UT CHANDIGARH EDUCATION DEPARTMENT

CCT PRACTISE
(E-CONTENT)

CLASS 10TH

CLASS - 8TH (MATHEMATICS-ENGLISH CONTENT)
COMPILED BY: ST. JOHN'S HIGH SCHOOL, CHANDIGARH
GMSSS, SECTOR-23-A, CHANDIGARH

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Subject	Medium	Chapter No. & Name	Experiential learning	CCT Literacy Area	Learning Outcomes	Intigration of other subjects with maths
Mathematics	English	1. Rational umbers	In athletics to find out time in various races and events, to find age, date, mass & to compare numbers. **Visit to a playground and sports complex.**	Quantity	The learner generalises properties of addition, subtraction, multiplication and division of rational numbers through patterns The learner finds out as many rational numbers as possible between two given rational numbers..	**Science-** Study of the body weight, ratio of age to body weight and height, Calculation of calories burnt while playing different types of sports
Mathematics	English	2. Linear Equations in one Variable	Figuring out income overtime, calculating mileage rates or predicting profit.	Change & Relationship	The learner solves puzzles and daily life problems using variables. **The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.**	**Accounts-** learning how to maintain accounts of a small business house

| Mathematics | English | 3. Understanding Quadrilaterals **(Cyclic Quadrilaterals)** | Used in construction of buildings, printing industry, interior designing (False ceiling), furniture designing and architecture.

Visit to a printing factory, furniture factory and construction sites | Shape & Space | The learner solves problems related to angles of a quadrilateral using angle sum property. The learner verifies properties of parallelograms and establishes the relationship between them through reasoning. **The learner understands cyclic quadrilateral and applies the concepts of cyclic.** . | **English** – A conversation between 2 toys describing the different shapes they are made from.

Art – Drawing an amusement park scene with understanding of different shapes of the swings in the park, studying interior designing etc. |

Mathematics	English	5.Data Handlings	Record of libraries, surveys done on census and demography, record of hospital management, etc. **Visit to a library, clinics and**	Shape & Space	The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like , after repeated throws of dice and coins.	**Social Studies-** Graphical representation of different types of geographical data. **Library Studies-** Recording data of the different types of books available in the library of your school.
Mathematics	English	6. Squares & Square Roots **(Zeroes of a Polynomial)**	Measurements taken by architects, carpenters, engineers. **Visit to architect's office/construction site.**	**Quantity**	The learner finds squares and square roots of numbers using different methods. The learner finds the zeroes of a polynomial.	**Physics–** Calculation of different distances.

Mathematics	English	7. Cubes & Cube Roots	Used in astronomy & finding large astronomical distances. **Visit to science city**	**Quantity**	The learner finds cubes and cube roots of numbers using different methods.The learner explains congruency of triangles on the basis of the information given about them like (SSS, SAS, ASA, RHS) **The learner works out ways to differentiate between congruent and similar figures**.	**Science** – Study of astronomical distances
Mathematics	English	8.Comparing Quantities **(Banking)**	Learning profit, loss, discount, sale tax, GST, learning bills/invoice, creating bills and invoices. Calculate interest on savings and FDR's. **Visit to shopping Malls , markets, banks, etc.**	Change & Relationship	The learner applies the concept of percentage in profit and loss situation in finding discount, VAT and compound interest, for example, calculate discount per cent when marked price and actual discount are given or find profit per cent when cost price and profit in	**Hindi/Punjabi**-Writing a letter to the manager of a bank asking the procedure and the documents required for opening an account in a bank.

					a transaction are given. **The learner understands different processes of bank.**	
Mathematics	English	9. Algebraic Expression & Identities	To apply in business & finance management, sports, cooking, etc. **Visit to a hotel management institute, business house**.	Change & Relationship	The learner uses various algebraic identities in solving problems of daily life	**Economics**- Studying the finance policy of the country or any institute.
Mathematics	English	10. Visualising Solid Shapes	Solving Rubik's Cube, playing football etc. **Visits to pyramid sites and other historical monuments.**	Shape & Space	The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc. The learner verifies Euler's relation through pattern.	**English** - Poem on different geometrical figures /Dialogue writing for conversation between two geometrical shapes
Mathematics	English	11. Mensuration **(Combination of 3 d figures for surface area & Volume)**	Construction of swimming pool in school, construction of school auditorium, playing fields, etc. Finding volume of cylindrical, conical objects. **Visit to an auditorium**	Shape & Space	The learner estimates the area of shapes like trapezium and other polygons by using square grid/graph sheet and verifies using formulas. The learner finds the area of a polygon and also the surface area and volume of cuboidal and	**Chemistry**- Finding volume using Boyle's law Charle's law etc. **Sports/Life Skills**- Helping the school supporting staff in preparing the field for a Kabaddi match or for

			and swimming pools.		cylindrical objects. **The learner finds surface areas and volumes of objects in the surrounding s by visualising them as a combination of different solids like cylinder and a cone, cylinder and a hemisphere, combination of different cubes etc.**	sports day of the school
Mathemat ics	Engli sh	12.Exponent s & Powers	Used in computers where data needs to be compressed & stored. For example, Gigabytes. Used in astronomy. **Visit to a computer lab ,science city etc.**	**Change & Relationship**	The learner solves problems with integral exponents..	**Computer Studies-** Learning web designing
Mathemat ics	Engli sh	13.Direct & Inverse Proportion	Used by cartographers in making of scaled maps to show relation between actual distance on land and the measurement on the map. Used by dietician to personalize diet plans.	**Change & Relationship**	The learner solves problems based on direct and inverse proportions	**Biology**-Diet plans **Civics**- Rights and duties of citizens etc.

|							
			Visit to Survey of India, dietician etc.				
Mathematics	English	14. Factorisation **(Quadratic Equations)**	Dividing pizza into equal pieces, exchanging money, comparing prices, planning vacation trip. **Visit Grocery store , pizza ho a ut , etc.**	**Change & Relationship**		The learner multiplies algebraic expressions, for example, expands (2x-5) (3x2+7). **The learner demonstrates strategies of finding roots and determining the nature of roots of a quadratic equation.**	**Value Education**– Studying the values of life like sharing, caring, empathy and equal division of share.
Mathematics	English	15. Introduction to Graphs **(Mean, Median, Mode of Grouped Data)**	Statistical record of cricket and other sports, election results, AQI index, etc. **Visit to Indian Statistical institute and universities**		Quantity	The learner draws and interprets bar charts and pie charts. **The learner calculates mean, median and mode for different sets of data related with real life contexts.**	**Physical Education**- Statistical record of the inter house matches of the school
Mathematics	English	16. Playing with Numbers	To sharpen mental ability and reasoning power.		Quantity	The learner proves divisibility rules of 2, 3,4, 5, 6, 9 and 11.	**English**- Dialogue writing for conversation between different numbers expressing each one's qualities

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:
- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns

1. A naughty boy Amrit watches a Sachin Tendulkar innings and acts according to the number of runs he sees Sachin scoring. The details of these are given below:

1 run	place a orange in the basket
2 runs	place a mango in the basket
3 runs	place a pear in the basket
4 runs	remove a pear and a mango from the basket

One fine day, at the start of the match, the basket is empty. The sequence of runs scored by Sachin in that innings are given as 11232411234232341121314. At the end of the above innings, how many more oranges were compared to mangoes inside the basket? (The basket was empty initially).

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:
- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

2. A candidate takes a test and attempts all the 100 questions in it. While Anycorrect answer fetches 1 mark, wrong answers are penalised as follows: one-tenth of the questions carry 1/10 negative mark each, one-fifth of the questions carry 1/5 negative marks each and the rest of the questions carry ½ negative mark each. Un-attempted questions carry no marks. What is the difference between the maximum and the minimum marks that he can score?

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

3. A carpenter was asked to make four rectangles of the dimensions given below.
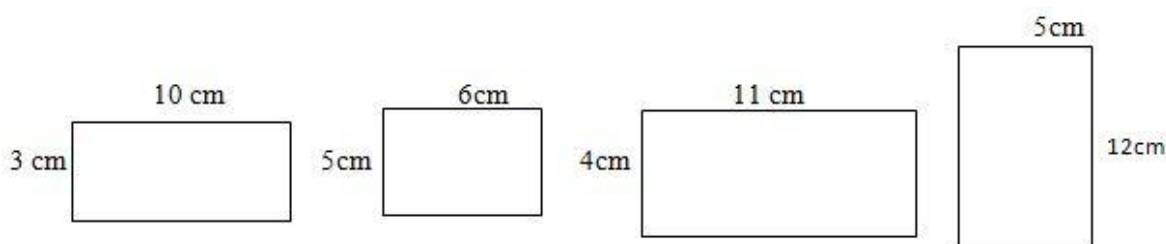
Four students were taken out of the class and asked to find that which rectanglewill have the length of the diagonal as rational number?

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

4. Adrian was given Rs 16000 by his parents to arrange a party for his birthday.He planned to spend ¼ on food, 3/10 of remainder on decoration and 5/21 on the return gifts to be given.His parents were very happy to see his planning as he could save some amount but suddenly, they come to know that he needs Rs 10000 urgently as his friend needs his help. How much money will Adrian borrow from his parents so that he can help his friend (he will add left over amount to make 10000).

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:
- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

5. You are asked to fence in the back yard of your house. The fence comes in sections that are $4\frac{2}{3}$ feet long. If your back yard is 42 feet long, how many sections would you need to buyso that you fence your entire back yard.

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns

6. A fruit seller puts a board outside his shop by displaying the rates of fruits Incombinations.Three mangoes,four guavas and five watermelons costRs750. Ten watermelons, six mangoes and 9 guavas cost Rs 1580. What is the cost of six mangoes, ten watermelons and 4 guavas?

Next day the board offers price of individual fruits. 6 kg mangoes Rs 90 and 10 Kg watermelons Rs 100.

How much will you pay if you buy 3 and a half kg mangoes and 2 and a half kg watermelons.

LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns

7. Birds have many physical features, besides wings, that work together to enable them to fly. They need lightweight, streamlined, rigid structures for flight. The shape of a bird's wing is important for producing lift. The increased speed over a curved, larger wing area creates a longer path of air. This means the air is moving more quickly over the top surface of the wing, reducing air pressure on the top of the wing, and creating lift. Also, the angle of the wing (tilted) deflects air downwards, causing a reaction force in the opposite direction and creating lift.Larger wings produce greater lift than smaller wings. So smaller-winged birds (and planes) need to fly faster to maintain the same lift as those with larger wings.

The diagram shows the wing spans of different species of birds. Use the diagram to answer the question given below:
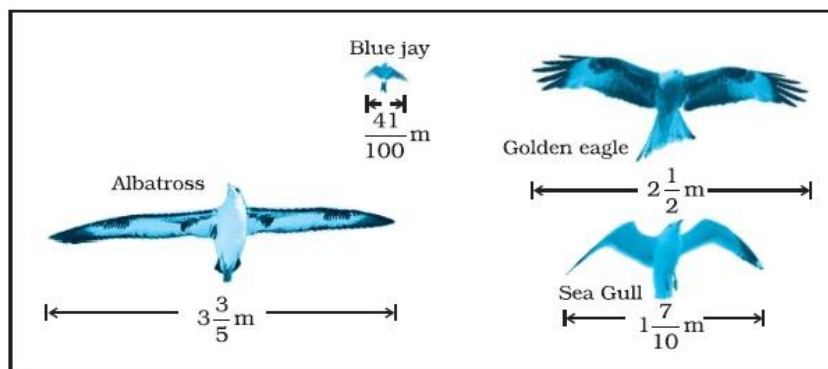
i. How much longer is the wingspan of the Albatross than the wingspan of a Sea gull?

ii. How much longer is the wingspan of a Golden eagle than the wingspan of a Blue jay?

iii. As per the given information which bird can cover maximum distance in 10 minutes?
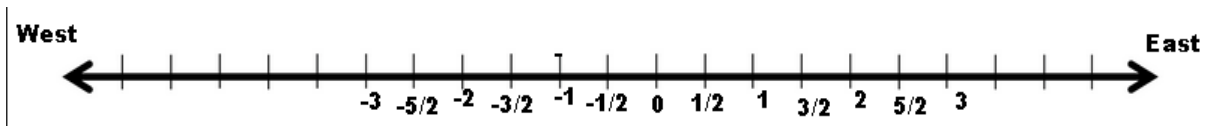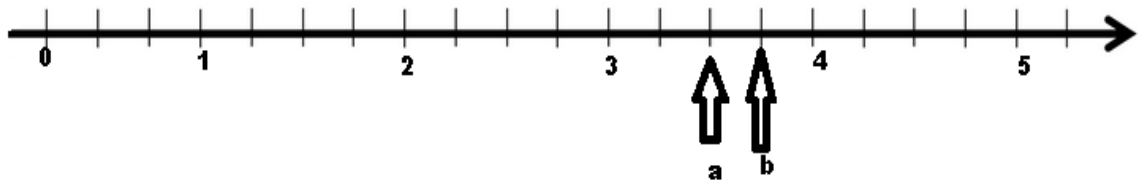
LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication,
  and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

8. While explaining the topic of Rational numbers and its relations with other
number, teacher has used the method of blood relations.If Rational Number(s) is Grand Mother of Jordan, Integers (Z) is as Mother of Jordan, and Natural number(s) is the daughter of Jordan, then how whole number(s) are related to Jordan?

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:
- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

9. A person starts walking from 0 on a number line. He first walks 3/7 km in East directions, them walks back 11/21 km in west direction. What is his final position?

(a) Between 0 to ½

(b) Between -1/2 to 0

(c) Between ½ to 1

(d) Between -1 to -1/2

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

LEARNING OUTCOMES:

- The learner generalises properties of addition, subtraction, multiplication, and division of rational numbers through patterns
- The learner finds out as many rational numbers as possible between two given rational numbers

10. The number line is divided into equal parts as shown. Which of the following number(s) is/are in between a and b?

I) 43/12
II) 46/12
III) 47/12

(A)	Only I
(B)	Only III
(C)	II and III
(D)	I and II

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

1. Roger gets $40 per day as wages and $4.50 as commission for every pair of shoes he sells in a day. His daily earnings goals is $112.

    i.   Write an equation to determine how many pair of shoes, p, Roger must sell in a day to meet his daily earnings goal.

    ii.   Find the number of pair of shoes he must sell to meet his daily earnings goal.

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

2. Last month, Margo bought a tree that grows 2.5cm each day. It was 5cm Tall when she bought it and now it is 65 cm tall. Find the number of days Margo has owned the plant.

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

3. Sum of digits of a twodigits number is 8. If the number obtained by reversing the digits is 18 more than the original number, then the original number is

    i.   35
   ii.   53
  iii.   26
  iv.   62

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

4. The perimeter of a rectangle is 240 cm. If its length is decreased by 10% And breadth is increased by 20%, we get the same perimeter. Find the original length and breadth of the rectangle. Show the working.

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

5. Agent Bourne transferred classified files from the CIA mainframe into his flash drive. The drive had 36.5 megabytes on it before the transfer, and the transfer happened at a constant rate. After 125seconds, there were 549 megabytes on the drive. The drive had a maximum capacity of 1000 megabytes. How long did it take the drive to be completely full? Show the working.

   i)   325 sec
   ii)   235 sec
   iii) 532 sec
   iv) 233 se c

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

6. Rohan and his friends went to a restaurant for a get –together. They Orderedtea and coffee. 4 cups of coffee and 4 cups of tea cost Rs 120. If 3 cups of coffee cost as much as 2 cups of tea. But Rohan was short of money to treat his friends. He was a very smart boy immediately calculated that he canorder 5 cups of coffee and 5 cups of tea with the amount he has in his wallet.

Find his strategy and money in his wallet.

CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

7. Father and Son were having discussion on their ages. Son said to his fatherthat if I add twice of my age to your age the sum is 56. To this father added that if I add twice of my age to your age the sum will be 82.

Is this information given by them enough to find their ages?
Can you tell their ages?

CLASS 8
CHAPTER 2 - LINEAR EQUATIONS

LEARNING OUTCOMES:

- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

8. In a family there are three sisters named Shivani, Rekha and Vrinda. Pocketmoney has to be decided for them according to their ages. The eldest will get maximum and youngest will get minimum. The following information is given about their ages.

Shivani is twice as old as Rekha and Vrinda is 9 years older than Rekha. Three years ago, Shivani was nine less than three times Rekha's present

age.

Who will get the maximum pocket money and who will get the minimum?

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

9. Two friends have gone for river rafting and hired two boats. Two boats start out 100 kilometers apart and start moving to the right at the same time. The boat on the left is moving at twice the speed as the boat on the right. Five hours after starting, the boat on the left catches up with the boat on the right.

How fast was each boat moving?

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

10. Kavin lives as a paying guest in a town. He cannot cook for himself and landlord provides him his meals except breakfast. For breakfast he uses his office cafeteria. He has Rs 1600 on his cafeteria card. Every time he orders breakfast, Rs 25 is deducted from the value on his card.
One day he receives a SMS that he has Rs 250 balance on his card. And he started calculating the number of times he has swiped his card for eating breakfast. Can you tell the answer?

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

11. Sehaj got interested in share market. He also thought of investing in share market. After discussing the details with his friend he decided to invest in two stocks. He bought total 360 shares of those two stocks. The price of one of the stock is Rs 35 per share, while the price of the other stock is Rs 45 per share. He spent total of Rs 15000 on these shares. How many shares of each stock did he buy?

Suddenly one day market crash and the prices of the shares were decreasing. But luckily his one stock costing Rs 35 each came down to a value of Rs 20 each. What was his total loss?

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

12. You look at your watch and notice that you still have M minutes Remainingfor your favourite show to start on T.V. Since you are very anxious, you take a look at your watch again 5 minutes after looking for the first time. How many minutes are left for your favourite T.V show to start? What will be the expression for the same.

CLASS 8
CHAPTER 2-LINEAR EQUATIONS\

LEARNING OUTCOMES:
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13. There is a donation box in a temple. The priest used it for buying his daily bread. One day he finds that there are Rs 500 in the box. Other morning, he noticed that "N" number of people put Rs 10 coin in the box during the day and (n+1) number of people put Rs 5 in the box. How many rupees? Money is there in the box at the end of that particular day

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

14. I and my friend planned to watch a movie. After we booked the tickets, Wefound that our tickets numbers were two consecutive odd numbers. On adding the tickets numbers their sums was equal to 68. Find the actual seat number of our movie ticket.

LEARNING OUTCOMES:

- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

15. Ram, Shyam, Mohan wrote the equation $X - 2 = 11$ in the form of the statement shown below.

Ram : 2 subtracted from x is 11

Shyam: The number x is greater than 11 by 2

Mohan; 11 subtracted from x is 2

Which among them wrote the statement correctly?

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
- The learner finds solutions of pairs of linear equations in two variables using different algebraic methods.

16. In a region, there are some Mexican,Chinese, and Indian people.

    i.   The number of Chinese is three times the number of Mexicans.

    ii.   The Number OF Indian is 6 less than the number of Chinese.

    iii.   The number of people in the region is 5 times the number of Indians

Which of the following equation can help to find out the number of Mexicans?

(Assume number of Mexican = x)

(A) $x + 3x + 3x + 6 = 5 (3x + 6)$

(B) $7x - 6 = 15x - 30$

(C) $7x - 6 = 15x - 38$

(D) $X + 3x + x + 6 = 5 (x + 6)$

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
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17. Ram Lal had some bananas, and he divided them into two lots A and B. He sold the first lot at the rate of Rs 2 for 3 bananas and the second lot at the rate of Rs 1 per banana, and got a total of Rs 400.If he had sold the first lot at the rate of Re 1 per banana, and the second lot at the rate of Rs 4 for 5 bananas, his total collection would have been Rs 460. Find the total number of bananas he had.

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

LEARNING OUTCOMES:
- The learner solves puzzles and daily life problems using variables.
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18. There are some students in the two section, section A and B. To make the number of students equal in each section, 10 students are shifted from section A to B, but if 20 students are sent from B to A, the number of students in A becomes double the number of students in B. Find the number of students in the two halls.

CLASS 8
CHAPTER 3 - UNDERSTANDING QUADRILATERALS

LEARNING OUTCOMES:
- The learner solves problems related to angles of a quadrilateral using angle sum property.
- The learner verifies properties of parallelograms and establishes the relationship between them through reasoning.
- **The learner understands cyclic quadrilateral and applies the concepts of cyclic quadrilaterals.**

1. Following is the layout of Punjabi Treat Restaurant at Chandigarh.

Observe the layout carefully and answer the given questions.

PUNJABI TREAT RESTAURANT

Entry/ Exit	Table 1	Table 6	Table 11	Table 16	Table 21	Washroom
	Table 2	Table 7	Table 12	Table 17	Table 22	
Cash Counter	Table 3	Table 8	Table 13	Table 18	Table 23	Kitchen
	Table 4	Table 9	Table 14	Table 19	Table 24	
	Table 5	Table 10	Table 15	Table 20	Table 25	

i.   Which polygon is represented by the whole layout of the restaurant?
   a) Square
   b) Trapezium
   c) Rectangle
   d) Rhombus

ii.   What polygon will it make if the restaurant makes a partition around tables 11, 7, 8, 14, 19, 23, 22 and 16together?
   a) Pentagon
   b) Hexagon
   c) Octagon
   d) Decagon

iii.   How many diagonals will be there in the polygon formed in Q2?
   a) 22
   b) 26
   c) 24
   d) 20

iv.   If a waiter starts from table 10 and then goes to table 4, table 12, table 18and then return to table 10, what kind of polygon does his movement make?
   a) Parallelogram
   b) Trapezium
   c) Quadrilateral
   d) Rhombus

v.   If a pentagon is formed by tables 12, 8, 9, 19 and 18, what formula will represent the sum of angles of thispentagon?
   a) $(n - 2) \times 360°$
   b) $(n - 2) \times 180°$
   c) $n \times 180°$
   d) $2n \times 180°$

vi.   If a line is drawn joining tables 7, 3, 8 and 12, what will be the area of polygon thus formed if each table is at a distance of 2ft from eachother?

vii.   If a rope is to be tied around tables 17, 18, 23 and 22, what will the lengthof rope required if each table covers 2 ft X 2ft ofspace?

viii.   If a rope is tied around tables 17, 18, 23 and 22, what will the area covered by this rope if each table covers 2 ft X 2ft of space?

ix.   If during renovation, a square portion has to be formed in the restaurant including the kitchen area, which tables would be taken along with thekitchen for thepurpose?

x.   Which tables would you take to form a trapezium whose parallel sides are2 and 3 units and distance between thethem is 4 units?
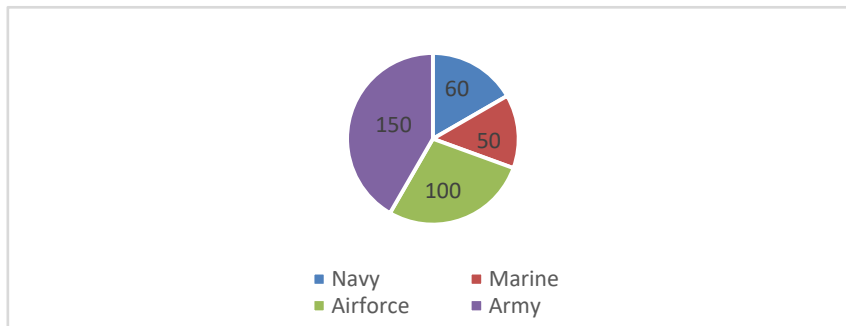
Class 8
CHAPTER 5 - Data Handling

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like , after repeated throws of dice and coins

1. Comparison of Result

The following graph shows the pass percentage for the classes X , XI , XII of a school for the five years.
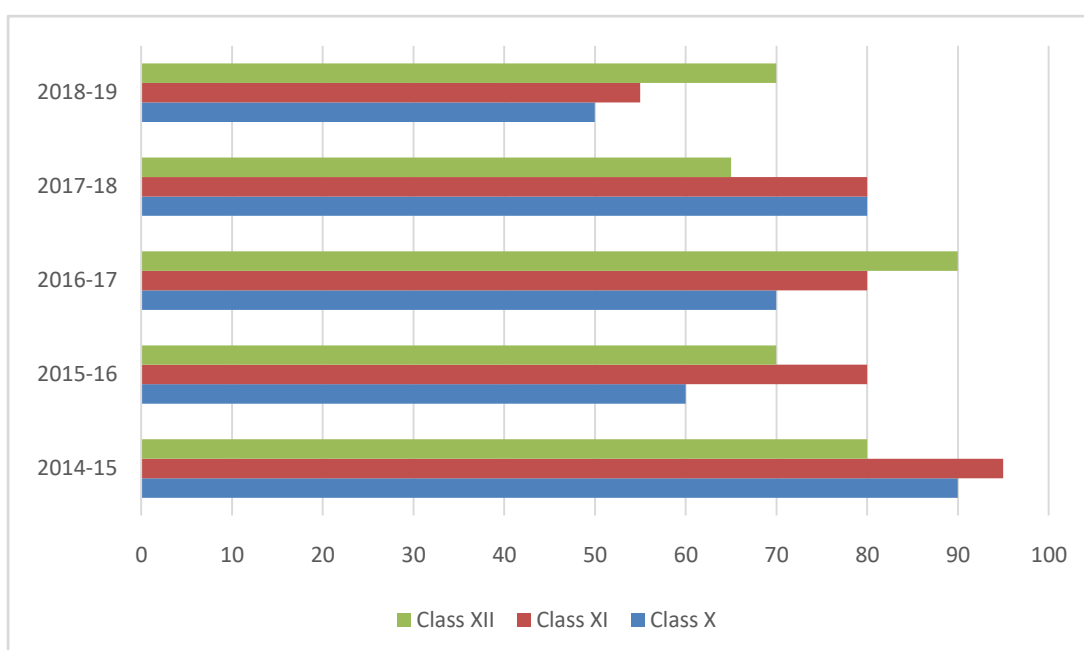
i. In which year there is a uniform increase in pass-percentage for classes X , XI , XII ?
   - A) 2014-15
   - B) 2017-18
   - C) 2018-19
   - D) 2016-17

ii. What is the maximum fall in the pass-percentage for class X in comparison to its previous year?
   - A) 60
   - B) 50
   - C) 30

D) 25

iii. What is the decrease in the pass-percentage for classes X and XII in year 2018-19 than in the year 2014-15?
   A) 40, 20
   B) 40, 80
   C) 40, 10
   D) 30, 40

iv. The school is worried about the results of these classes for the session 2018-19. If in 2019-20 the school wants to achieve the pass percentage of the three classes to the maximum of the past years. How much increase in percentage the school should aim for classes X, XI and XII?
   A) 50, 40, 40
   B) 40 ,40, 20
   C) 40, 50, 20
   D) 20, 20, 40

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

2.   Nine hundred men volunteered for joining the armed forces. The pie graphrepresents the proportion of men in the different armed services.(data represents central angle in degrees)

i.   How many men volunteered for Marine and Navy altogether?
A)   275
B)   325
C)   250
D)   375

ii.   Whatis the percent difference of the men volunteered to join Airforce and Army?
A)   41.67
B)   16.66
C)   13.89
D)   27.77

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

3. Every year a school organizessummer camp for students during summer vacation. School prepares a bar graph to show the number of students who registered for a summer camp in 2016, 2017 and 2018 in different activities.
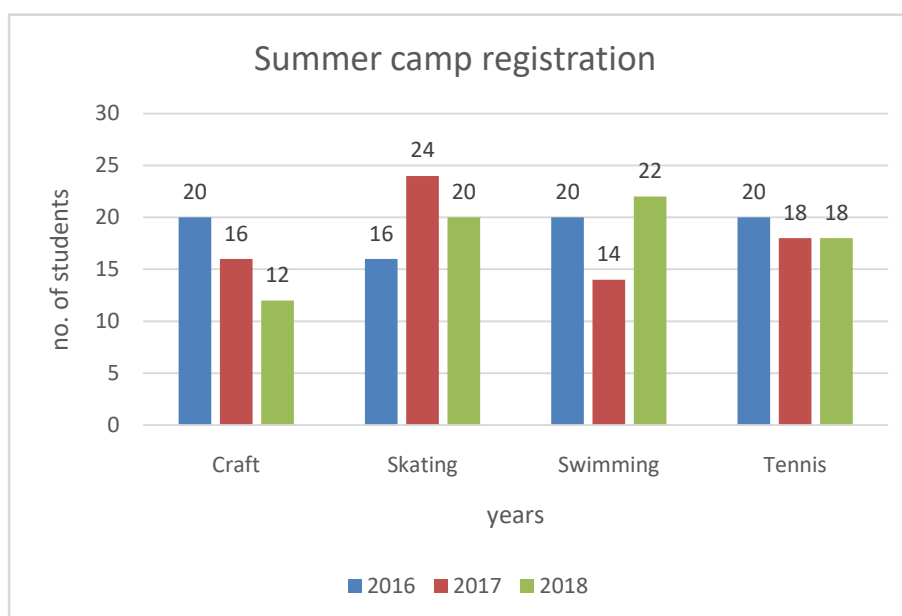
i. Between 2016 to 2018, for which activity did the number of students decrease by 2?

ii. What fraction of the students of 2017 attended crafts?

Class 8
CHAPTER 5 - Data Handling

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis ofits earlier occurrences or available data like, after repeated throws of dice and coins

4. The chart below shows the types of vehicles, by percentage, in a large apartment compound from 2011 to 2013.

For example, in 2011, 15% of the total vehicles in the apartment compound were jeeps.
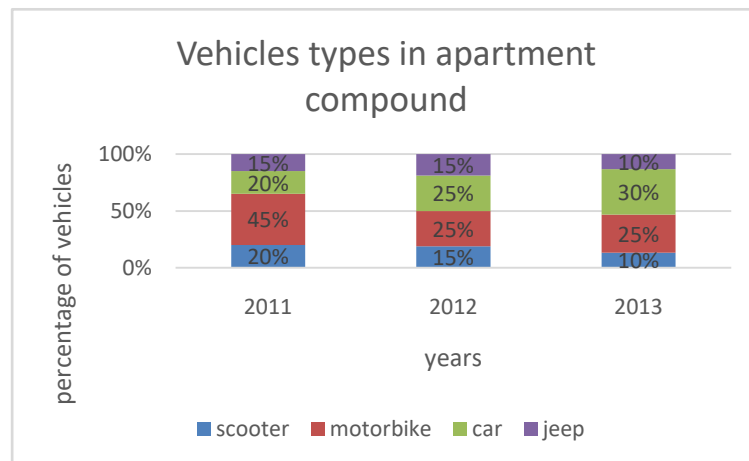
i. What is the difference in the percentage of Motorbikes in the apartment compound between the year 2011 and the year 2013?
   A. 35%
   B. 25%
   C. 20%
   D. 10%

ii. in a particular year, out of total of 200 vehicles in the apartment compound, 90 were cars. Which year was that?

   A. 2011
   B. 2012
   C. 2013
   D. none of the year could have 90 cars

CHAPTER 5 - Data Handling

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

5. Ramneek is a pet shop owner. He depicted the different pets sold by his shop in a month by a pie chart for his partner for better understanding.

Pets sold by a Pet shop in a month
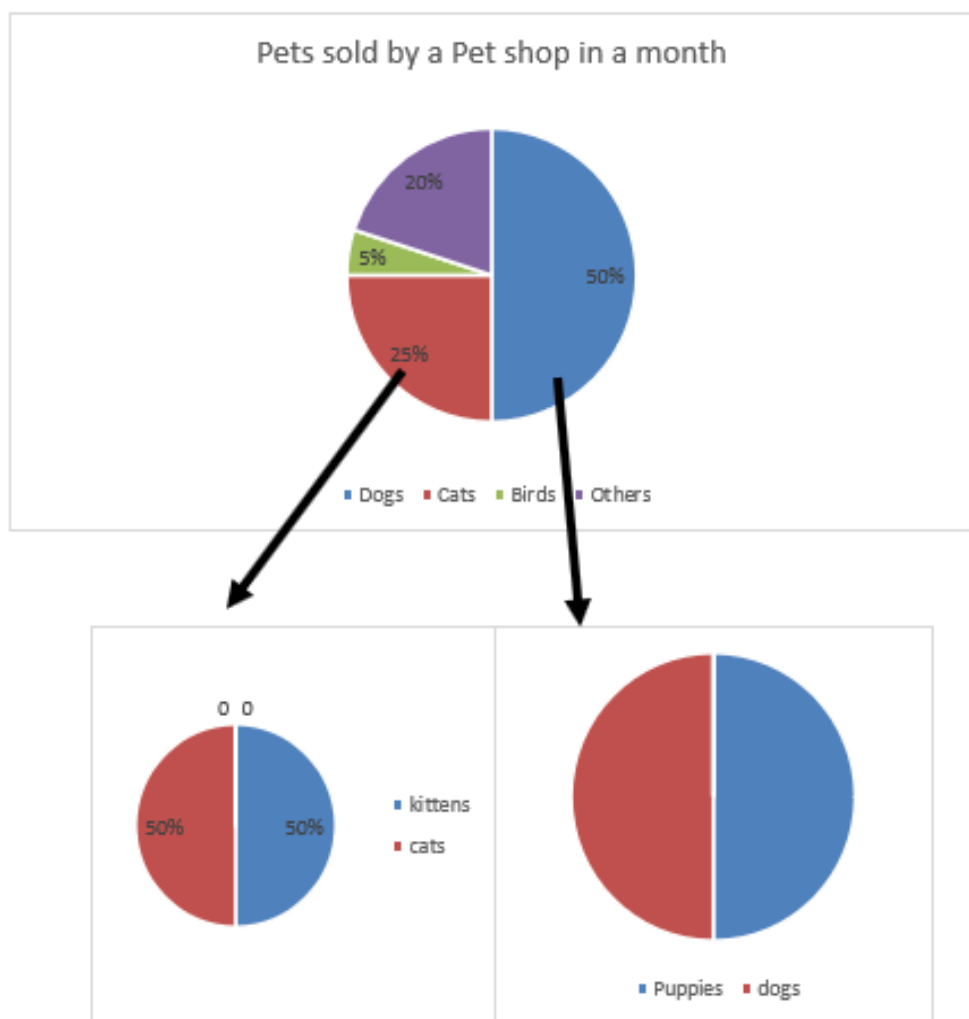
i. Based on the chart, which of the following conclusions can be made?

   a) The number of birds sold is 20 less than the number of cats sold.

   b) The number of kittens sold is equal to the number of puppies sold.

   c) The total number of cats sold is equal to the number of adult dogs sold.

   d) Cannot say any of the above without knowing the actual number of pets sold.

ii. Ramneek realized that he made a mistake because 10% of the pets in the "Others" category were actually birds.

   He made a new chart with the corrected numbers. By how much would the percentage of birds sold increase in the new chart

Class 8
CHAPTER 5 - Data Handling

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

6. Noida based company did a survey of 50 employees to find out the Averageage of their employees in accounts department. They found out the average age of their employees is 35 years.

    i.   What does average age 35 means?

    ii.   Does the change of the employees effect the average age?

    iii.   New employee is 45 years old while the one who got transferred was 35 years old. What is the new average age of the employees?

Class 8
CHAPTER 5 - Data Handling

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

7. Study the following table and answer the questions based on it. Expenditures of a Company (in Lakh Rupees) per Annum Over the given Years.

Year	Item of Expenditure				
	Salary	Fuel and Transport	Bonus	Interest on Loans	Taxes
1998	288	98	3.00	23.4	83
1999	342	112	2.52	32.5	108
2000	324	101	3.84	41.6	74
2001	336	133	3.68	36.4	88
2002	420	142	3.96	49.4	98

i. What is the average amount of interest per yearWhich the company had to pay during this period?

A. Rs. 32.43 lakhs

B. Rs. 33.72 lakhs

C. Rs. 34.18 lakhs

D. Rs. 36.66 lakhs

ii.   The total amount of bonus paid by the company during the given period is approximately what percent of the total amount of salary paid during this period?

      A. 0.1%

      B. 0.5%

      C. 1%

      D. 1.25%

LEARNING OUTCOMES:
- The learner makes hypotheses on chances of future events on the basis of its earlier occurrences or available data like, after repeated throws of dice and coins

8. Romi is a student. He is allowed to watch T.V. at most for an hour Between7:30 pm and 10:00pm. He checked for the TV programs between 7:30 PM and 10:00 PM in different channels and made the list of his favourite shows along with their timings.

Time	Program	Duration
7:30 pm	America's Funniest videos	30 minutes
7:30 pm	Big Bang Theory	30 minutes
8:30 pm	Tom and Jerry	1 hour
9:00 pm	Blue planet	30 minutes
10:00 pm	Friends	1 hour

i. Romi wants to watch two programs. Which two programs can he watch completely?

ii. Romi has to take dinner at 9 pm. Because of which he has to miss Blue planet. What options are now left for him.

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

SOFIA'S GARDEN

1. Sofia is fond of gardening. She bought 3590 flower saplings as she wants to impress the visitingneighbors and family friends by arranging her saplings in such a manner that they are arranged in 's' rows and each row has 's' number of saplings. She finds that she cannot do this with the number of saplings she has. What is the minimum number of saplings she needs to add to get this kind information?

    A. 6

    B. 2

    C. 10

    D. 18

CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:
- The learner finds squares and square roots of numbers using different methods.

SCHOOL AUDITORIUM

2. In school auditorium the number of chairs in a row is the same as the umber

of tows of chairs. There are 7033 students in school it was found that less than 31 chairs were empty. How many chairs were empty after all students sat down? Show your work also

    A. 23
    B. 24
    C. 25
    D. 26

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

GARDEN

3.   Peter had an extra land in front of his house. He wanted to convert it into beautiful garden by planting 4919 plants in equal number of rows and columns after forming square he finds that he has 19 pots more to be arranged. How many plants were arranged in arow?

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:
- The learner finds squares and square roots of numbers using different methods.

PENCIL FACTORY

4. Every day a factory making pencils sends 2077 pencils totown market and 3701 pencils to market in other states. It was found little more than 614 pencils were remained in factory. If it is known that factory makes perfect number of pencils every day. What is smallest number of pencils remaining in factory?
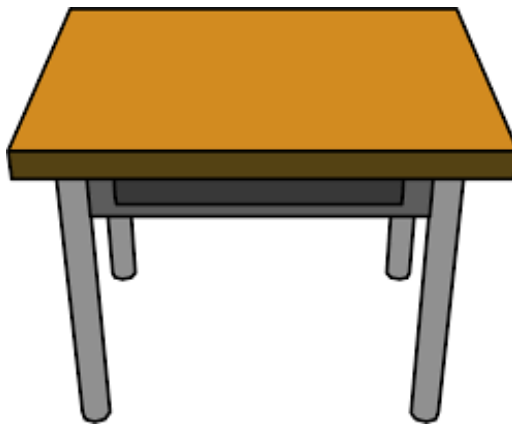
CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

ARMY PARADE

5. On the occasion of 26th January, Mr. Singh a General in Indian army wants to prepare his soldiers for the Republic Dayparade. He wishes to stand his 5600 soldiers in the form of a square by arranging soldiers equally in each row and column. He found that he would need a few more soldiers to complete his square.

You have to help Mr. Singh to find out how many more soldiers he would need to complete the square.

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

EXAM HALL

6. There is Exam being held in the hall of Ravi's school in a few days. He has to arrange chairs for all the students participating in the exam. There would be 9801 students participating in the exam and he has to arrange the chairs in such a way that there are equal numbers of chairs in each row and column. How many chairs would be there in each row and column?

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

MANGOES

7. The King of Fruits, Mango is favorite among everyone. It comes in varying shades of yellow and red and isvery tasty and healthy.

Meera is also fond of mangoes and she wants to plant 3500 mango trees in her garden in a way that number of rows is equal to number of columns. During plantation she found that 19 plants were left over due to less space. What will be the number of trees in each row and column respectively?
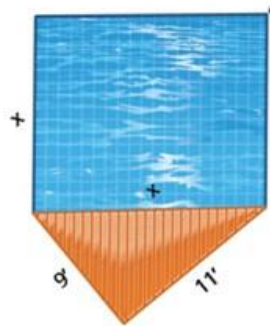
CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

TEACHER'S TABLE

8. Mrs. Smita, the math teacher of class 8th was on leave. Mrs. Vaishali, the music teacher was deputed in her absence. There were 35 students in her class. The class was very naughty. To keep the class busy Mrs. Vaishali puts a question to students that the teacher's table which is a square shaped, is having 2.25m^2 areas. What will be the measurement of sides of the teacher's table?
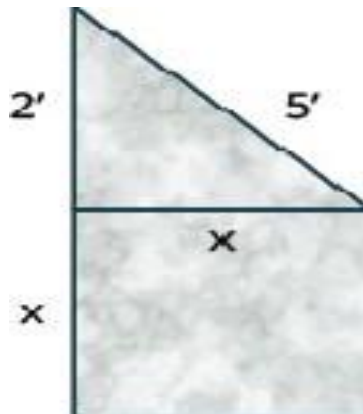
CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:

- The learner finds squares and square roots of numbers using different methods.

REWARD

9. In 1791, the King of Goa, Ching Chang, had a feast. As it was his 50th birthday so he wants to have very big party. He invites 15 kings from nearby states, 80 family members and many more. He wanted to have special seafood in dinner so he proclaims that one who brings me my choice of food would be rewarded. A wiseman bring 50kg of special seafood come topalace. The king got happyandasked him for reward some gold coins each day for a month. The coins were to be counted out in a pattern of (1) one coin for the first day, 3 coins for the second day, 5 coins for the third day and so on for 30 days. Find how many coins he will get in the month?

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:
- The learner finds squares and square roots of numbers using different methods.

SWIMMING POOL

10. An architect wants to put a square pool next to a triangular deck, as shown in the picture. The triangular deck is a right-angled triangle, with legs of length 9 feet and 11 feet, and the pool will be adjacent to the hypotenuse

   i. Use the Pythagorean Theorem to find the length of a side of thepool.
   ii. Find the exact area of the pool.

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

LEARNING OUTCOMES:
- The learner finds squares and square roots of numbers using different methods.

MONUMENT

11. An artist wants to make a small monument in the shape of a square base topped by a right triangle, as shown below. The square base will be adjacent to one leg of the triangle. The other leg of the triangle will measure 2 feet and the hypotenuse will be 5feet.

   i. Use the Pythagorean Theorem to find the length of a arm of the squarebase.

   ii. Find the exact area of the face of the squarebase.

CLASS 8
CHAPTER 7 - CUBES AND CUBE ROOTS

LEARNING OUTCOME:
The learner finds cubes and cube roots of numbers using different methods.

1.   Four usual dice are thrown on the ground. The total ofnumbers on the top

faces of these four dice is 13 as the top faces showed4, 3,1 and 5respectively.

What is the total of the faces touching the ground?

   A.12
   C.15

   B.13

   D. Can't bedetermined

CHAPTER 7- CUBES AND CUBE ROOTS

LEARNING OUTCOME:
The learner finds cubes and cube roots of numbers using different methods.

2. How many dots lie opposite to the face having three dots, when the

givenfigure is folded to form acube?
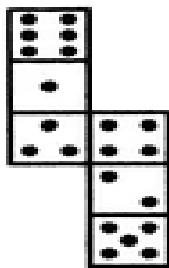
A. 2

B. 4

C. 5

D. 6

CLASS 8
CHAPTER 7- CUBES AND CUBE ROOTS

LEARNING OUTCOME:
The learner finds cubes and cube roots of numbers using different methods.

3.   A wooden cube is painted Blue on all the four adjoining sides and green on two opposite sides i.e. top and bottom. it is then cut atequaldistance at right angles four times vertically (top to bottom) and two times horizontally (along the sides).Study the diagram and answer the following questions:

How many cubes will have one face painted only Blue?

      A.   1
      B.   2
      C.   3
      D.   4
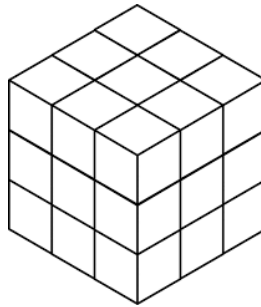
LEARNING OUTCOME:
The learner finds cubes and cube roots of numbers using different methods**.**

4.   Read the information given below to answer the questions thatfollow:

- A cube has six sides, each of which has different colors:
  Black,Blue, Brown, green, red andwhite.
- Red side is opposite to theblack.
- The green side between the red andblack.
- The blue side is adjacent to theside.
- The brown side is adjacent to theblue.
- The red side is the bottomface.

I.   The four colors adjacent to green are:
   a. Black, blue, brown,red
   b. Black, blue, brown,white
   c. Black, blue, red,white
   d. Black, brown, red,white

CLASS 8
CHAPTER 8 - COMPARINING QUANTITES

LEARNING OUTCOMES:
- The learner applies the concept of percentage in profit and loss situation in finding discount, VAT and compound interest, for example, calculate discount per cent when marked price and actual discount are given or find profit per cent when cost price and profit in a transaction are given.

1. FRUIT SHOP

Richa went to a fruit shop to buy some fruits for making a dessert for a party at her home. At the fruit shop, she came across that cost of Nagpuri Oranges and Kinnauri Apples is ₹ 240/- for 6 kg and ₹ 280/- for 4 kg respectively. She decided to purchase Kinnauri Apples.

i. **Which of the following statement support Richa's decision?**
   a) Rate of Nagpuri Oranges is more than Kinnauri Apples.
   b) Rate of Kinnauri Apples is more than Nagpuri Oranges.
   c) Per kg cost of Kinnauri Apples and Nagpuri Oranges is same.

   Give the relevant explanation and show your work.

CLASS 8
CHAPTER 8 - COMPARINING QUANTITES

LEARNING OUTCOMES:
- The learner applies the concept of percentage in profit and loss situation in finding discount, VAT and compound interest, for example, calculate discount per cent when marked price and actual discount are given or find profit per cent when cost price and profit in a transaction are given.

2. SHOPPING DURING SALE

Annanya and Bhavin went to Elante Mall on 15th January. Winter Bonanza sale was going on all the clothing showrooms were offering 40% discount on all their products except Lewis. It was offering 25% discount on its products.
- Annanya bought one cardigan at marked price ₹ 1600/- from Monte Carlo outlet and twodenims from Lewis outlet at marked price ₹ 2200/- each.
- Bhavin bought only one jacket from Puma outlet at sale price of ₹ 1600/-.

i. What amount did Annanya pay in total? Show your work.
ii. What is the marked price of Bhavin's jacket? Explain how you find your work.

Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:
- The learner uses various algebraic identities and algebraic operations in solving daily life problems

1. Rohan is a taxi driver and he sets a target to earn Rs.4000 on Wednesday. Meter charges the customer at rate of Rs.20 per kilometer but driver gets only80% of the amount paid by the passenger after deduction of commission and other changes by the taxi company. For howmanykilometer should he drive to achieve his target on Wednesday?
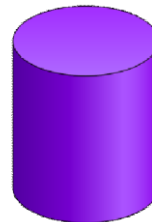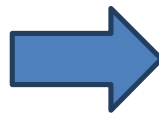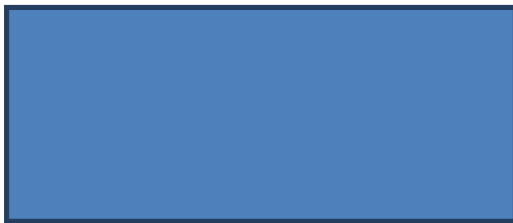
    A. 200
    B. 250
    C. 300
    D. 450

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems.

2. To emphasise the important of fitness , DAV school Ranchi has made one mandatory period of sports daily. Currently school is having facilities only for football and basketball. There are $4y^2 + y - 8$ students in class 8th D if 2y+16 play football , how many opt for basketball?

   A. $4y^2 - y - 24$
   B. $4y^2 + y - 24$
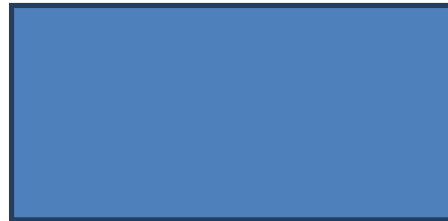   C. $4y^2 + y + 24$
   D. none of these

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

3. Piyush is a landscape designer and is trying to create a garden. Piyush wants Todesign the garden so that it resembles a square contained which is in the rectangle.The modeled area of square is given by expression $2x^2 + 5x - 2$ and area of rectangle is given by $8x^2 - 7$. He wants to figure out area between rectangle and square available for planting some plants. Which of the following expression represents the area Piyush will have available for planting.

    A. $2x^2 + 13x - 9$
    B. $6x^2 - 5x - 5$
    C. $10x^2 + 5x - 9$
    D. $6x^2 + 5x - 9$

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:
- The learner uses various algebraic identities and algebraic operations in solving daily life problems

4. Mathematics teacher is demonstrating the Curved surface area concept to students of class 8th. She uses a sheet and Rolls the sheet into cylinder such that the height Ofthe cylinder is y units and its radius is y-3 units. If the curved surface area is givenby $2n(y^2 - 7y + 12)$sq. units. Find the height of the cylinder

(Curved surface area of cylinder $=2\pi RH$)

        A. y+4
        B. y+3
        C. y-4
        D. y-3

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

5. Sugal went on picnic along with his friends to Shimla. Sugal's mother gave him Rs. $4xy^2$ and his father gave himRs.$(5xy^2 + 10)$ Out of the total money during his trip to Shimla he spent Rs. $(10 - 3xy^2)$.

What percentage of the total money is left unspent with Sugal?

A. $\left(\frac{9xy^2+10}{6xy^2}\right) * 100$

B. $\left(\frac{9xy^2}{6xy^2+10}\right) * 100$

C. $\left(\frac{6xy^2+10}{6xy^2}\right) * 100$

D. $\left(\frac{6xy^2}{9xy^2+10}\right) * 100$

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

6. .Hitz is a car manufacturing company and wants to compile a profit/loss statement. Total sale of Hitzcompany for the year 2019 is given by expression $-0.85x^2 + 1.85x + 7$

where x= number of cars manufactured per year.

The total cost of producing x cars is given by expression

$0.03 x^2 + 1.34x - 4$.

What is the total profit earned by the company for the year 2019?

A. $-0.88x^2 + 0.51x + 11$
B. $0.88x^2 + 0.51x + 11$
C. $0.88x^2 + 0.51x - 11$
D. $0.88x^2 - 0.51x + 11$

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

7. Your aunt is planning to host your cousin's wedding reception party at solitaire banquets

Menu
One salad
One non veg, one veg
Two side dishes
One dessert
Rs.200000 for hall
Rs.600 per plate
150 guests

   i.   Write an algebraic expression to determine the cost of wedding party, ifg represents no. of guests attending theparty.

   ii.   Determine the cost of party if no. of guests are150

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

8. Rohan and Sameer goes for morning walk in a rectangular field whose length is twice its width and whose area is 72 sq. meter Rohan is more fit and makes 8 rounds of park. If the difference of distance travelled between Rohan and Sameer is 108 m. Find number of rounds taken by Sameer?
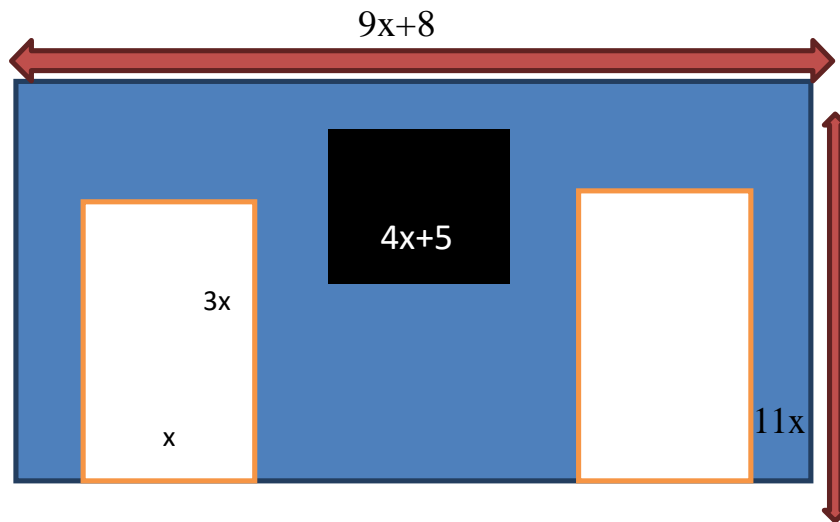
Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

9. A manufacturer shows the model of wall of a house with one square window and two doors. The figure shows the dimensions of a wall having a square window of side 4x+5 and two identical doors of length 3x and width x?

9x+8

4x+5

3x

x

11x

Write an algebraic expression for the area of the wall to be painted.
Show your work?

Learning outcomes:

- The learner uses various algebraic identities and algebraic operations in solving daily life problems

x 9

10. Write two different algebraic expressions that describe the area of rectangle. For

One expression, think of rectangle as one Large figure, and for other expression think of rectangle as sum of 4 different rectangles?
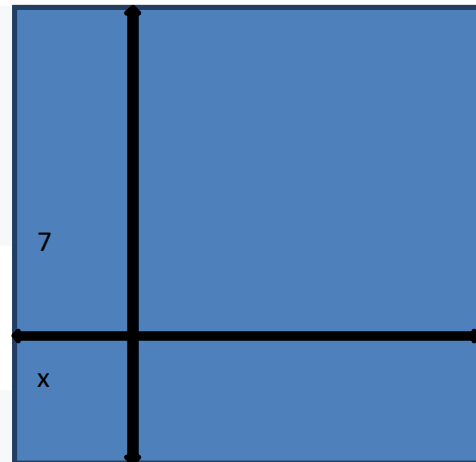
7

x

Class -8
Chapter 9 - ALGEBRAIC EXPRESSION ANDIDENTITIES

Learning outcomes:
- The learner uses various algebraic identities and algebraic operations in solving daily life problems

11. M/s P&R construction company is in final phase of building 3 star hotel

    "Maya palace" Architecture has shared design of floor tiles as shown in figure.In which black one is surrounded by blue ones?
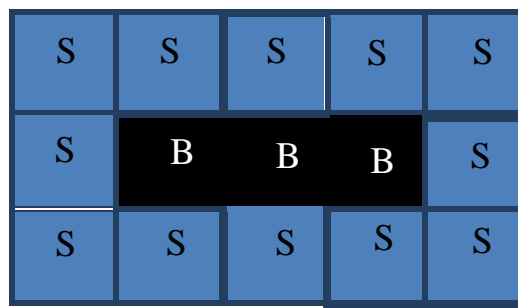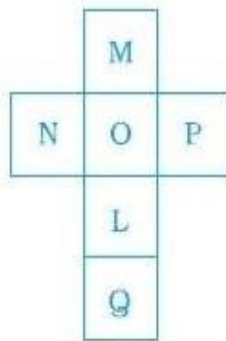

i. How many blue tiles are needed to surround?

   a. 2 blacktiles

   b. 4 blacktiles

   c. 20tiles

   d. If black tile is denoted by B and blue tile by S. Write an expression relating thetwo

Chapter-10 - VISUALISING SOLID SHAPES

Learning outcomes:
- The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc.

1. The net shown below can be folded into the shape of a cube.
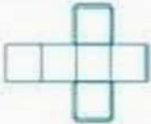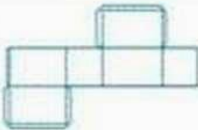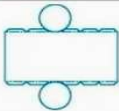   The face marked with the letter L is opposite to the face marked with which letter?

Learning outcomes:

- The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc.

2.   Identify the nets given below and mention the name of the corresponding

Nets	Name of Solid
(a)	
(b)	
(c)	
(d)	
(e)	
(f)	

solid in the space provided.

Chapter-10 - VISUALISING SOLID SHAPES

Learning outcomes:
- The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc.

3. Use a ruler to measure the distance in cm between the places joined by dotted lines. If the map has been drawn using the scale 1 cm : 10 km. Find the actual distances between

   i. school and Library

   ii. college and complex

   iii. house and School

Town Y
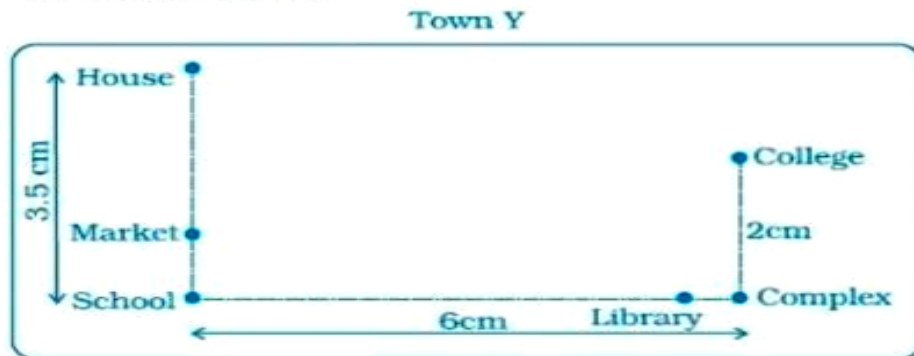
Class 8
Chapter-10 - VISUALISING SOLID SHAPES

Learning outcomes:

- The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc.

4. In the picture below a construction has been made using seven identical dice with their faces numbered from 1 to6.

Top view

When the construction is viewed from the top, only 5 dice can be seen.

How many dots in total can be seen when this construction is viewed from the top?
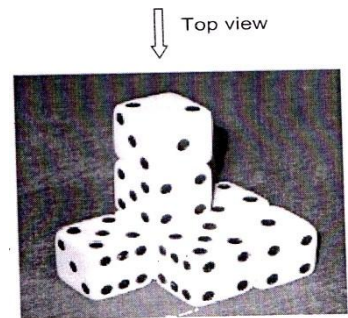
Number of dots seen: ....

Learning outcomes:

- The learner represents 3D shapes on a plane surface, such as sheet of paper, blackboard, etc.

5. **In this photograph you see dice, labelled (a) to (f). For all dice there is a rule:**

The total number of dots on two opposite
faces of each die is always seven.
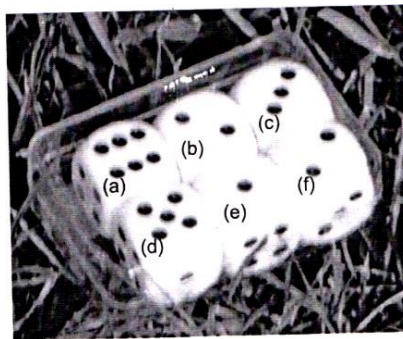
Write in each box the number of dots onthe bottom face of the dice corresponding to the photograph.

(a)	(b)	(c)
(d)	(e)	(f)

Class 8
Chapter 11 - MENSURATION

Learning outcomes:
- The learner identifies and finds the area of a 3dimensional object and also the surface area and volume of the object (s)

1. Rajan is a clerk in a Govt office. He planned to go to Shimla with his family during Diwali vacations. His family was reality excited for this trip as they got vacations after a long time and Shimla was their favourite destination. They all prepared their luggage etc one day in advance.

i. Rajan planned to give few gifts to his sister who also lived in Shimla. He purchased few gifts and packed them in two cartons of dimensions 36cm, 25cm and 15cm each. Due to Diwali season, no shopkeeper had time to pack their gifts. So Rajan planned to buy packing papers and pack the cartons at home. Can u help him guess how much packing paper is needed to pack two cartons assuming that no paper will be wasted while packing?

ii. Rajan's wife suggested to buy boxes of gulab jamuns instead of gifts for his sister as she is very fond of gulab jamuns. Each box of gulab jamun is of dimensions 15cm, 12cm and 2cm. They want to pack all the boxes in the same cartons in which they had earlier planned to pack gifts. Can you help the family find out how many boxes will they be able to pack in the carton?

iii. Early morning, while his family was getting ready, Rajan went to a petrol filling station to fill fuel in his car. Rajan had read that the total capacity of his car fuel tank is 0.048 cubic metres. He observed that the fuel machine showed the quantity of fuel in litres. He wondered how much fuel in litres can be filled in his car. Can you help Rajan find the exact capacity of the car in litres ?(Hint: 1 cubic meter = 1000 litres)

iv. Rajan asked the machine operator to fill 12 litres of petrol in the car which already had 7.8 litres of petrol in the tank. After filling, the fuel in the cylindrical tank rose to 0.07m. Rajan wants to know what is the radius of the fuel tank of his car. Can you help him find it ?

v. Due to some technical problem in the car engine, the car broke down. Rajan called a mechanic who advised him to empty the fuel tank for cleaning. The mechanic took out petrol from the car with the help of a pipe and poured it into a conical vessel of radius 0.3m. Find the height of the conical vessel if it was completely filled by the petrol taken out from the car?

Learning Outcomes:

- Learner solves problems with integral exponents

1. Observe that there are few numbers which use can read like 0.000007, 0.77007, 77777007 and777077.

    i.   Write the following numbers in standard form.

Numbers	Standard Form
0.00007	
0.77007	
77777007	
777077	

    ii.   Identify very large and very small numbers.

    iii.   Write the following numbers in usual form.

Numbers	Usual Form
5.1×10^{4}	
3×10^{-10}	
1.1×10^{6}	
7×10^{-5}	

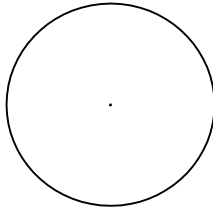# Class 8
Chapter 12 - EXPONENTS AND POWERS

Learning Outcomes:

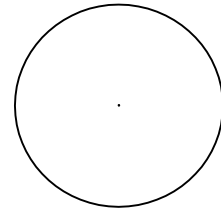- Learner solves problems with integral exponents

2. The diameter of the some circles is given below:
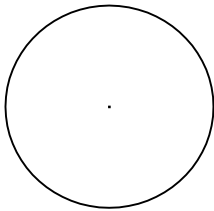
1.23×10^{-2} 0.003×10^{4} 0.378×10^{2}

Write very large and small diameter.

Class 8
CHAPTER 13 - DIRECT AND INVERSE PROPORTIONS

LEARNING OUTCOME:
- The learner solves problems based on direct and inverse proportions.

(Organising a Birthday party)

1.   Rupali decided to organise a party for her 18th birthday . In the following worksheet you will be helping Rupali to organise the event.
       Rupali used the telephone to find out this information.

LOCATION	COST OF THE ROOM PER EVENING	MAXIMUM NUMBER OF PEOPLE
Golf Club Function Room	₹ 2000	₹ 100
Alpha Function Centre	₹ 5000	₹ 200
Wedding Reception Dining Room	₹ 4000	₹ 250
Exclusive Hotel Room	₹ 7500	₹ 500
Community Hall	₹ 1500	₹150

   i. Where should the Event be held?
   ii. What is the cost per person of hiring each of these rooms for an evening when the room contains the maximum number of people?
   iii. Rupali anticipates that 200 people will attend the Event. Which of the locations would be suitable for the Event?
   iv. Which of the suitable locations has the cheapest cost per person, for 200 people?
   v. What things, other than cost, should Rupali consider when she is choosing the location for the event ?

Class 8
CHAPTER 13 - DIRECT AND INVERSE PROPORTIONS

LEARNING OUTCOME:

- The learner solves problems based on direct and inverse proportions.

Party Menu

2. Rupali is very excited for her birthday party. After booking the venue she is now looking for party menu. By using the internet and some sources she found a caterer named BUDGET CATERING.

BUDGET CATERING	
Food Items	**Price per person**
Fast food	Rs. 40
BBQ meat	Rs.60
BBQ sausages	Rs. 15
Chicken	Rs. 35
Salads	Rs. 15
Vegetables	Rs. 20
Bread rolls	Rs. 5
Deserts	Rs. 25
Coffee	Rs. 10
Sandwich	Rs. 10
Soft Drinks	Rs. 40

i. Rupali decided to have Fast food, BBQ meat, salads, desserts and coffee. How much will this meal cost per person?

ii. Rupali can only afford to spend Rs.7500 on the food. What is the maximum number of people Rupali can invite to her 18th birthday party?

iii. What could Rupali do if she wanted to invite more people but keep the catering costs to under Rs.7500?

Class 8
CHAPTER 13 - DIRECT AND INVERSE PROPORTIONS

LEARNING OUTCOME:
* The learner solves problems based on direct and inverse proportions.

Coffee Shop

3. Akshay is a very talented and hardworking boy. His age is 25 years and he has done his diploma in food management from a reputed college. After obtaining an experience of 3-4 years he is now looking for a new start up. After the survey of the market and the interest of the people, hedecideds to open a coffee shop. First requirement for a good coffee shop is a good expresso coffee making machine. Either Akshay can buy a new machine for Rs.8000 or can take it on rent for Rs 60 per week provided he signs a 2-years contract.

   i. How much will it cost Akshay to rent the machine for 2 years?

   ii. If Akshay rents the machine, at the end of the 2 years he will be able topurchase the machine for 50% of its new value. Calculate the total amount Akshay will pay for the coffee machine if he rents then buys.

   iii. Why may the rent-then-buy option suit Akshay better than buying a newmachine?

Class 8
CHAPTER 13 - DIRECT AND INVERSE PROPORTIONS

LEARNING OUTCOME:
- The learner solves problems based on direct and inverse proportions.

Coffee Beans

4. Akshay researched the cost of supplies he will need to buy regularly. The same coffee beans are available in three different-sized packets:

Type of coffee bean	250 gm packet	5kg packet	10 kg packet
Colombain beans	₹ 10.50	₹ 160	₹ 330
Mocha beans	₹ 10.70	₹ 182	₹ 340
Premium brands	₹ 4000	₹ 250	₹ 405

i. How much cheaper per kilogram is it to buy Colombian beans in 5 kg packets than in 10 kg packets?
ii. Akshaydoesn't think that he will be able to use all of a 10 kg pack of Premium beans blend before the beans go stale. Will it be cheaper for him to buy Premium beans in 250g or 5 kg packets? Explain your answer.
iii. What is the cheapest way per kilogram to buy Mocha beans?

CHAPTER 14 - FACTORIZATION

LEARNING OUTCOMES:

- The learner multiplies algebraic expressions. E.g. Expansion of
  $(2x - 5)(3x + 7)$

1. If the price of petrol is increased by Rs.2 per litre, a person will have to buy 1 litre less petrol for Rs.1740. Find the original price of petrol at that time.

     i. Why do you think the price of petrol is increasing day by day?
    ii. What should we do to save petrol?

Class 8
CHAPTER 14 – FACTORIZATION

LEARNING OUTCOMES:

- The learner multiplies algebraic expressions. E.g. Expansion of
$(2x – 5)(3x + 7)$

2. Ramesh has two square plots of land which he utilizes for two different purposes- one for providing free education to the children below the age of 14 years and the other to provide free medical services for the needy villagers. The sum of the areas of two square plots is 15425 m^2. If the difference of their perimeters is 60m, find the sides of the two squares.

Class 8
CHAPTER 14 - FACTORIZATION

LEARNING OUTCOMES:
- The learner multiplies algebraic expressions. E.g. Expansion of $(2x - 5)(3x + 7)$

3. In the center of a rectangular plot of land of dimensions 120m×100m, a rectangular portion is to be covered with trees so that the area of remaining part of the plot is 10500 m^2.

    i.   Find the dimensions of the area to be planted.

    ii.   Which social act is being discussed here?

Class 8
## CHAPTER 14 - FACTORIZATION

LEARNING OUTCOMES:
- The learner multiplies algebraic expressions. E.g. Expansion of $(2x – 5)(3x + 7)$

4.   Madhu opened her Mathematics book, and noticed that the product of the two page numbers in front of her was equal to 1122. What were the numbers of those pages?

Class 8
CHAPTER 15 - INTRODUCTION TO GRAPHS

LEARNING OUTCOMES:
- The learner interprets the bar chart.

1. LOK SABHA

Percentage of Women MPs in Various Lok Sabhas
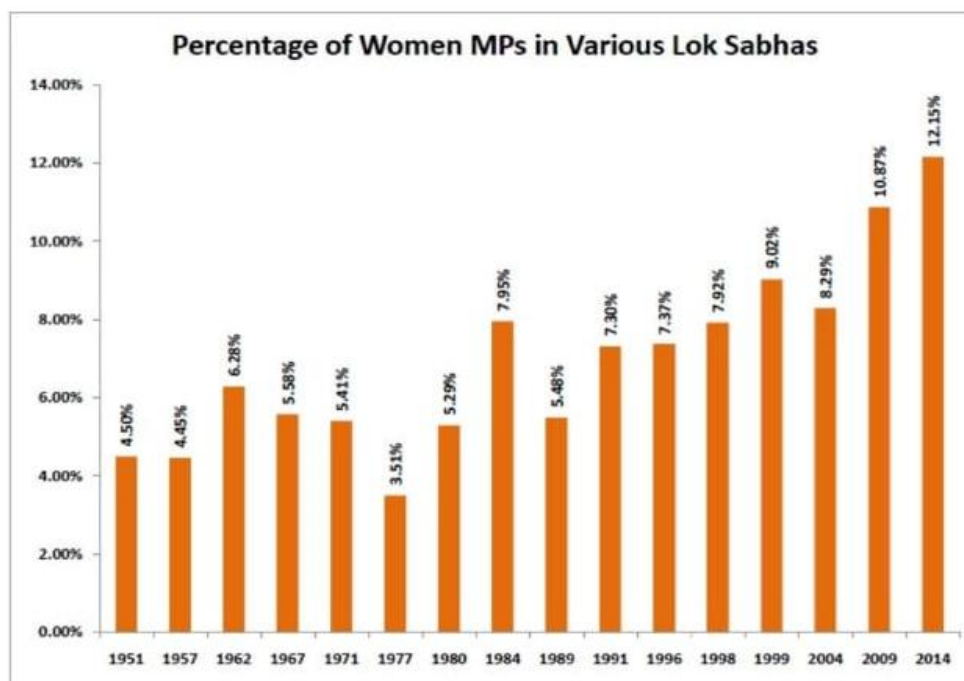
i. What is the difference between the highest % and the lowest % of women M. P. elected in LOK SABHA.
ii. In how many terms more than 4.5% women have been seen elected as Lok SabhaM.P since Independence?
iii. What is the average percentage of women M.P. elected from 1984 to 2014?

Class 8
CHAPTER 15 - INTRODUCTION TO GRAPHS

LEARNING OUTCOMES:

- The learner interprets and compares the data given in the table.

2.   ICC CRICKET WORLD CUP 2019

The 2019 , 12th ICC cricket world cup was held. It was hosted by England and Wales. World cup began on 30 May and ended with final match on 14 July. The finial was played at Lord's in London where England beat New Zealand on boundary count after both the matches and the subsequent super over finished as ties.

Following are details of top 5 bowlers:

Name	Matches	Over	Marden	Runs	Wkts	Fine Wicket Have	AVG	Econ	Best
Mitcheilstarc	10	92.2	5	502	27	2	18.59	5.43	5/26
Lockie Ferguson	9	83.4	3	409	21	0	19.47	4.88	4/37
Jofra Archer	11	100.5	8	461	20	0	23.05	4.57	3/27
Mustafizur Rahman	8	72.1	2	484	20	2	24.20	6.70	5/59
JaspritBumreh	9	84	9	371	18	3	20.61	4.41	4/55

i. What percentage of maiden over's were bowled by JaspritBumrahamong top 5 bowlers.

ii. Among bowlers with five wickets haul who had the best Economy Rate?

iii. What fraction of sum were scored off by Mitcheilstarc out of total runs scored

off by best 5 bowlers.

CHAPTER 15 - INTRODUCTION TO GRAPHS

LEARNING OUTCOMES:
- The learner interprets and compares the data given in the table.

3. HEALTH CHECK UP

Growth is an important indicator of health and nutritional Status of a child. Growth monitoring can direct nutritional and other health problems that would

otherwise go unnoticed. In Joseph's High School, a weight and height check up was held. Doctors measured the weight of 35 girls of a class and found that average weight of girls was 45 kg.

(i)   How have the doctors calculated average weight? Explain.

(ii)   State true/false

If all the girls are arranged indescending order of their weight, then the middle most weight is equal to 40 Kg.

(iii) Later on it was found that while measuring weight, doctor wrote 20kg and 25 kginstead of 25 kg and 30 kg what is the correct average weight?

Class 8
CHAPTER 15 - INTRODUCTION TO GRAPHS

LEARNING OUTCOMES:

• The learner interprets the data from the polygon graph

4. ECONOMIC GROWTH

Economic growth is an increase in the amount of goods and services produced per head of the population over the period of time. For countries with significant level of poverty, economic growth can enable vastlyimproving living standards and reduces employment. The system is how money is made and used within a particular country or region. For a particular region, the economy is connected with the things like how many goods and services are produced and how much money
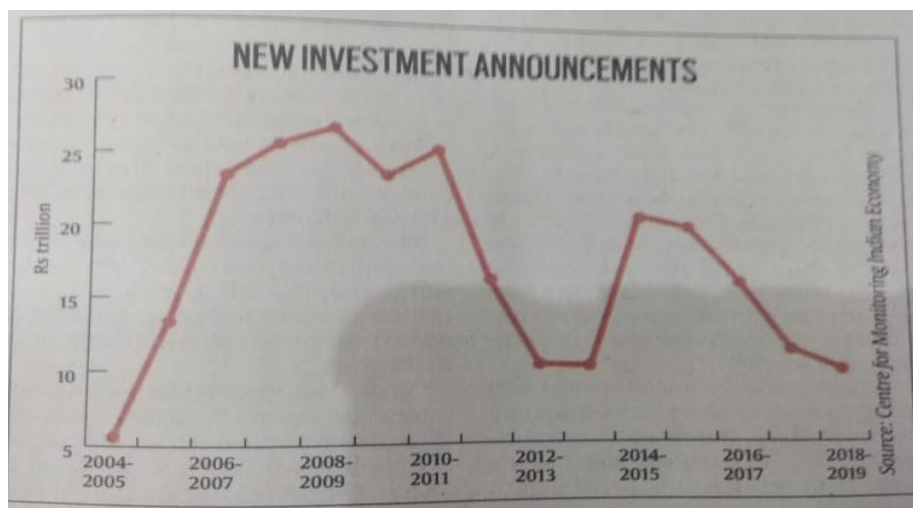
people can spend on these things. The economy of India is a developing mixed economy. It is the world's seventh largest economy.

i.   In which year Indian economy was the highest?
ii. In which year Indian economy was almost constant?
iii. From the graph it can be seen that Indian economy has gone down in recent years.
       Write yourviews on how the Indian Economy can be improved.

Class 8
CHAPTER 15 - INTRODUCTION TO GRAPHS

LEARNING OUTCOMES:

- The learner interprets bar chart.

5. POPULATION PYRAMID

Population pyramid shows

(1) Total population divided into the various age groups.

(2) The percentage of the total population subdivided into males and females.
The

shape

of the population pyramid tells the story of the people living in that particular country.

It shows present number of males and females in a country along with their age groups

India - 2019
Population: **1,373,605,068**
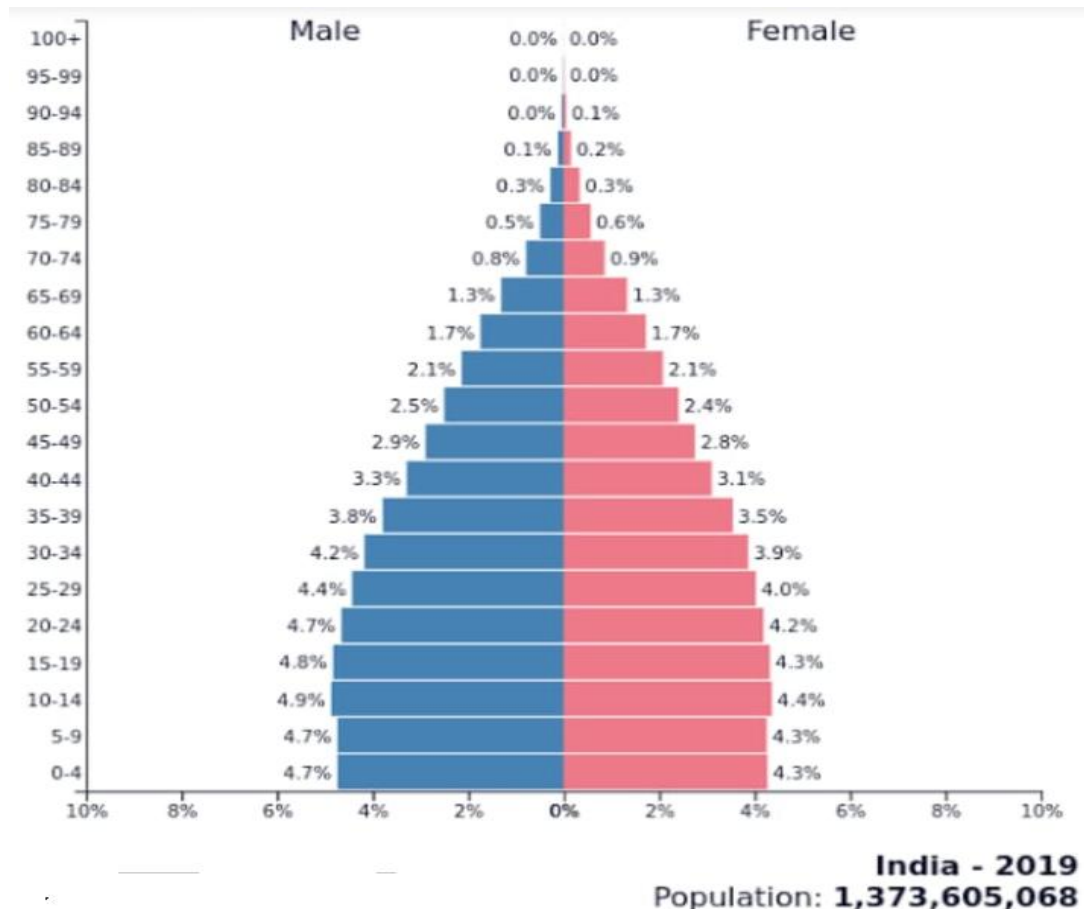
i. How many people lie in the group of 15-19?

ii. How much population of males is above 49years of age?

Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:
- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

1. An old man was not keeping well. So he called his three sons and told them that he would give all his money and property to the son who will be able to solve the following question.

    If A 3 + 8 B = 150, then what is the value of A + B?

Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:

- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

2.   Let $E = 3$, $B = 7$ and $A = 4$. Find the other digits in the sum:

```
  B A S E
 +B A L L
 G A M E S
```

LEARNING OUTCOMES:
- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

3.   The product of two, two digit numbers is 1431. The product of their ten's digit is 10 and the product of their unit's digit is 21. Find the numbers.

Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:
- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

4. What is the height of the table in cm?
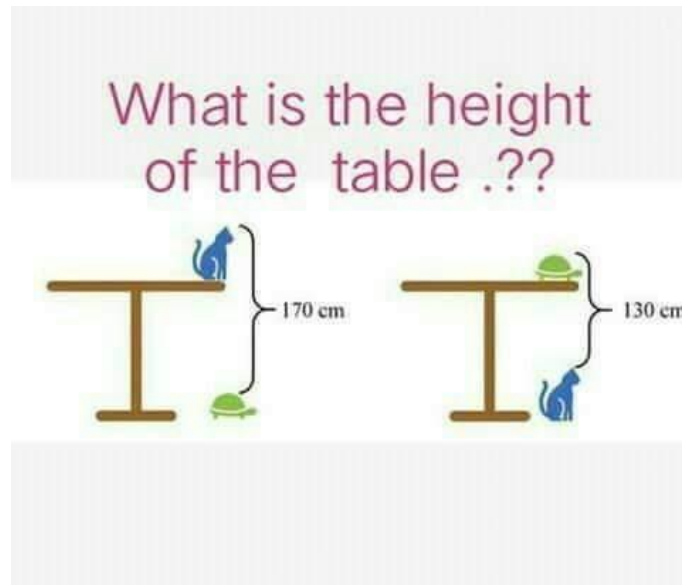
Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:

- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

5. Find the values of p, q and r in the following multiplication:

```
  3 p 4
X q 6
  2 1 2 4
1 0 6 r x
1 2 7 4 4
```

Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:
- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

6. Find the values of A, B, C and D in the following subtraction:

    8 A B C
    <u>-A B C 5</u>

    D 4 8 8

LEARNING OUTCOMES:

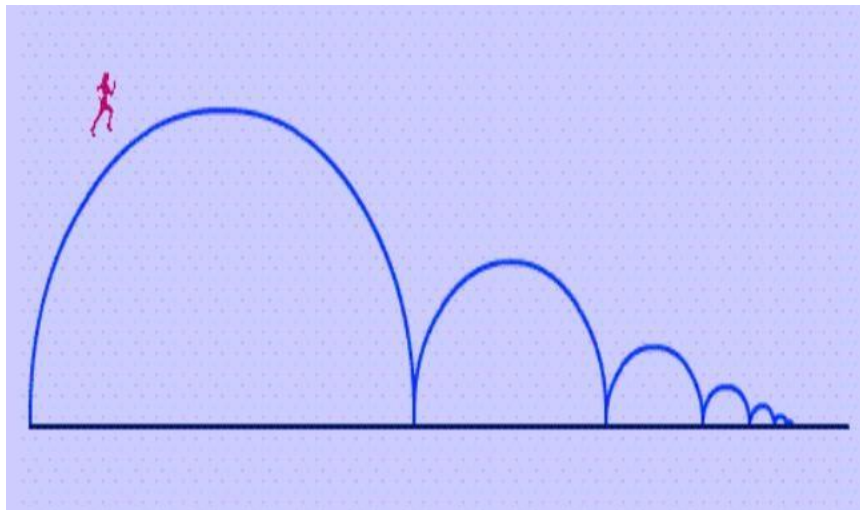- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

7. An athlete is able to jump FOREVER. However, every time that she jumps, she gets a bit more tired. Every jump goes ½ as far as her prior jump. Now, for her very first jump, she goes ¼ of a foot and so on and so forth. Can you tell how many jumps she has to take to travel 1 foot?

LEARNING OUTCOMES:

- The learner solves problems related to daily life situations involving linear equations using hit and trial method

8. Three brothers live in a farm. They plan to buy new seeds. Mohan and Suresh decided to go to purchase the seeds whereas Deenu stayed to protect the fields. Suresh bought 75 sacks of wheat seeds from the market and Mohan bought 45 sacks. After coming back home, they distributed the sacks equally. Deenu had paid Rs 14000 for his share. How much amount did Mohan and Suresh get of the sum Deenu paid, considering equal distribution of the sacks?

Class 8
CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:

- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

9. Find the missing digit.

```
          4   3   2
      5   3   5   1   1
  6   1   2   8   3   3   1
      7   2   8   4   3
          9   ?   3
```

CHAPTER –16 - Playing with numbers

LEARNING OUTCOMES:

- The learner solves problems related to daily life situations involving linear equations using hit and trial method.

10.   What number replaces the question mark?

<u>Class 8</u>
<u>CHAPTER –16 - Playing with numbers</u>

LEARNING OUTCOMES:
- The learner solves problems related to daily life situations involving linear equations using hit and trial method.
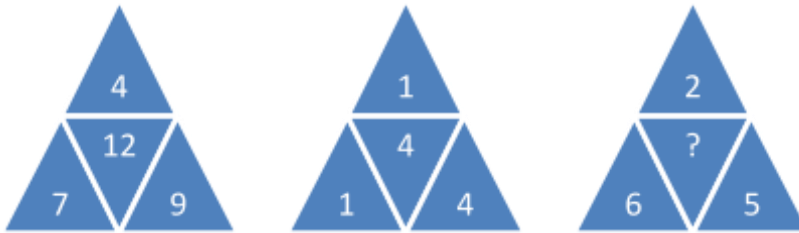
11.   In a certain country, $1/2$ of $5 = 3$. If the same proportion holds, what is the value of $1/3$ of 10?
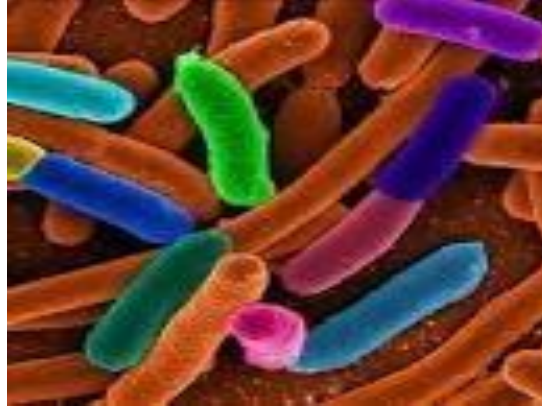
1. A Certain strain of E-Coli bacteria has a doubling at rate of 30 minutes
   Here is table that demonstrate how quickly bacteria is growing

Time in Hour	0	0.5	1	1.5	2	2.5
No of Bacteria	100	200	400	800	1600	3200

   Above relationship is given by
   $P(t) = 100 \, (2)^{2t}$

 i. What is the initial population of bacteria?
 ii. What is $P(1)$
 iii. When will the bacteria reach ten lakh?

Class 8
Supplementary Resource Material
LOGARITHMS

DECIBEL SCALE

shutterstock.com • 1304692708
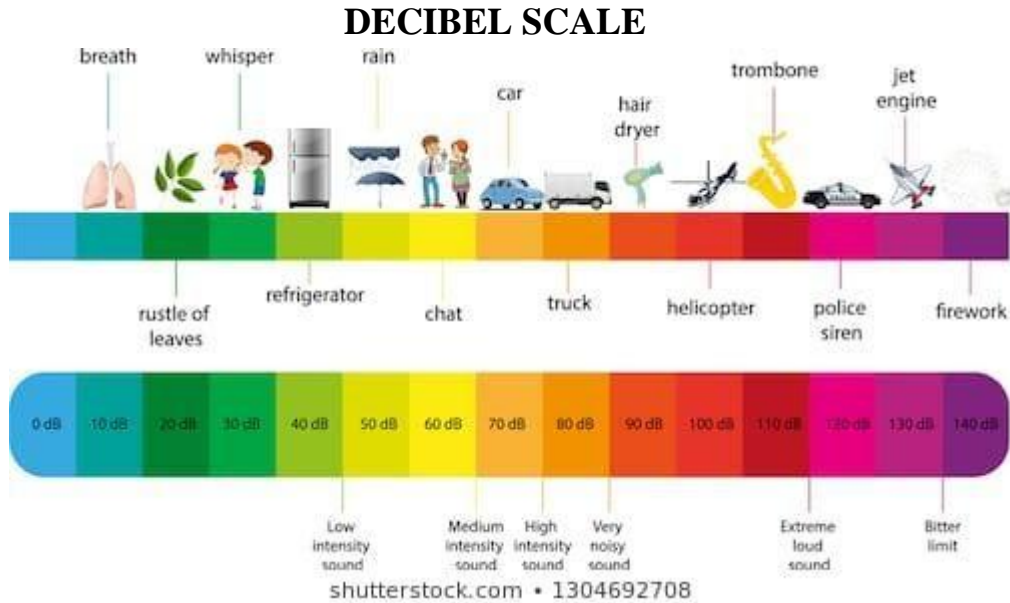
2. Sound is measured in a logarithmic scale using a unit called decibel.

The sound intensities are measured by formula

$$d = 10 \log_{10}(P/Po)$$

Where P is intensity of sound and P—is the weakest sound that human ear can hear.

i. How many more times intense is the sound of normal?

Conversation (60 dB) than Whisper (30dB)

(A) Pn = 100 Pw

(B) Pn = 1000 Pw

(C) Pn = 10 Pw

(D) Pn = 10000 Pw

ii. Dishwasher A has a noise rating of 52 decibels. Dishwasher B has noise rating of 56 decibels. How many times more intense is noise from dishwasher B? Show your working

ANSWER KEY

CLASS 8
CHAPTER 1-RATIONAL NUMBERS

11.   Number of oranges = 8
                    Number of mangoes= 2
                    Difference = 6

12.   Difference = maximum – minimum = 100 – (–40) = 140

13.   Last rectangle with length of diagonal as 13cm

14.   Rs. 3600

15.   ~ 9 sections

16.   cost of 6M + 10 W + 4G = 1180Rs
                    I will pay Rs. 77.5 to buy 3 and a half kg mangoes and 2 and a
                    half kg water melons.

17.

iv.   Difference   between the wing span of Albatross than the wingspan of a Sea
        gull is 3.6 m – 1.7 m = 1.9 m

 v.   Difference   between the wing span of Golden Eagle   than the wingspan of a
        Blue Jay is   2.5 m – 0.41 m = 2.09 m

vi.   As per the given information

18.   Jordan himself is Whole Number   as per this venn diagram

Rational Numbers

$-\dfrac{8}{2}$

$\dfrac{2}{3}$

$0.11\overline{1}$

Integers

..., −4, −3, −2, −1, ...

Whole Numbers

0

Natural Numbers

1, 2, 3, 4,...8,...
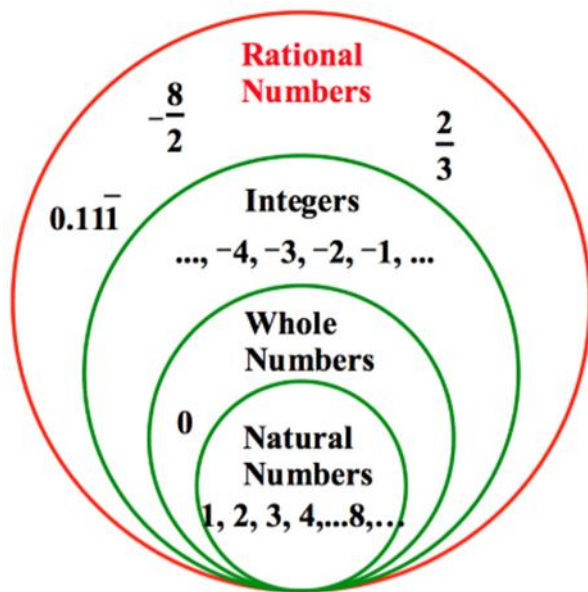
19. (d) Between -1 to -1/2

20. (A) Only I

CLASS 8
CHAPTER 2-LINEAR EQUATIONS

19.

    i.   40+ 4.50p =112

    ii.   16

20.   24

21.   i.   35

22.

     b = 40 cm
     $l = 2b = 80$ cm

23.   i)   235 sec

24.   Rohan had Rs 150 with him.

25.   Son's age 10 years, Father's age 36 years

26.   Rekha's Age = 6years (Minimum Pocket money)
          Vrinda's age = 15 years (Maximum Pocket money)

27.   Speed of boats: 20 and 40 km/hr

28.   54 meals

29.   Shares of each stock did he buy 120 and 240
          Total Loss = Rs 1800

30.   M- 5 minutes

31.   Money at the end of the day $500 + 10 \times N + 5 \times (n +1)$

32.   Ticket numbers will be 33 and 35

33.   All three of them wrote correct statement.

34.   (B) $7x- 6 = 15x - 30$

35.   Total number of bananas was 500 bananas, 300 in lot A and 200 in lot B.

36.   100 students in section A and 80 students in section B

CHAPTER 3 - UNDERSTANDING QUADRILATERALS

2.

xi.	C. Rectangle
xii.	C. Octagon
xiii.	D. 20
xiv.	C. Quadrilateral
xv.	B. $(n-2) \times 180°$
xvi.	4 Sq. ft.
xvii.	8 ft.
xviii.	4 sq. ft.
xix.	To form a square portion including the kitchen area, the tables 18, 19, 20, 23, 24 and 25 have to be taken so that they including the kitchen form a square portion as required.
xx.	It is an open ended question. The students can use any set of tables to form the required trapezium.

Class 8
CHAPTER 5 - Data Handling

1.
   i.   D. 2016-17
   ii.   C.30
   iii.   C. (40,10)
   iv.   B. (40, 40, 20)

2.
   i.   A. 275
   ii.   C. 13.89

3.
   iii.   tennis
        Explanation:
        On observing the graphs carefully, we will find that in tennis the
        number of students decrease by 2
   iv.   16/72

4.
   iii.   C. 20%
   iv.   D.none of the year could have 90 cars.

5.
   i.   c) The total number of cats sold is equal to the number
               of adult dogs sold.
   ii.   2%

6.
   i.   Average means the central value of data.
   ii.   YES
   iii.   35.2

7.
   i.   D.Rs. 36.66 lakhs
   ii.   C. 1%

8.

    i.   a)America's Funniest videos and blue planet

          b)Blue planet and Big bang theory

    ii.   America's Funniest videos/Big bang theory

CLASS 8
CHAPTER 6 - SQUARES AND SQUARE ROOTS

12.   C. 10

13.   A. 23

14.   70

15.   622

16.   25 More soldiers

17.   99 Chairs in each row and column

18.   59 trees in each row and each column

19.   dimension of teachers table is 1.5m.

20.   900

21.

    iii.   2 units

    iv.   49.5 units2

22.

    iii.   5.389 feet

    iv.   29.04 feet2

CLASS 8
CHAPTER 7 - CUBES AND CUBE ROOTS

6.   C   15
7.   D   6
8.   D
9.   D   Black, brown, red, white

CLASS 8
CHAPTER 8 - COMPARINING QUANTITES

1. Statement (b) is correct.

2.
   iii.   Amount paid by Annanya ₹4260

   iv.   Marked price of Bhavin's jacket = ₹2666.60

1.   B. 250

2.

       E. $4y^2 - y - 24$

3.   B. $6x^2 - 5x - 5$
4.   C. y-4
5.   **D**
6.   A $-0.88x^2 + 0.51x + 11$

7.
      i.   algebraic expression 200000 +600g
      ii.   290000

8.   5
9. $77x^2 + 48x - 25$
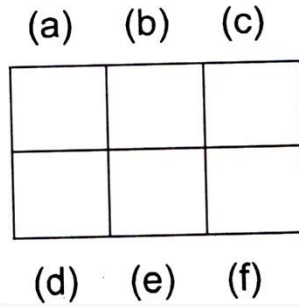10. $6x^2 + 5x - 9$
11.   . i.
      e.   10
      f.   14
      g.   46
      h.   S= 2B+6

5.   M

| (a) | (b) | (c) |
| (d) | (e) | (f) |

6.   a) Cube b) Cubiod c) Cylinder d) Cone e)Square Pyramid
         f) Triangular Prism.

7.

    i.   60 km
    ii.   20 km
    iii.   35 km

8.   Number of dots seen: 17

10.   a=1, b=5, c=4, d=2, e=6, f=5

2.

vi.	3630 cm^2
vii.	75 boxes
viii.	48 litres
ix.	r = 0.3m
x.	h = 0.21m

5.

    iv.

Numbers	Standard Form
0.00007	7×10^{-5}
0.77007	7.7007×10^{-1}
77777007	7.7777007×10^{7}
777077	7.77077×10^{5}

    v.   Largest= 77777007 and smallest =0.00007

    vi.   Write the following numbers in usual form.

Numbers	Usual Form
5.1×10^{4}	51000
3×10^{-10}	0.0000000003
1.1×10^{6}	1100000
7×10^{-5}	0.00007

6. Third one is larger and first is smallest.

CHAPTER 13 - DIRECT AND INVERSE PROPORTIONS

2. Organizing a Birthday party
vi. Community Hall
vii. Golf Club Function Room-Rs.20
   Alpha Function Centre-Rs. 25
   Wedding Reception Dining Room- Rs. 16
   Exclusive Hotel Room- Rs. 15
   Community Hall- Rs. 10
viii. Wedding Reception Hall
ix. Wedding Reception Hall
x. Facilities, Ventilation, Parking, Cleanliness, Approachable & No Traffic
   (Any two)

3. Party menu
v. Rs.150
vi. 100
vii. Choose different Food Items From Menu with low price.

7. Coffee Shop
   i. ₹ 6240
   ii. ₹ 10240
   iii. Because he also need money for other things while starting his shop.
      Proper management, pay in instalments (any relevant answer)
4. Coffee Beans
i. ₹ 1
ii. No Because Cost for 10 kg packet = ₹ 405
   Cost for two 5 kg packet = ₹ 470
   Cost for forty 250g packet = ₹ 450
   10 kg packet is cheapest.
iii. To buy 10 Kg packet of Mocha beans with cost ₹ 34 /kg

Class 8
CHAPTER 14 - FACTORIZATION

1. Price for 1 Litre of petrol was Rs 58 originally
   i. Any relevant answer
   ii. Any relevant answer

2. Sides of two squares are 80 m and 95 m.

3. i. Dimensions of area to be planted = (120 – 70) and (100 – 70)
      i.e., 50 m and 30 m.
   ii. Save tree

4. First page is page 33, and the second is page 34

CHAPTER 15 - INTRODUCTION TO GRAPHS

2.

    i.   8.64%

   ii.   13 Terms

  iii.   8.48 %

2.

   iv.   100/3 %

    v.   Mustafizur Rahman

   vi.   502/2227.

4.

  (i)   Correct Explanation.

  (ii)   False

  (iii) 40.2

5.

   i. In the period   2008-2009

  ii. 2012-2013 to 2013-2014

 iii. Any Relevant points

6.

   i.   9.1% of 1373605068

  ii.   9.7% of 1373605068

Class 8
CHAPTER –16 - Playing with numbers

1. A = 6, B = 7 so A + B = 13

5. G = 1, S = 8, M= 9 and L = 5
6. Numbers are 53 and 27
7. height of the table is 150 cm
8. p = 5, q = 3 and r = 2
9. A = 7, B = 2, C = 3 and D = 1
10. Never
11. Mohan got Rs 1750 & Suresh got Rs 12250
12. 6
13. 9
14. 4

<div align="center">

Class 8
Supplementary Resource Material

LOGARITHMS

</div>

1. **GROWTH OF BACTERIA**

iv.   100
v.   400
vi.   6.64hr
2.   DECIBEL SCALE

iii.   (B)   Pn   =1000 Pw
iv. $P_B/P_A = 10^{0.4}$

TURN YOUR OBSTACLES

INTO YOUR WAY TOWARDS SUCCESS
-ERIC WORRE