or while presenting it one need to be very careful & honest and responsible for the accuracy of the data .Otherwise it will mislead

The community or society .Teacher shall inculcate students the importance of honesty & responsibility in students while taking any task.

Story on Honesty & Discussion

Story 1

A milkman became very wealthy through dishonest means. He had to cross a river daily to reach the city where his customers lived. He mixed the water of the river generously with the milk that he sold for a good profit. One day he went around collecting dues to celebrate the wedding of his son.

With the large amount thus collected he purchased plenty of rich clothes and glittering gold ornaments. But while crossing the river the boat capsized and all his costly purchases were swallowed by the river. The milk vendor was speechless with grief. At that time he heard a voice that came from the river, “Do not weep. What you have lost is only the illicit gains you earned through cheating your customers.

Moral of the Story: Honest dealings are always supreme. Money earned by wrong methods will never remain forever.

<https://www.advance-africa.com/honesty-is-the-best-policy.html>

OR

Story 2

Once upon a time Birbal asked a question to King Akbar that “My lord how can you be sure that people of your kingdom are honest with you and honest with each other??”

King replied “question is valid Birbal but how can we check this??”

Birbal said “We should conduct a test for assuring this, I have an idea what if we tell all the people in the kingdom to donate one jar of milk each into a tank??”

Akbar said “Good idea Birbal let's perform this test “King did as Birbal said, he asked all the people to donate one jar of milk into a tank. All of them did as king order them.

Now it's time to open the tank. When they opened the tank it had only water, “why there is only water in the tank” king asked to Birbal.

Birbal replied “my lord each person think that if we donate water instead of milk in the tank then it will mix with the milk poured by others then no one can notice and all the people think the same and no one donate milk”

Moral Of The story:

Honesty & Responsibility comes from within. Nobody can or could force someone to be honest.

If you want to change something then you should start it with yourself first i.e. blaming and shouting will never be the solution of any problem.

We all have to take action to change anything and we can only do that if we start all the changes with ourself. Never blame anyone for what they did instead of this try to spread peace, honesty and happiness into our society.

B2: Line graph, Coordinates & Interdependence

Cartesian coordinates are numbers that indicate the position of a point in a given space. Aside from its use in mathematics, we can find coordinates used on a daily basis to indicate places on maps. The map can show a few streets, a city, or the entire world. So you can find your friend's house with a map of their city or even know exactly where you are with GPS if you're in the middle of a wild jungle or a scorching desert.

Maps can be divided into sectors with X and Y axes. And people use GPS every day to get directions while driving or walking, or to work out how long it takes to get from one point to another. It's a system that uses coordinates to find our position and the position of our destination.

A typical Cartesian coordinate system is defined by x and y axes. Each axis has a unit of length or distance (such as metres or miles). Any point within the coordinate system is described by a distance relative to both the x and y axes, (x,y). The axes cross at the point where the value of both x and y is zero; this is called the origin (0,0).

To determine the coordinates of a point say P, First, measure how far it is along the x-axis from the origin, i.e. its perpendicular distance from the y-axis. This provides your x coordinate, next, measure how far the point is along the y-axis, in a perpendicular direction from the x axis. This gives your y coordinate. Thus, the coordinate of P is P (x,y) Teacher shall discuss with students that to locate a point we need to consider two or three factors or variables. The relations between the two variables are very important to locate the position. The same is applicable in real life situations. Identifying factors and elements that are connected play a crucial role in solving a problem, in decision making, planning etc.

Teacher shall divide the class into two groups and conduct a debate on the topic and moderate the debate in the class. **Is interdependence important and can it lead to success?**

V.C: Assignments

C1: Write an essay on Importance of Interdependence

Resources

References:

1. <https://www.learnbse.in/data-handling-ncert-extra-questions-for-class-8-maths/>
2. www.mathworksheet4kids.com
3. <https://juststartlearning.wordpress.com/2016/04/27/a-story-about-thinking-akbar-and-birbal/>
4. <https://www.skillsyouneed.com/num/cartesian-coordinates.html>

Topic	Values / Life skills integrated & imbibed	Activities
Playing with Numbers	<p>Core Values considered : Curiosity& Sharing</p> <p>Other Sub-Values: equality, kindness.</p> <p>Life skills: mental ability, critical thinking, problem solving,</p>	<p>Value integration Activities:-</p> <ol style="list-style-type: none"> 1.use crossword puzzles to revise the previous knowledge of students. 2.Give puzzles and riddles groupwise to solve in class room to instill curiosity 3.Conduct group discussion by giving different types of sharing 4. Assignment <p>Ask students to visit an old age home /orphanage along with parents and share food/clothes/books with them</p>

Materials / Resources needed

Value Integration:-

1. Work sheet of crosswords, puzzles& riddles for the context & value based activity
2. Facilities and Equipment to show videos
3. Facilities to conduct games
4. BB, Pen
5. Ncert Text Book, Reference books,(R.D Sharma , R.S.Aggarwal)

Description (of the points of discussion)

Value Integration:-

In this chapter the activities are incorporated in such a manner that children learn curiosity and the value of sharing equally. It means that everyone should look at others impartially and see them all as the same – friends, enemies, strangers, foreigners, relatives, even animals. Teacher can explain that by using divisibility test we are dividing a number by other number completely, this concept can be used to inculcate the value of sharing

The key discussions are:

1.By using crossword puzzles teacher shall revise the previous knowledge of students.

2.By using puzzles& riddles groupwise in the class room teacher inculcate curiosity among students

3.By conducting group discussion on different types of sharing teacher instill the quality of sharing in students

4. Assignment

Write an essay on how inclusivity in the class room bring positive change

Ask students to visit an old age home /orphanage along with parents and share food/clothes/books with them

Unit 16
Playing with Numbers
Curiosity & Sharing

I. Introduction

Various types of numbers such as natural numbers, whole numbers, integers, rational numbers and the interesting properties about the numbers are already studied in previous classes. In Class VI, students explored finding factors and multiples and the relationships among them. This chapter helps to explore numbers in more detail. These help in justifying riddles, coding & tests of divisibility.

Through this lesson, students are instilled with curiosity and the value of sharing equally. It means that everyone should look at others impartially and see them all as the same – friends, enemies, strangers, foreigners, relatives, even animals. Teacher can explain that by using divisibility test we are dividing a number by other number completely, this concept can be used to inculcate the value of sharing.

II. Learning Objectives / Outcomes

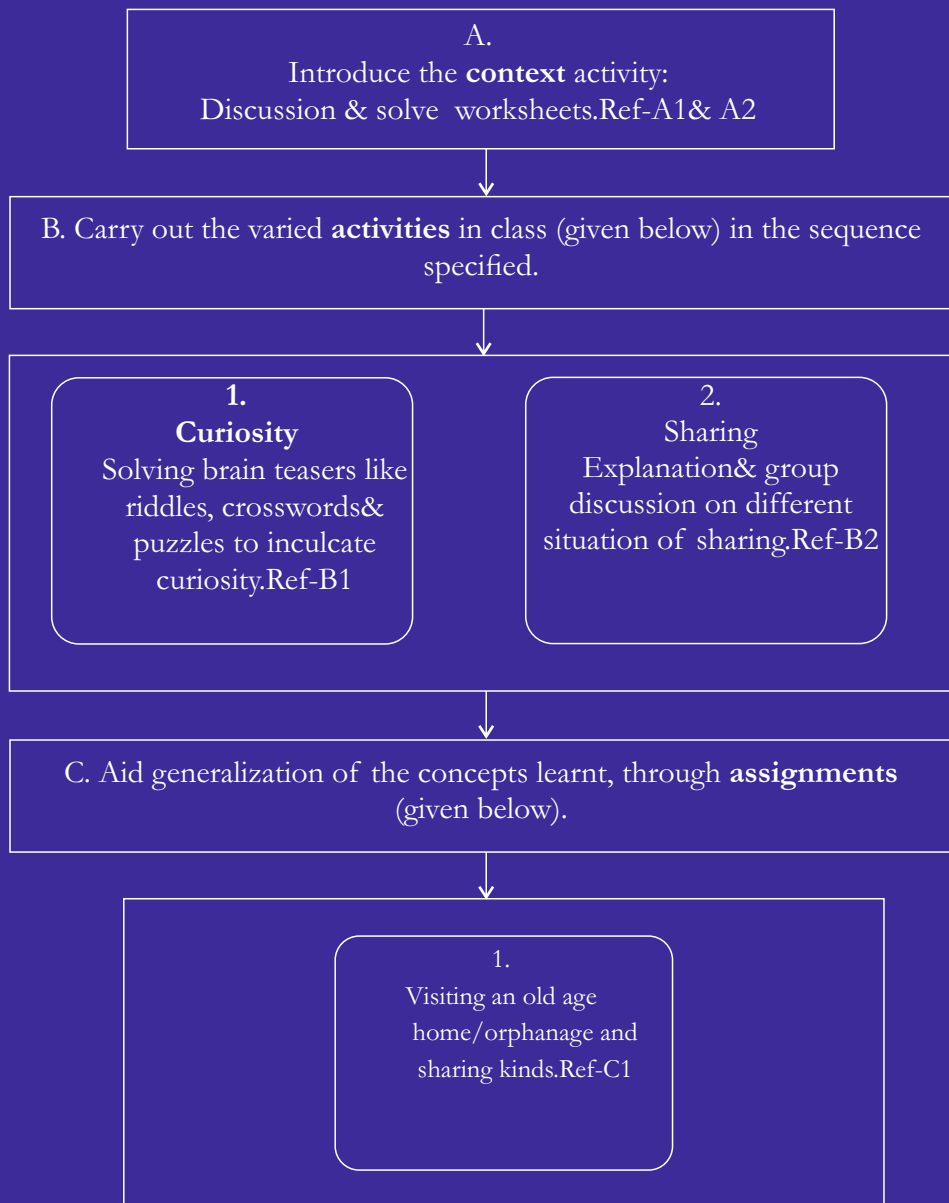
Through this unit, the students will achieve the following grade appropriate academic and value based goals:

- Use the concepts of place value and express the given numbers in their generalized form
- Add or subtract a two-digit number and its reverse and check whether it is divisible by 9 or not, Subtract a three-digit number and its reverse and verify that it is divisible by 99, Form all possible three-digit numbers using the given 3 digits and verify that the sum of these numbers will be divisible by 37
- Use addition and multiplication and find the values of the letters in the given puzzles
- Apply the divisibility rule of 2, 5, 10 & 11 and check whether a given number is divisible by individually and all of them or not.
- Apply the divisibility rule of 3 and 9 and check whether a given number is divisible by them
- Instill the value of curiosity & sharing while learning riddles, puzzles & divisibility tests.

III. Process & Action Plan

We use numbers in our day-to-day life. We buy everything with money and measure its quantity with the help of Numbers only. Therefore Numbers play a very significant role in our life. Division is one of the four basic operations which distribute a number into equal parts. It is defined as a mathematical technique where a number is shared into smaller groups or a technique of distributing quantities into equal parts. Divisibility rules or tests are procedures used to check whether a number is divisible by another number without necessarily performing the actual division. A number is divisible by another number if the results or quotient is a whole number and the remainder is zero. It is denoted by several symbols including, the slash, the horizontal line, and the division sign. Your role as a teacher is significant, as you have the power and the means to shape the lives under your guidance. One of the most important goals you may have as a teacher, is the character education of the students using the academic content at hand.

The values and life skills integration within this unit may follow the following process and action plan, as depicted in the flow chart on next page:



While it would be ideal to expose the students to all the activities as given, and the discussion that would ensue, you may choose as per your convenience and availability of time, the activities that would be relevant to the content being taught and/or suited to the cognitive and emotional maturity of the students.

This topic incorporates the *core approach* – Knowing, Understanding, Valuing and Acting the values embedded in the topic.

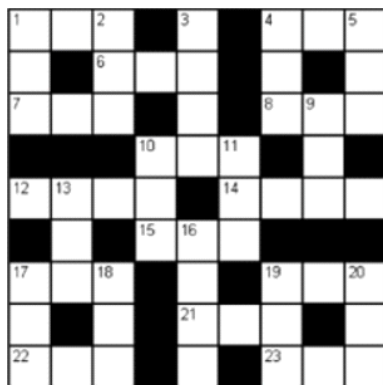
The *core values* being considered are *Curiosity & Sharing* along with other sub-values like *equality, kindness*.

The unit also provides the scope to develop the following life skills in the students: *mental ability, critical thinking, problem solving*,

IV. Activities & Related Discussion

A: The Context Activity for the Teacher to start:

A1: Solve the following crossword puzzles



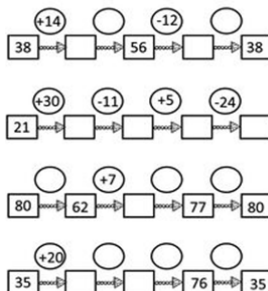
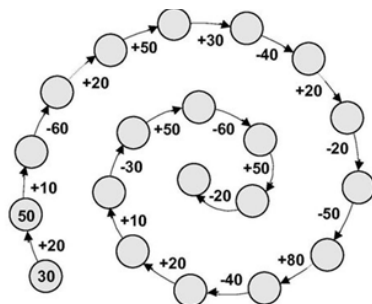
ACROSS

1. $353 - 126 =$
4. $46 \times 6 =$
6. $26 + 330 + 12 =$
7. $724 - 322 =$
8. $1265 - 404 =$
10. $400 + 467 =$
12. 3 Down - 16 Down =
14. $2004 - 876 =$
15. $133 + 208 + 428 =$
17. $1652 - 809 =$
19. $26 \times 9 =$
21. $646 - 215 =$
22. $1762 - 1430 =$
23. 19 Across + 22 Across =

DOWN

1. $526 - 322 =$
2. $519 + 213 =$
3. $5673 + 2163 =$
4. $597 - 349 =$
5. 12 Across - 15 Across =
9. $946 - 324 =$
10. $1200 - 393 =$
11. $436 + 283 =$
13. $172 \times 2 =$
16. $2386 + 1420 + 2640 =$
17. $1257 - 444 =$
18. $161 \times 2 =$
19. $430 - 215 =$
20. $162 + 162 + 162 =$

A2: Fill the Blank Circles & Squares.



B: Value based Activities:

B1: To inculcate curiosity teacher shall give them different riddles and puzzles to solve in the class group wise.

Riddles:

1. In 1990, a person is 15 years old. In 1995, that same person is 10 years old. How can this be?
2. A tailor has 10 meters of fabric, every day, he cuts off a 2 meter long pieces. How many days will it take to finish the whole thing?
3. Every day, the number of lily pads in a pond doubles. If the pond is completely full by the 30th day, on which day was it half full?

Crossword:



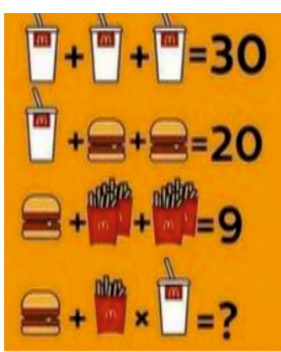
Across

- 1 $9 + 3$
 3 3×5
 6 five x nine
 8 6×3
 10 6 times 11
 12 6×4
 14 $25 + 42$
 16 $12 + 7$
 19 $22 + 50$
 21 $50 + \text{twenty eight}$
 23 $18 + 8$
 25 9×5
 27 $10 + 10 + 20 + 18$
 28 100 minus 47

Down

- 2 Twenty + four
 4 $25 + 26$
 5 8×2
 7 $100 - 48$
 9 $60 + 22$
 11 eighty minus fourteen
 13 $20 + 10 + 11$
 15 $55 + 22$
 17 $100 - 3$
 18 $11 + 11$
 20 2×12
 22 $100 - 17$
 24 $20 + 10 + 20 + 15$
 26 5×11

Puzzles:



By solving these brain teasers inculcate curiosity in students and teacher shall instruct students to think & prepare more such brain teasers by their own and share in the class.

<https://www.ba-bamail.com/content.aspx?emailid=22417>

<https://www.tes.com/en-ca/teaching-resource/numerical-crossword-6106026>

<https://in.pinterest.com/pin/250090585546684280/>

https://www.educationworld.com/a_lesson/numbercross/numbercross007.shtml

B2: Divisibility tests teach students the value of sharing.

Division is one of the four basic operations which distribute a number into equal parts. It is defined as a mathematical technique where a number is shared into smaller groups or a technique of distributing quantities into equal parts. The same quality of sharing we apply in our real life. Sharing not only shows that you care for others but also helps in self-development as a human being. It makes you selfless, humble and empathetic towards others which makes you a well-adjusted individual for the society.

Sharing is one of the most important aspects of human communal life. It allows people to relate, connect and take responsibilities to fulfill each other's needs. It is the base for family's love for each other, bearing each other's emotions, sensitivity and caring for one another. In fact, we can only share a thing with another person for whom we have a space in our heart and mind. Parents care for their offspring as they have love, and each time they show their love with their kids by feeding them, by giving them gifts, by providing them protection and shelter and by providing them best opportunities to succeed in life. In response, good mannered kids returns the care and love of their parents in the same way as their parents have cared for them during childhood, in this way journey of “sharing is caring” continues over generations. It sets the acceptable way of treating others and how to be at peace and harmony with the society and world at large.

Teacher shall divide students into groups and give topics and guidance of different types of sharing situations. Students will discuss in groups and present their views in the form of presentation/skits to the class.

Group-I Sharing of love & care

Group-II Sharing of knowledge/Skill

Group-III Sharing of kinds

Group-IV Sharing of time

V. C: Assignments

C1: Ask students to visit an old age home /orphanage along with parents and share food/clothes/books with them

Resources

1. <https://www.ba-bamail.com/content.aspx?emailid=22417>
2. <https://www.tes.com/en-ca/teaching-resource/numerical-crossword-6106026>
3. <https://in.pinterest.com/pin/250090585546684280/>
4. https://www.educationworld.com/a_lesson/numbercross/numbercross007.shtmlReferences:
5. https://www.educationworld.com/a_lesson/numbercross/numbercross001.shtml
6. <http://www.editeurador.ro/viewpage.php?id=11&p=1>
7. Ncert Textbook, Reference books, (R.D Sharma , R.S. Aggarwal)

Resources for Teachers:

Answers of Riddles

1. The person was born in 2005 B.C. Hence we count backward.
2. 4 days. On the 4th day, he will cut off a 2 meter –long piece and will have two equal pieces.
3. The pond is half –full the day before it's completely full, therefore the answer is the 29th

Maths
Grade VIII

Integration of Values

Teacher's Manual

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