

Chapter—1

Rational Numbers

1. Which of the following is not a rational number :

- (a) $\frac{11}{17}$ (b) $\frac{160}{0}$ (c) 117 (d) $5\frac{1}{2}$

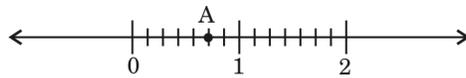
2. Find the sum :

- (i) $\frac{3}{16} + \frac{2}{8}$ (ii) $\frac{-3}{25} + \frac{9}{20}$ (iii) $\frac{-1}{5} - \frac{1}{3}$ (iv) $2\frac{1}{12} + \frac{-5}{36}$

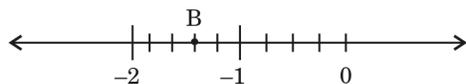
3. (i) What is the additive inverse of $\frac{-7}{11}$?

(ii) What is the multiplicative inverse of $2\frac{3}{11} \times \frac{1}{3}$?

4. (i) A represents which number on the number line?



(ii) B represents which number on the number line?



(iii) Represent $\frac{9}{11}$ on number line.

5. (i) Which number lies between $\frac{1}{5}$ and $\frac{1}{4}$?

- (a) $\frac{1}{8}$ (b) $\frac{9}{40}$ (c) $\frac{1}{9}$ (d) $\frac{1}{20}$

(ii) Write 10 rational numbers between $\frac{-4}{5}$ and $+\frac{4}{7}$.

(iii) Find a rational number between $\frac{1}{6}$ and $\frac{1}{3}$.

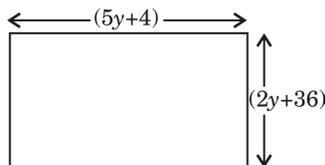
6. Find the product of $\frac{3}{8}$ and the reciprocal of $\frac{-5}{17}$.

7. A tailor needs $\left(\frac{9}{10}\right)^{\text{th}}$ of a metre of cloth to stitch a blouse. If he wants to stitch 100 blouses how much cloth will be needed?
8. Simplify :
- (i) $\left(\frac{3}{4} + \frac{4}{5}\right) + \frac{1}{5}$ (ii) $\left(\frac{-7}{8} \times \frac{5}{6}\right) \times \frac{-6}{9}$
9. Find $(x + y) \div (x - y)$ if
 $x = \frac{1}{10}$, $y = \frac{9}{5}$
10. The sum of the additive inverse and multiplicative inverse of 3 is _____.
11. Simplify
 $\frac{5}{8} + \frac{9}{2} + \left(\frac{-4}{5}\right) + \frac{7}{8} + \left(\frac{-5}{2}\right) + \frac{7}{5}$
12. The number which is subtracted from $\frac{29}{13}$ to get $\frac{-5}{7}$ is _____.
13. The value of x for which the two rational numbers $\frac{4}{9}$, $\frac{x}{54}$ are equivalent.
14. $\frac{5}{6}$ of all the money in Salma's bank account is ₹ 55,000. How much money does Salma have in her bank account?
15. Arrange the number $\frac{1}{4}$, $\frac{13}{16}$ & $\frac{5}{8}$ in the ascending order.

Chapter—2

Linear Equations in one Variable

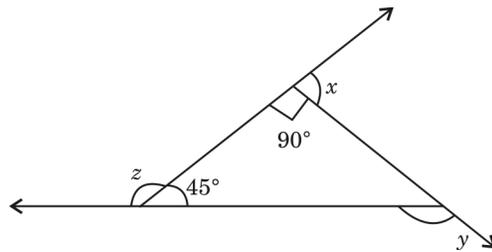
1. Form an equation of “7 added to thrice a number is 118” and also find the number.
2. If sum of two numbers is 29 and one of them is 18. Form the equation for finding the another number.
3. A man has ₹ x . He gave half of it to his wife, $\frac{1}{4}$ to his son and ₹ 1200 to his daughter. Form an equation and also find x .
4. Interior angles of a triangle are in the ratio 2 : 3 : 4. Find the angles of the triangle.
5. Find x if $4x + 7 = x + 45$.
6. If father is twice as old as his son and also 32 years older than his son. What is the age of father?
7. Solve for x —
 $8x + 25 = 4x + 105$
8. Sides of rectangle are in the ratio 15 : 4. If the perimeter of the rectangle is 38 cms then find the sides of rectangle.
9. A number consists of two digits whose sum is 9. If 9 is added to the number its digits are inter changed. Find the number.
10. The sum of two numbers is 5 and difference of their squares is 5. Find the difference of the numbers?
11. The sum of four consecutive natural numbers is 166. What are the numbers?
12. For what value of y is the perimeter of shape 220 cm?



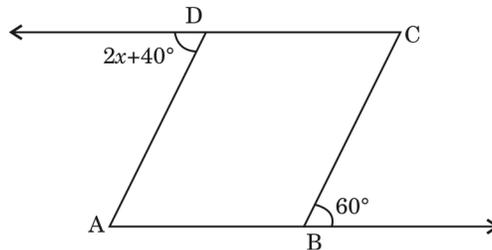
Chapter—3

Understanding Quadrilaterals

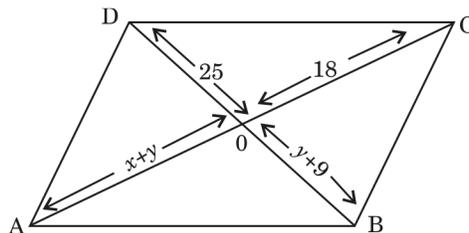
1. What is the sum of the interior angles of a polygon having 9 sides?
2. In the adjoining figure find $x + y + z$.



3. What is the measure of each exterior angle of a regular polygon having 10 sides?
4. ABCD is a parallelogram. What is the value of x ?

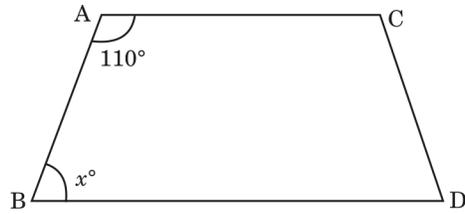


5. The ratio of two adjacent sides of a parallelogram is 3 : 1 and its perimeter is 72 cm. What is the length of the adjacent sides?
6. ABCD is a parallelogram. What is the value of x and y in the figure given below :

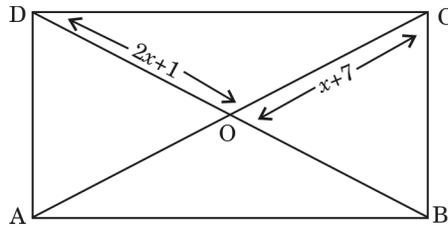


7. Give reasons whether quadrilateral ABCD is a parallelogram or not.
 - (i) $AB = BC = 6$ cm $AD = 3$ cm, $BC = 5.2$
 - (ii) $\angle A = 80^\circ$, $\angle C = 55^\circ$

8. ABCD is a trapezium. What is the value of x ?



9. ABCD is a rectangle. What is the length of the diagonal AC?



10. ABCD is a square of side 6 cm. What is the length of its diagonal?

Chapter—4

Practical Geometry

1. How many measurements can determine a rectangle uniquely?
2. The lengths of the diagonals of a rhombus are 6 cm and 8 cm. What will be length of each side of rhombus?
3. Construct a quadrilateral ABCD in which $AB = 5.2$ cm, $BC = 4.8$ cm, $CD = 3.8$ cm $AD = 4.2$ cm and $AC = 6$ cm.
4. Construct a rhombus with side 5.8 cm and one of its angles equal to 60° .
5. Construct a quadrilateral ABCD in which $AB = 4.8$ cm, $BC = 5.2$ cm, $\angle A = 75^\circ$, $\angle B = 105^\circ$ and $\angle D = 80^\circ$
6. Construct a parallelogram EFGH in which $EF = 6$ cm, $FG = 4.5$ cm and $EG = 7$ cm.
7. Construct a square in which diagonal is 5.4 cm.
8. Which of the following statements are true and which are false?
 - (i) The diagonals of rhombus are equal.
 - (ii) Each square is a rectangle.
 - (iii) Each rhombus is a kite.
 - (iv) In a trapezium pair of opposite sides are parallel to each other.
 - (v) Diagonals of a rectangle are equal and bisect each other at right angle.

Chapter—5

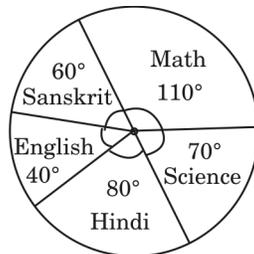
Data Handling

1. What does the height of a bar represents in a bargraph?
2. What is the lower limit in the class interval 200-300?
3. What is the size of the class interval 25-35?
4. Which type of data can be represented by histogram?
5. What is the minimum value of the probability for an event?
6. When a coin is tossed twice, what are the possible outcomes?
7. A coin is tossed once. What is the probability of getting a head?
8. A dice is thrown once. What is the probability of getting an even number?
9. A dice is thrown once. What is the probability of getting 7?
10. Find the probability of getting a prime number from 1 to 20.
11. A dice was thrown 20 times and following outcomes were noted—
2, 1, 3, 4, 1, 2, 5, 6, 2, 1, 6, 3, 2, 1, 1, 4, 5, 6, 4
Prepare a frequency distribution table.
12. The following table shows the weight of 40 students of class VIII :

<i>Weight (in kg)</i>	<i>Frequency</i>
40 — 45	5
45 — 50	9
50 — 55	13
55 — 60	10
60 — 65	3

Answer the following —

- (i) Which class has the lowest frequency?
 - (ii) How many students have weight more than 55 kg.
13. The following pie chart shows the marks obtained by a student of class VIII in six subjects:



If the total marks are 180 then, what is the difference of marks obtained in Math and Science?

14. The data given below shows the number of hours spent by a child on different activities in a day—

<i>Activity</i>	<i>Number of hours</i>
School	7
Homework	4
Play	2
Sleep	8
Others	3

Draw a pie chart to represent the above data.

15. The marks obtained by 30 students of class VIII in an examination are given below—
26, 15, 16, 7, 9, 22, 5, 0, 23, 17, 16, 16, 18, 8, 12, 6, 11, 29, 14, 15, 2, 19, 26, 14, 29, 28, 24, 17, 12, 8
Prepare a frequency distribution table taking one such class as 5 — 10 (where 10 not included).

Chapter—6

Square and Square Roots

- Fill in the blanks—
 - The digit at unit's place of square of 239 = _____
 - $29 \times 31 = \boxed{} - 1$
 - $17 \times 23 = \boxed{} - 3^2$
 - $(151)^2 - (150)^2 = \underline{\hspace{2cm}}$
 - The sum of first five odd numbers = _____
 - If $6^x = 1296$ then $x = \underline{\hspace{2cm}}$
- Write the perfect square numbers between 100 and 150.
- Write 17^2 as sum of two consecutive integers.
- Find the Pythagorean triplet whose smallest number is 10.
- Find the smallest number by which 192 must be multiplied to make the product perfect square.
- Find the square root of the following—
 - 10609
 - 33.64
 - 0.4489
 - $\frac{289}{361}$
 - $1\frac{7}{9}$
- Find :
 - $\sqrt{55} \times \sqrt{220}$
 - $\sqrt{0.25} \times \sqrt{0.09}$
- Find the smallest number of four digits which is a perfect square.
- Find the smallest square number which is divisible by the numbers 4, 12 and 16.
- Find x if $\frac{x}{16} = \sqrt{\frac{9}{16}}$
- The area of a square field is 4225 m^2 . If a girl cycles along its boundary, how much distance she will be able to cover if she covers the boundary twice.
- For the international yoga day, yoga teacher has to arrange 1024 students in such a way that each row has as many students as the number of rows. Find the number of students in each row.

- 13.** A square park of side 40 m has a 4 m wide path surrounding it. Find the area of the path.
- 14.** Find the least number which must be added to 2000 to make the sum a perfect square.
- 15.** State true or false:
- (i) The square of an even number is always even.
 - (ii) 99 is 2-digit greatest perfect square number.
 - (iii) 248 is a perfect square number.
 - (iv) Square numbers can have odd number of zeros at the end.

Chapter—7

Cubes and Cube Roots

1. Find the cube of 15.
2. Is 3087 a perfect cube?
3. If $72x$ is a perfect cube then $x =$ _____
4. Write ones digit of cube root of 2197.
5. 17 is a cube root of _____.
6. The cube root of $2^3 \times 3^3 \times 3^3 \times 5^3$ is _____.
7. Find the cube root of —
 - (i) 729
 - (ii) 64×27
 - (iii) 2744
 - (iv) 64000
 - (v) 1.331
8. Find the cube root of 140×2450 .
9. Find the smallest number by which 256 must be multiplied so that the product is a perfect cube.
10. If $x^3 = 0.008$ then $x =$ _____
11. Find the side of the cubical box whose volume is 9261 m^3 .
12. If $a^3 - 1 = 1330$ then $a =$ _____
13. Find the cube root of $\frac{1331}{1728}$.
14. If $\sqrt[3]{\frac{x}{y}} = \frac{2}{3}$ then $\frac{x}{y} =$ _____
15. Three numbers are in the ratio $1 : 2 : 3$ and the sum of their cubes is 288. Find the numbers.

Chapter—8

Comparing Quantities

- Convert the following ratios to percentage:
(i) 9 : 25 (ii) 12 : 5
- Which is largest among $6\frac{2}{3}\%$, $\frac{3}{20}$ and 0.14?
- Convert the following percentages to fractions and ratios:
(i) 2.5% (ii) 0.25% (iii) 125%
- If 23% of a is 69, then find a.
- x is 5% of y , y is 24% of z . If $x = 480$, find the values of y and z .
- A number is increased by 10% and then it is decreased by 10%. Find the net increase or decrease percent.
- If the cost of 18 mangoes is the same as the selling price of 16 mangoes, find the gain percent.
- If $x\%$ of 250 + 25% of 68 = 67, then the value of x is.....
- Tick (\checkmark) the correct answer in each of the following:
(i) 5% of a number is 9. The number is
(A) 45 (B) 90 (C) 135 (D) 180
(ii) If $(180\% \text{ of } x) \div 2 = 540$, then x is.....
(A) 400 (B) 480 (C) 600 (D) 560
(iii) What percent of 10 kg is 250 g ?
(A) 25% (B) 5% (C) 10% (D) 2.5%
(iv) A period of 4 hours 30 min is what percent of a day?
(A) $18\frac{3}{4}\%$ (B) 20% (C) $16\frac{2}{3}\%$ (D) 19%
(v) The price of a watch including 10% VAT is ₹ 825. What is its basic price?
(A) ₹ 742.50 (B) ₹ 775 (C) ₹ 750 (D) ₹ 907.50
- Write True or False for each of the following :
(i) $SP = \frac{(100 + loss\%)}{100} \times CP$.
(ii) Gain is calculated on the selling price.
(iii) 6 hours = 25% of a day.
(iv) 6% of 8 is 48.

11. Fill in the blanks:

(i) $7\frac{1}{2}\%$ of ₹ 1200 =

(ii) 240 ml is% of 3l.

(iii) If $x\%$ of 35 is 42, then $x = \dots\dots$

(iv) $\frac{9}{5} = \dots\dots\%$

(v) 120 =% of 80

12. Find the single discount equivalent to two successive discounts of 20% and 10%.

13. Find the principal, if the compound interest compounded annually at the rate of 10% per annum for three years is ₹ 331.

14. On selling 100 pens, a man gains the selling price of 20 pens. Find the gain percent.

15. Find the difference between the compound interest and simple interest on ₹ 5000 for 2 years at 9% per annum.

Chapter—9

Algebraic Expressions and Identities

1. Classify the following polynomials as monomials, binomials or trinomials.

(i) $7 + a + 5b$ (ii) $3b^2 - 5b^2$ (iii) pqr

2. Add $7x^2 - 4x + 5$, $-3x^2 + 2x - 1$ and $5x^2 - x + 9$.

3. Subtract $\frac{2}{3}y^3 - \frac{2}{7}y^2 - 5$ from $\frac{1}{3}y^3 + \frac{5}{7}y^2 + y - 2$

4. Complete the following table of products:

First monomial →					
Second monomial ↓	$11x$	$-10qp$	$4a^2b^2$	$2x^2y^2$	$-3 mn^2$
$5x$	$55x^2$				
$7pq$		$-70p^2q^2$			
$6a^2b^2$				$12a^2b^2x^2y^2$	
$-9x^2y^2$					
$8 m^2n$			$32a^2b^2m^2n$		

5. Fill in the blanks:

(i) The number of terms in the product of $(3x^2 + 6xy + 5y^2)$ and $(3x + 4y - 13)$ is.....

(ii) In the product of $(4a^3 + 5a^2 - 11a)$ and $(-15 + 3a - 7a^2)$, the coefficient of a^4 is.....

(iii) The value of $(3a - 4b + 2) \times (5a + 6)$ for $a = 1$ and $b = -2$ is

(iv) The value of $\frac{(67.542)^2 - (32.458)^2}{75.458 - 40.374}$ is.....

(v) Find the product:

$(A + B). (A - B). (A^2 + B^2). (A^4 + B^4) = \dots\dots\dots$

6. Write whether true or false.

(i) If, $a + \frac{1}{a} = 7$, then $a^2 + \frac{1}{a^2} = 49$

(ii) The product of a binomial and a trinomial will always have 5 terms.

(iii) $(3x^2 + 5y^2) \times (5x^5 + 8y^3) = 15x^7 + 24x^2y^3 + 25x^5y^2 + 40y^5$

7. If $(3x - 5y) = 10$ and $xy = 5$, then find the value of $9x^2 + 25y^2$.

8. If $x + y = 9$ and $xy = 14$, find $x^2 - y^2$.
9. (i) Given $(x^2 + y^2) = 74$ and $xy = 35$, find the value of $x + y$ and $x - y$.
- (ii) If $x + \frac{1}{x} = 4$, find the value of $\left(x^2 + \frac{1}{x^2}\right)$ and $\left(x^4 + \frac{1}{x^4}\right)$
10. Choose the correct option :
- (i) The power of the algebraic expression $7xy + 3xy^2 - x^3y^2 + 4$ is
 (A) 1 (B) 2 (C) 5 (D) 3
- (ii) Which of the following algebraic expressions is a polynomial?
 (A) $2m^2 - 5m + 6$ (B) $m^2 + \sqrt{m} + 11$ (C) $m^3 - 7m^{2/3} + 6$ (D) $m + \frac{5}{m} - 7$
- (iii) The product of $(7a - 8b)$ and $(7a - 8b)$ is
 (A) $14a^2 - 112ab + 16b^2$ (B) $49a^2 + 112ab - 64b^2$
 (C) $49a^2 - 112ab + 64b^2$ (D) $49a^2 - 112ab - 64b^2$
- (iv) If $(5x - 7)(2x + 4) = 10x^2 - px - 28$, then p is
 (A) 3 (B) 5 (C) -6 (D) -7
- (v) What must be added to $7z^3 - 11z^2 - 129$ to get $5z^2 + 7z - 92$?
 (A) $7z^3 + 16z^2 + 7z + 37$ (B) $-7z^3 + 16z^2 + 7z + 37$
 (C) $-7z^3 + 16z^2 + 7z - 37$ (D) $-7z^3 - 7z^2 + 7z - 37$
11. If $A = 5x + 11y - 15z$, $B = 12x - 13y + 19z$, $C = 7x - 6y + 21z$, then find:
 (i) $A + B + C$ (ii) $A - B - C$ (iii) $A + B - C$ (iv) $A - B + C$
12. If the perimeter of a rectangular field is $(16a + 8b - 6c)$ units and one of its side is $(5a + 3b - 4c)$ units, find the other side
13. Using suitable identities evaluate the following:
 (i) $(93)^2$ (ii) $(12.5)^2 - (7.5)^2$ (iii) 93×109
14. Simplify the following.
 (i) $(x^2 + y^2)^2 - (x^2 - y^2)^2$
 (ii) $(5x + 11)^2 + (5x - 11)^2$
15. Complete the following:

	Length (l)	Breadth (b)	Height (h)	Volume (lbh)
(i)	$4xy$	$-12xz$	$-5zy$
(ii)	$-x^4$	$-x^3$	x^2
(iii)	$-2mn$	$-9lmn$	$6nl$

Chapter—10

Visualising Solid Shapes

1. Draw the following 3-D shapes :
 - (i) Cuboid (ii) Cube (iii) Triangular Pyramid
 - (iv) Triangular Prism
2. What is the least number of planes that can enclose a solid? What is the name of the solid?
3. Fill in the blanks:
 - (i) A cube hasverices,edges and.....faces.
 - (ii) The point at which three faces of a 3-D figure meet is known as its.....
 - (iii) A cuboid is also known as a rectangular.....
 - (iv) A triangular pyramid is also called as.....
 - (v) A square prism is same as a.....

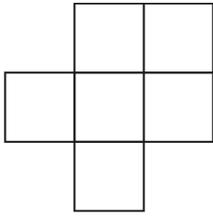
4. Complete the following table:

Name of solid	No. of Faces (F)	No. of Vertices (V)	No. of Edges (E)
Cuboid			
Triangular prism			
Triangular pyramid		4	6
Square Pyramid			
Rectangular pyrmid	5 $\left\{ \begin{array}{l} 1 \text{ rectangular} \\ 4 \text{ triangular} \end{array} \right.$		

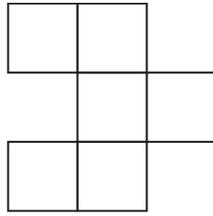
5. Give example of any three 3-D shapes that are non — polyhedron.
6. Using Euler's formula, complete the following.

Faces (F)	6	5	8
Vertices (V)	$V_1 = \underline{\hspace{2cm}}$	$V_2 = \underline{\hspace{2cm}}$	12
Edges (E)	12	8	$E_1 = \underline{\hspace{2cm}}$

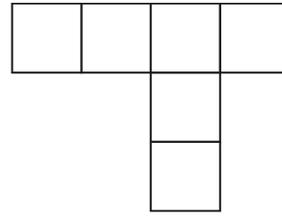
7. Which among the following are nets for a cube?



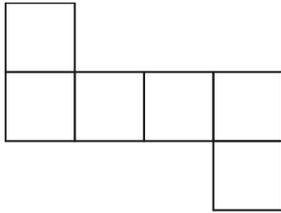
(i)



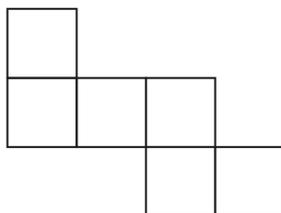
(ii)



(iii)

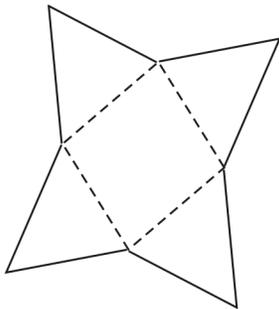


(iv)

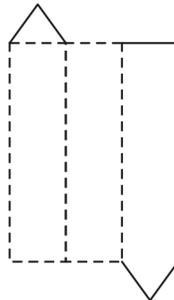


(v)

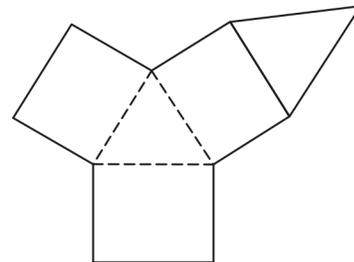
8. Name the polyhedron that can be made by folding each net:



(i)

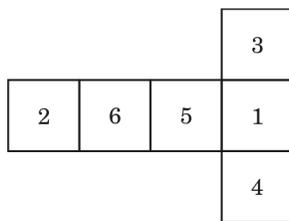


(ii)

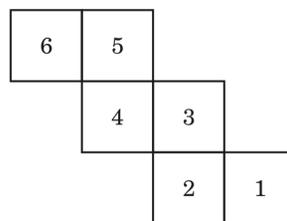


(iii)

9. Dice are cubes where the numbers on the opposite faces must total 7 which of the following are dice?



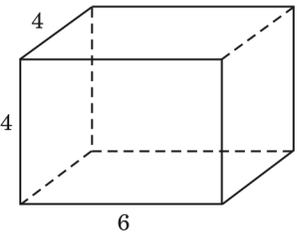
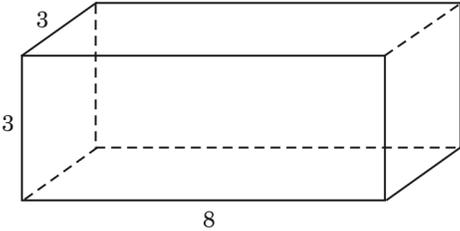
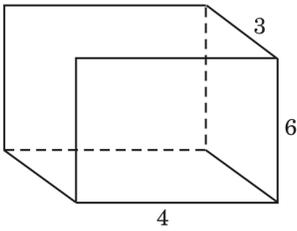
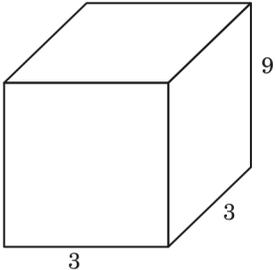
(i)



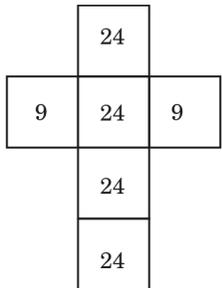
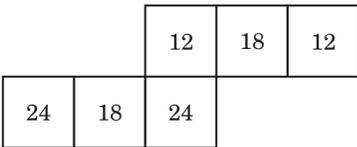
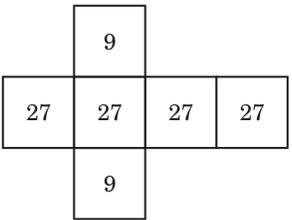
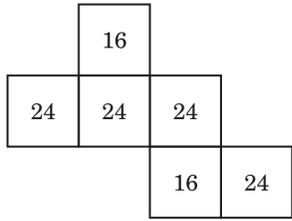
(ii)

10. Match the following

Prisms

- (i) 
- (ii) 
- (iii) 
- (iv) 

Net with areas of faces

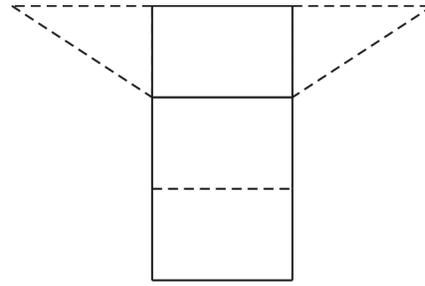
- (a) 
- (b) 
- (c) 
- (d) 

11. Choose the correct option :

- (i) An iron almirah is an example of a
 (A) Cuboid (B) Cube (C) Cylinder (D) Rectangular pyramid
- (ii) What is the minimum number of faces a pyramid can have?
 (A) 1 (B) 3 (C) 5 (D) 4

(iii) The net given alongside is of

- (A) Triangular pyramid
- (B) Triangular prism
- (C) Square Pyramid
- (D) Pentagonal pyramid



(iv) Which of the following solids has the maximum number of vertices?

- (A) Tetrahedron
- (B) Cuboid
- (C) Octahedron
- (D) Cylinder

(v) The number of faces in a rectangular prism is :

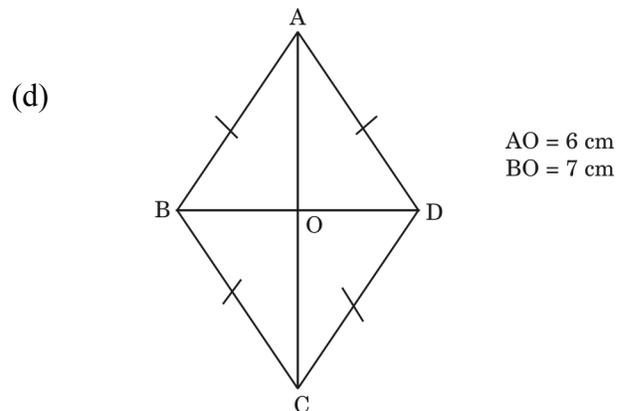
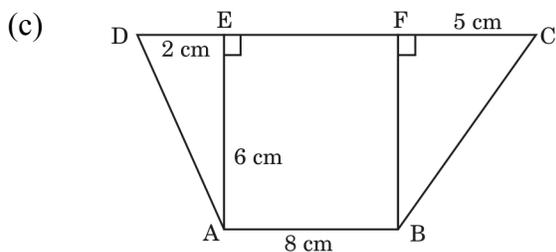
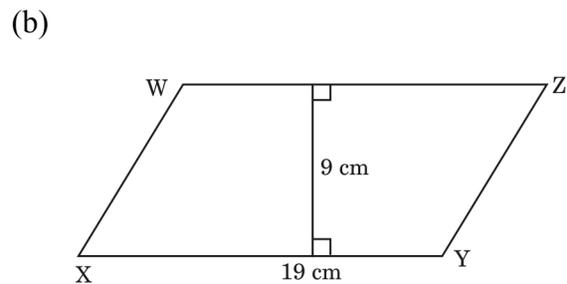
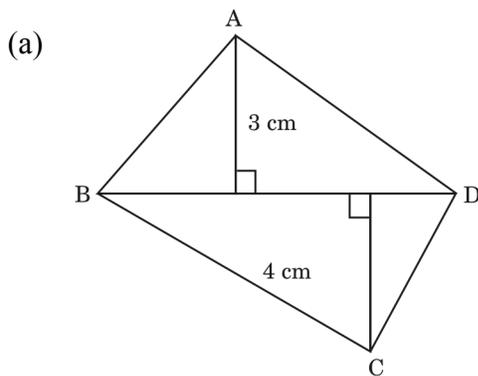
- (A) 6
- (B) 4
- (C) 8
- (D) 12

12. Can a polyhedron have 8 faces, 14 edges and 6 vertices? Specify reason.

Chapter—11

Mensuration

1. Write 'True' or 'False' for the following statements :
 - (a) Every rectangle is a square.
 - (b) Diagonals of a rhombus bisect at right angles.
 - (c) Every rectangle is a parallelogram.
 - (d) Both diagonals of a parallelogram are equal.
 - (e) Rhombus is a parallelogram with all sides equal.
2. Area of a circle with diameter 14 cm. is _____.
3. Find the area of these figures:

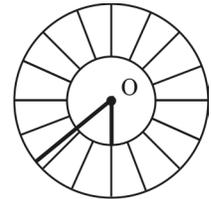


4. Area of a rhombus is 24 cm^2 . If one of its diagonal is 6 cm then its perimeter is _____ cm.

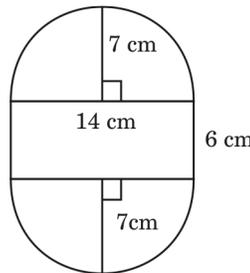
5. A cylindrical tower is 5 m. in diameter and 14 m. high. Find the cost of painting its curved surface at ₹ 25 per m².
6. Volume of a cubical box is 512000 cm³. Find its surface area.
7. The ratio of radii of two spheres is 1 : 3
 - (a) What is the ratio of their volumes?
 - (b) What is the ratio of their surface areas?
8. Kiran daily goes for morning walk in a park. which is 65 m long and 40 m wide. How many metres she walks daily if she takes 4 rounds of the park?
9. Find the values of a, b, c, d, e and f.

S. No	Shape	Radius	Height	Volume	Total surface Area.
1	Cylinder	11 cm.	14 cm.	<u>a</u>	<u>d</u>
2	Cone	7 cm.	24 cm.	<u>b</u>	<u>e</u>
3.	Sphere	21 cm.	<u>c</u>	<u>f</u>

10. Find the area of shaded portion, if radii of two circles are 15 cm and 13 cm.



11. What is the perimeter of the figure.



12. Two cylinders have the same radii of bases if their heights are 15 cm and 25 cm, then find the ratio of their volumes.
13. The internal dimensions of a hall are in the ratio 7 : 5 : 3. If the volume of the room is 2835 m³, then find the length of the hall.
14. Find the side of a cubical aquarium whose surface area is 48600 cm².
15. Wheel of a cycle with diameter 56 cm. completes 100 revolutions to reach the destination. Find the total distance covered.

Chapter—12

Exponents and Power

- Complete the following.
 - The value of $3^4 = \dots$
 - $125^0 + 5^2 = \dots$
 - Multiplicative inverse of $2^{-5} = \dots$
 - $11^4 \times 11^{-2} = \dots$
 - $\frac{1}{7^{-4}} = \dots$
- Write 1723.56 in expanded form using exponents.
- Find the value of $4^5 \times 2^3 \times 2^{-6}$ in exponents.
- Simplify and express the result in power notation with positive exponents.
 - $\left(\frac{1}{3}\right)^{-5} \times \left(\frac{1}{3}\right)^4 \times (3)^{-2}$
 - $\left(\frac{3}{7}\right)^4 \times \left(\frac{7}{3}\right)^2 \times \left(\frac{1}{7}\right)^{-2}$
 - $(5^{-2} \div 5^{-8}) \times 5^{-6}$
 - $(13^0 + 4^{-3}) \times 8^2$
- Simplify: $(3)^{-5} \times \left(\frac{1}{3}\right)^2 \times \left(\frac{1}{3}\right)^{-8}$
- Write 'True' or 'False' for the following statements
 - $\left(\frac{3}{11}\right)^{-2}$ is a whole number.
 - $\left(\frac{2}{9}\right)^{-2} \times \left(\frac{9}{2}\right)^2 = 1$
 - $\left[(a)^{-m}\right]^{-n} = a^{mn}$.
 - $327900000 = (3.279) \times 10^8$.
- Simplify: $\left[\left(\frac{2}{7}\right)^{-2}\right]^4 \times \left[\left(\frac{7}{2}\right)^4\right]^{-2}$
- If $3^x = 243$, then find the value of x .

9. Simplify : $\frac{5^{-3} \times 6^{-5} \times 81 \times 4}{3^{-7} \times 10^{-3}}$
10. What is the multiplicative inverse of $(64)^{-2/3} \times \left(\frac{1}{4}\right)^{-3}$
11. Find the value of $a^2 b^3$ if $a = 5, b = -2$
12. Find the value of x if : $(-3)^{3x+1} \times (-3)^4 = (-3)^8$
13. Distance of moon from Earth is 384, 467, 000 m. Write it in scientific notation.
14. Express 4.21678×10^7 in usual form.
15. Express the height of bundle of 500 papers placed on each other if thickness of one paper is 0.0016 cm.

Chapter—13

Direct and Inverse Proportion

1. Which of the following are in Direct or Inverse proportion:

(a)

x	4	5	6
y	10	12	14

(b)

x	4	5	6
y	12	10	8

- (c) Distance travelled and petrol consumed by a car.
(d) Area of a piece of land and price of land.
(e) Speed of a car and time takes to cover a fixed distance.

2. Find the value of x and y if $x : y = 2 : 3$ and $2 : x = 1 : 2$

3. A car is moving at a uniform speed of 45 km/h.

- (a) How far will it travel in 5 hours?
(b) Find the distance covered in 40 minutes.

4. In a students hostel with 32 students, a fixed quantity of food lasts for 45 days. If 16 more students join in, then the food will last for how many days?

5. A gardener can plant 30 plants in 2 hours How many more gardeners he should appoint so that they can plant 150 plants along the street in 2 hours?

6. If $2 : 3 = x : 51$ find x .

7. If x and y are in inverse proportion. Find the value of a , b and c in the table —

x	25	15	b	10
y	3	a	4	c

8. If $A : B = 2 : 3$ and $B : C = 4 : 5$ then. Find $A : C$

9. Four children C_1 , C_2 , C_3 and C_4 got 500 sq.m. of land each from their ancestor's property. After some time each distributed his property equally among their children as given in the table.

<i>Children</i>	C_1	C_2	C_3	C_4
<i>Share each child got</i>	500 m ²	250 m ²	125 m ²	100 m ²

- (a) Find how many children each had.
(b) What do you conclude from this?
10. If 628 persons can complete the work in 84 days then in how many days 1256 persons will complete the same work?

Chapter—14

Factorisation

1. Write all possible factors of the following:
(i) $8x^2$ (ii) $17xy^2$ (iii) $33y^2z$
(iv) $15pq$ (v) $-6ab$
2. Write common factors of the following.
(i) $14x^2, 35xy, 42xy^2$ (ii) $4p, -16pq^2, 20p^2q$
(iii) $-15a^2, -45a^3, -75a^4$ (iv) $2a^2b^3, 8a^3b^2, 12a^2b^2$
3. Find the HCF of the terms in each of the following algebraic expressions.
(i) $5a^2 + 15a^3 - 20a$ (ii) $2xy^2 + 4yx^2 + 6xy$
(iii) $3pq - 5p - 2p^2q$ (iv) $-12ab^2 - 15a^2b - 18a^2b^2$
4. Factorize the following expressions:
(i) $4x - 12x^2$ (ii) $6x(x-2y) + 5y(x-2y)$
(iii) $(x+2y)^2 - 4x - 8y$ (iv) $15xy + 10y - 6x - 4$
(v) $ax^2 + by^2 + bx^2 + ay^2$ (vi) $ab - a - b + 1$
5. Factorize the following using identities:
(i) $9a^2 - 25b^2$ (ii) $48p^2 - 27q^2$
(iii) $36x^2 + 60xy + 25y^2$ (iv) $(2a-b)^2 - 9c^2$
(v) $x^2 + 4y^2 - 4xy - 9z^2$ (vi) $xy^5 - yx^5$
6. Factorize the following by using $(x+a)(x+b) = x^2 + (a+b)x + ab$
(i) $x^2 + 14x + 45$ (ii) $x^2 - 22x + 120$
(iii) $y^2 + 5y - 36$ (iv) $a^2 + 3a - 88$
(v) $x^2 - 4x - 21$
7. Divide as directed:
(i) $18a^2b^3$ by $6ab^2$ (ii) $72a^3b^4$ by $(-8a^2b^2)$
(iii) $(-4a^3 + 12a^2 - 16a)$ by $4a$ (iv) $(x^2 - 5x + 6)$ by $(x - 3)$
(v) $(ax^2 - ay^2)$ by $(ax + ay)$ (vi) $(y^2 + 8y + 12)$ by $(y + 6)$
8. State whether true or false (also give reason):
(i) $\frac{2x-5}{2x} = -5$ (ii) $3(y-2) = 3y-2$
(iii) $4x + 3y = 7xy$ (iv) $(3x)^2 + 4(3x) + 5 = 3x^2 + 12x + 5$
(v) $a(5a+2) = 5a^2 + 2a$

Chapter—15

Introduction to Graphs

- Fill up the blanks:
 - The point where X-axis and Y-axis meet is called.....
 - Who is considered to be father of cartesian system.....
 - The X-coordinate of the point A (3, 7) is.....
 - Perpendicular distance of the point (2, 3) from X-axis is.....
 - The Y-coordinate of the point B (4, 1) is.....
 - Perpendicular distance of the point (5, 2) from Y-axis is.....
- From the given graph, locate the position of points A, B, C, D and E.

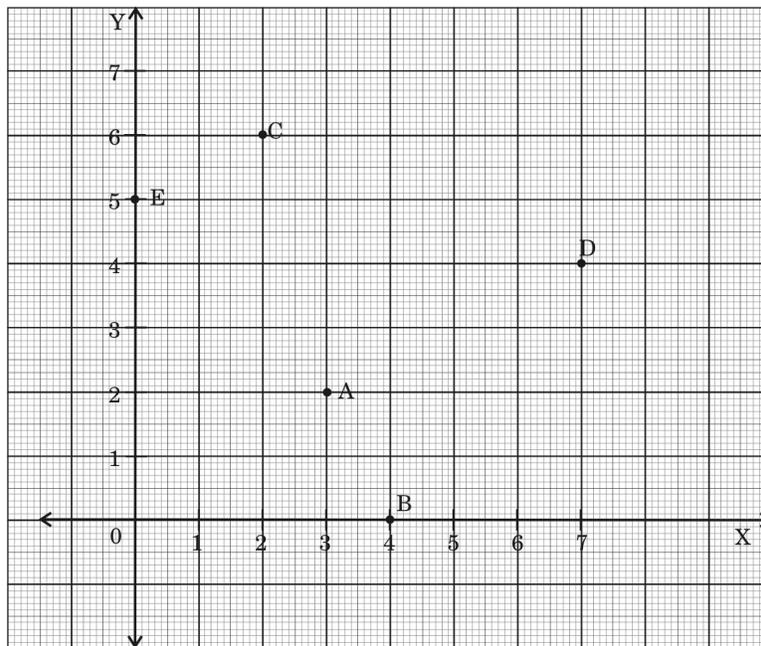


Fig. 1

- Plot the following points on the graph sheet:
A (2, 1), B (4, 5), C (0, 2.5), D (6, 2), E (3, 0)
- Plot the following points on the graph sheet. Join the points and name the geometrical figures so formed:
A (3, 2), B (7, 2), C (9, 5), D (3, 5), E (1, 5) F (1, 8)

5. Due to eating outside Ashu was admitted in a hospital with typhoid fever. His temperature was recorded at different times of the day as given below. Draw the temperature time graph to represent the data:

Time (in hrs.)	6 : 00	8 : 00	10 : 00	12 : 00	14 : 00	16 : 00	18 : 00
Temp. (in °F)	102	100	99	103	100	102	99

6. The runs scored by two teams A and B in first 10 overs are given below:

Overs	I	II	III	IV	V	VI	VII	VIII	IX	X
Team A	2	1	8	9	4	5	6	10	6	2
Team B	5	6	2	10	5	6	3	4	8	10

Draw the graph depicting the data on same axis.

7. For an experiment in science, Vikram and Rohit grew one plant each under similar lab conditions. Their heights were measured at the end of each week for 5 weeks. the result is shown by the following graph:

- Write height of plant A and plant B after (a) 2 weeks (b) 5 weeks.
- Write difference of height of the two plants after 5 weeks.
- During which week plant A grew most?
- During which week plant B grew least?

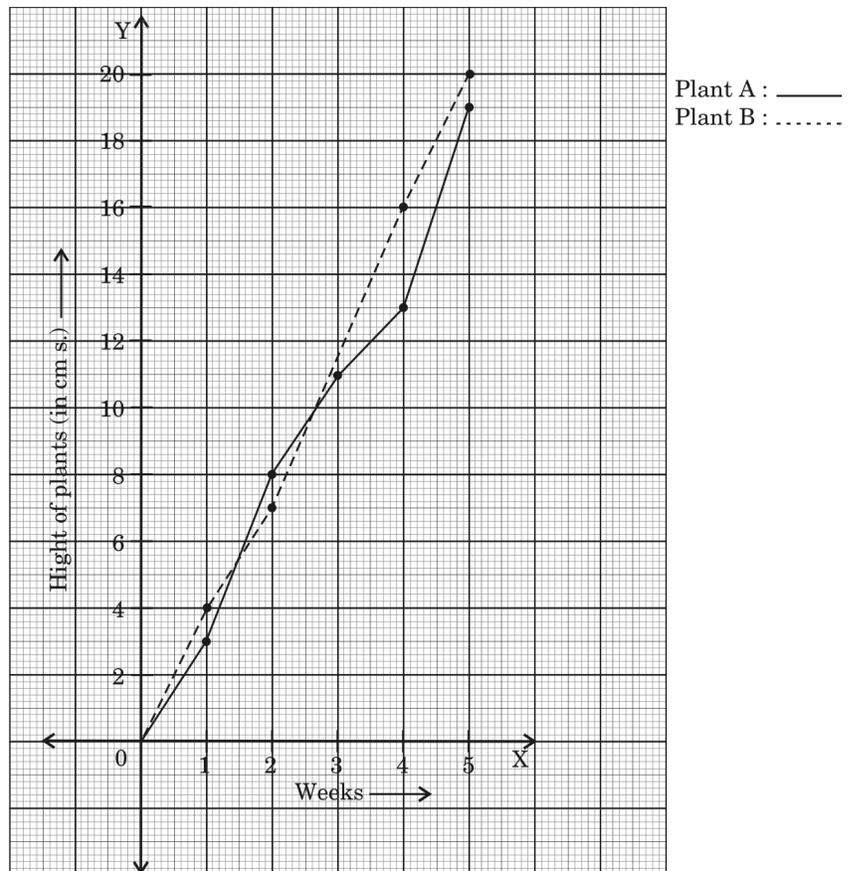


Fig. 2

8. The quantity of petrol filled in a car and the cost of petrol are given in the following table:

Petrol (litres)	10	15	20	25
Cost (Rs.)	500	750	1000	1250

Draw the graph of above data. Find the cost of 12 l of petrol using graph. How much petrol can be purchased for Rs. 800?

Chapter—16

Playing with Numbers

1. If $35a6$ is divisible by 3, where 'a' is a digit, what are the possible values of 'a'?
2. If $67y19$ is a multiple of 9, where 'y' is a digit what are the possible values of 'y'?
3. If $15x2$ is a multiple of 4, where 'x' is a digit, what are the possible values of 'x'?
4. If $67x19$ is divisible by 11, where 'x' is a digit, what are the possible values of 'x'?
5. Find the values of letters in each of the following:

$$\begin{array}{r} \text{(i)} \quad \text{B} \ 9 \\ + 4 \ \text{A} \\ \hline \text{6} \ \text{5} \end{array}$$

$$\begin{array}{r} \text{(ii)} \quad \text{A} \ \text{B} \\ + 3 \ 7 \\ \hline \text{6} \ \text{A} \end{array}$$

$$\begin{array}{r} \text{(iii)} \quad 1 \ 2 \ \text{A} \\ + 6 \ \text{A} \ \text{B} \\ \hline \text{A} \ 0 \ 9 \end{array}$$

$$\begin{array}{r} \text{(iv)} \quad \text{B} \ \text{A} \\ \times \ \text{B} \ 3 \\ \hline \text{5} \ 7 \ \text{A} \end{array}$$

$$\begin{array}{r} \text{(v)} \quad \text{A} \\ \times \ 5 \\ \hline \text{B} \ \text{A} \end{array}$$

$$\begin{array}{r} \text{(vi)} \quad \text{A} \ \text{B} \\ \times \ \text{B} \\ \hline \text{9} \ \text{B} \end{array}$$

6. State true or false:
 - (i) If a number is divisible by 3 then it is also divisible by 9.
 - (ii) If a number is divisible by 8 then it is also divisible by 4.
 - (iii) If a number is divisible by 12 then it is divisible by both 3 and 4.
 - (iv) If sum of two consecutive odd numbers is always divisible by 4.
 - (v) If two numbers are co-prime at least one of them must be a prime number.
7. Fill up the blanks:
 - (i) A two digit number ab can be written in standard form as.....
 - (ii) Largest 3-digit number which is divisible by 6 is.....
 - (iii) If we addto 194562 then it is divisible by 5 and 10 both.
 - (iv) If we subtract.....from 53214 then the number so obtained is divisible by 8.
 - (v) Smallest 4-digit number which is divisible by 7 is

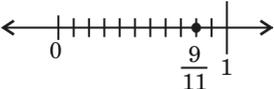
Answers

Chapter—1

1. $\frac{160}{0}$

2. (i) $\frac{7}{16}$ (ii) $\frac{33}{100}$ (iii) $\frac{-8}{15}$ (iv) $\frac{70}{36}$ or $\frac{35}{18}$

3. (i) $\frac{7}{11}$ (ii) $\frac{33}{25}$

4. (i) $A = \frac{5}{7}$ (ii) $B = -1\frac{2}{5}$ or $-\frac{7}{5}$ (iii) 

5. (i) (b) $\frac{9}{40}$

(ii) $\frac{-27}{35}, \frac{-26}{35}, \frac{-25}{35}, \frac{-24}{35}, \frac{-23}{35}, \frac{-22}{35}, \frac{-21}{35}, \frac{-20}{35}, \frac{-19}{35}, \frac{-18}{35}$

(iii) $\frac{1}{4}$

6. $\frac{-51}{40}$

7. 90 metres

8. $\frac{35}{20}$ or $\frac{7}{4}$ or $1\frac{3}{4}$

9. $\frac{-19}{17}$ or $-1\frac{2}{17}$

10. $\frac{-8}{3}$

11. $\frac{164}{40}$ or $\frac{41}{10}$

12. $x = \frac{268}{91}$

13. $x = 24$

14. ₹ 66,000

15. $\frac{1}{4}, \frac{5}{8}, \frac{13}{16}$

Chapter—2

1. $x = 37$ 2. $x = 11$ 3. ₹ 4800 4. $40^\circ, 60^\circ, 80^\circ$
5. $x = \frac{38}{3}$ 6. 64 yrs 7. 20 8. 15 cm, 4 cm
9. 54 10. 1 11. 40, 41, 42, 43 12. $y = 10$ cm

Chapter—3

1. 1260° 2. 360° 3. 36° 4. $x = 10$
5. 27 m, 9 m 6. $x = 2$
7. (i) ABCD is not a parallelogram In a Parallelogram opposite sides are equal here $AD \neq BC$
(ii) ABCD is not a perallelogram. In a parallelogram oppsite angles are equal.
here $\angle A = 80^\circ, \angle C = 55^\circ, \angle A \neq \angle C$
8. $x = 70^\circ$ 9. $AC = 26$ cm 10. $6\sqrt{2}$ cm

Chapter—4

1. 2 2. 5cm
8. (i) False
(ii) True
(iii) False
(iv) False
(v) True

Chapter—5

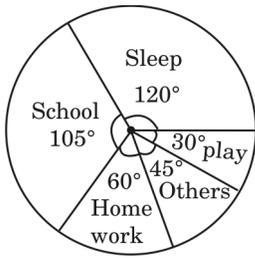
1. Frequency. 2. 200 3. 10 4. Continuous grouped data
5. 0 6. HH, HT, TH, TT
7. $\frac{1}{2}$ 8. $\frac{1}{2}$ 9. 0 10. $\frac{2}{5}$

11.

Outcome	Frequency
1	5
2	4
3	3
4	3
5	2
6	3

12. (a) 60 — 65
(b) 13
13. 20

14.



15.

Class Interval (Marks)	Frequency (Number of students)
0 — 5	2
5 — 10	6
10 — 15	5
15 — 20	9
20 — 25	3
25 — 30	5

Chapter—6

1. (i) 1 (ii) 30^2 or 900 (iii) 20^2 or 400 (iv) 301
(v) 5^2 or 25 (vi) $x = 4$
2. 121, 144
3. $144 + 145$
4. (10, 24, 26)
5. 3
6. (i) 103 (ii) 5.8 (iii) 0.67 (iv) $\frac{17}{19}$ (v) $1\frac{1}{3}$
7. (i) 110 (ii) 0.15
8. 1024
9. 144
10. $x = 12$
11. 520 m
12. 32
13. 336 m^2
14. 25
15. (i) True
(ii) False
(iii) False
(iv) False

Chapter—7

1. 3375
2. No
3. $x = 9$
4. 3
5. 4913
6. 90
7. (i) 9 (ii) 12 (iii) 14 (iv) 40 (v) 1.1
8. 70
9. 2
10. $x = 0.2$
11. 21 m
12. $a = 11$
13. $\frac{11}{12}$
14. $\frac{x}{y} = \frac{8}{27}$
15. 2, 4, 6

Chapter—8

1. (i) 36% (ii) 240%
2. $\frac{3}{20}$
3. (i) $\frac{1}{40}$, 1 : 40 (ii) $\frac{1}{400}$, 1 : 400 (iii) $\frac{5}{4}$, 5 : 4
4. 300
5. $y = 9600, z = 40000$
6. Decrease % = 1%
7. 12.5%
8. 20
9. (i) (D) 180 (ii) (C) 600 (iii) (D) 2.5% (iv) (A) $18\frac{3}{4}\%$ (v) (C) ₹ 750
10. (i) False (ii) False (iii) True (iv) False
11. (i) ₹ 90 (ii) 8 (iii) 120 (iv) 180 (v) 150
12. 28%

13. ₹ 1000
 14. 25%
 15. ₹ 40.5

Chapter—9

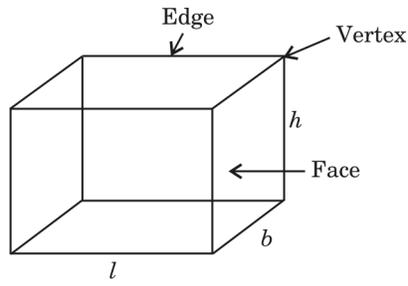
1. Trinomial (ii) Monomial (iii) Monomial
 2. $9x^2 - 3x + 13$
 3. $\frac{-1}{3}y^3 + y^2 + y + 3$

First Monomial → Second Monomial ↓	$11x$	$-10qp$	$4a^2b^2$	$2x^2y^2$	$-3mn^2$
$5x$	$55x^2$	$-50pqx$	$20a^2b^2x$	$10x^3y^2$	$-15mn^2x$
$7pq$	$77pqx$	$-70p^2q^2$	$28a^2b^2pq$	$14pqx^2y^2$	$-21mn^2pq$
$6a^2b^2$	$66a^2b^2x$	$-60a^2b^2pq$	$24a^4b^4$	$12a^2b^2x^2y^2$	$-18a^2b^2mn^2$
$-9x^2y^2$	$-99x^3y^2$	$-90x^2y^2pq$	$-36a^2b^2x^2y^2$	$-18x^4y^4$	$27mn^2x^2y^2$
$8m^2n$	$88m^2nx$	$-80pqm^2n$	$32a^2b^2m^2n$	$-16m^2nx^2y^2$	$-24m^3n^3$

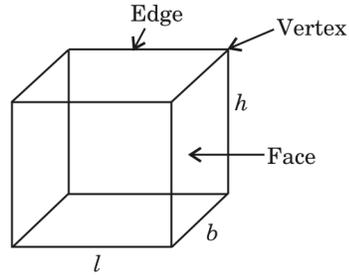
5. (i) 7 (ii) -23 (iii) 143 (iv) 100 (v) $A^8 - B^8$
 6. (i) False (ii) False (iii) True
 7. 250
 8. 45
 9. (i) $x + y = 12$; $x - y = 2$
 (ii) $x^2 + \frac{1}{x^2} = 14$; $x^4 + \frac{1}{x^4} = 194$
 10. (i) (C) 5 (ii) (A) $2m^2 - 5m + 6$
 (iii) (C) $49a^2 - 112ab + 64b^2$
 (iv) (C) -6
 (v) (B) $-7z^3 + 16z^2 + 7z + 37$
 11. (i) $24x - 8y + 25z$ (ii) $-14x + 30y - 55z$
 (iii) $10x + 4y - 17z$ (iv) $18y - 13z$
 12. $(3a + b + c)$ units
 13. (i) 8649 (ii) 100 (iii) 10137
 14. (i) $4x^2y^2$ (ii) $50x^2 + 242$
 15. Volume lbh
 (i) $240x^2y^2z^2$ (ii) x^9 (iii) $108l^2m^2n^2$

Chapter—10

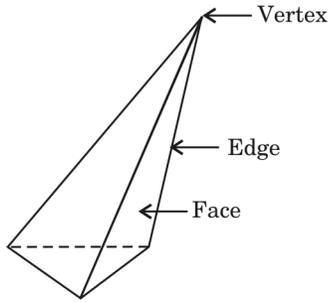
1. (i)



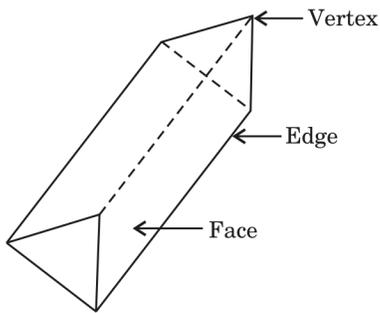
(ii)



(iii)



(iv)



2. 4, Tetrahedron

3. (i) 8, 12, 6

(ii) Vertex

(iii) Prism

(iv) Tetrahedron

(v) Cube

4.	Name of solid	No. of Faces (F)	No. of Verties (V)	No. of Edges (E)
	Cuboid	6	8	12
	Triangular prism	5	6	9
	Triangular Pyramid	4 triangular faces	4	6
	Square pyramid	5 $\left\{ \begin{array}{l} 1 \text{ square face} \\ 4 \text{ triangular faces} \end{array} \right.$	5	8
	Rectangular pyramid	5 $\left\{ \begin{array}{l} 1 \text{ rectangular face} \\ 4 \text{ Triangular faces} \end{array} \right.$	5	8

5. Sphere, Cone, Cylinder

6. $V_1 = 8$

$V_2 = 5$

$E_1 = 8$

7. (iv) and (v)

8. (i) Square pyramid

(ii) Triangular prism

(iii) Triangular prism

9. Figure (i) Represent a dice

10. (i) \leftrightarrow (d) (ii) \leftrightarrow (a) (iii) \leftrightarrow (b) (iv) \leftrightarrow (c)

11. (i) (A) Cuboid (ii) (D) 4 (iii) (B) Triangular Prism

(iv) (B) Cuboid (v) (A) 6

12. No, because $F + V \neq E + 2$

Chapter—11

1. (a) False. (b) True (c) True (d) False (e) True.

2. 154 cm^2

3. (a) 42 cm^2 (b) 171 cm^2 (c) 69 cm^2 (d) 84 cm^2

4. 20 cm

5. ₹ 5500

6. 38400 cm^2

7. (a) $1 : 27$ (b) $1 : 9$

8. 840 m .

9. (a) 5324 cm^3 (b) 1232 cm^3

(c) 38808 cm^3 (d) $\frac{12100}{7} \text{ cm}^2$ (or $1728\frac{4}{7}$) cm^2

(e) 704 cm^2 (f) 5544 cm^2

10. 176 cm^2 .

11. 56 cm.
12. 3 : 5.
13. 21 m.
14. 90 cm.
15. 176 m. or 17600 cm.

Chapter—12

1. (a) 81 (b) 26
(c) 2^5 or 32 (d) 11^2 or 121
(e) $= 7^4$
2. $1 \times 10^3 + 7 \times 10^2 + 2 \times 10^1 + 3 \times 1 + 5 \times 10^{-1} + 6 \times 10^{-2}$
3. 2^7
4. (a) $\frac{1}{3}$ (b) 9
(c) 1 (d) 65
5. 3
6. (a) False (b) False (c) True (d) True
7. 1
8. $x = 5$
9. 3^6 or 729
10. 4
11. -200
12. $x = 1$
13. 3.84467×10^8
14. 42167800
15. 0.8 cm.

Chapter—13

1. (a) Direct (b) Inverse (c) Direct (d) Direct (e) Inverse.
2. $x = 4, y = 6$
3. (a) 225 km. (b) 30 km.
4. 30 days.
5. 4 more gardeners
6. $x = 34$
7. $a = 5, b = \frac{75}{4}, c = 7.5$

8. $A : C = 8 : 15$
9. (a) C_1 – one child, C_2 – two children, C_3 – 4 children, C_4 – 5 children
 (b) If a person have more children, each will get less piece of land.
10. 42 days

Chapter—14

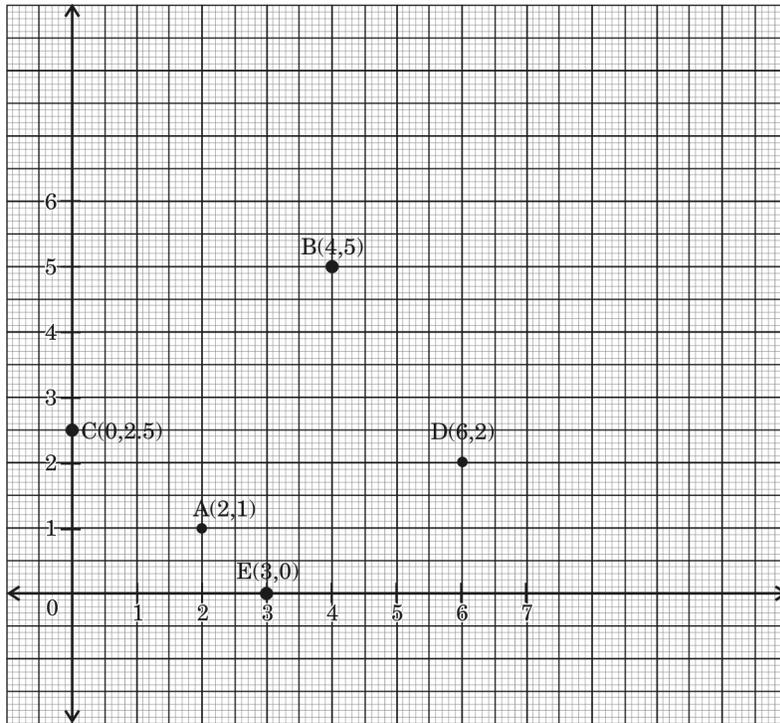
1. (i) $8x^2 = 1, 2, 4, 8, x, 2x, 4x, 8x, x^2, 2x^2, 4x^2, 8x^2$
 (ii) $17xy^2 = 1, 17, x, 17x, y, 17y, xy, y^2, 17y^2, xy^2, 17xy^2, 17xy$
 (iii) $33y^2z = 1, 3, 11, 33, y, 3y, 11y, 33y, y^2, 3y^2, 11y^2, 33y^2, z, 3z, 11z, 33z, yz, 3yz, 11yz, 33yz, y^2z, 3y^2z, 11y^2z, 33y^2z$
 (iv) $15pq = 1, 3, 5, 15, p, 3p, 5p, 15p, q, 3q, 5q, 15q, pq, 3pq, 5pq, 15pq$
 (v) $-6ab = \pm 1, \pm 2, \pm 3, \pm 6, \pm a, \pm 2a, \pm 3a, \pm 6a, \pm b, \pm 2b, \pm 3b, \pm 6b, \pm ab, \pm 2ab, \pm 3ab, \pm 6ab$.
2. Common factors are
 (i) 1, 7, x, 7x
 (ii) 1, 4, p, 4p
 (iii) $-1, -5, -a, -5a, -a^2, -5a^2$
 (iv) 1, 2, a, 2a, $a^2, 2a^2, b, 2b, b^2, 2b^2, ab, 2ab, a^2b, 2a^2b, ab^2, 2ab^2, a^2b^2, 2a^2b^2$
3. (i) $HCF = 5a$ (ii) $HCF = 2xy$ (iii) $HCF = P$
 (iv) $HCF = -3ab$
4. (i) $4x(1-3x)$
 (ii) $(x-2y)(6x+5y)$
 (iii) $(x+2y)(x+2y-4)$
 (iv) $(3x+2)(5y-2)$
 (v) $(a+b)(x^2+y^2)$
 (vi) $(a-1)(b-1)$
5. (i) $(3a-5b)(3a+5b)$
 (ii) $3(4p-3q)(4p+3q)$
 (iii) $(6x+5y)^2$
 (iv) $(2a-b-3c)(2a-b+3c)$
 (v) $(x-2y-3z)(x-2y+3z)$
 (vi) $xy(x-y)(x+y)(x^2+y^2)$
6. (i) $(x+5)(x+9)$ (ii) $(x-10)(x-12)$
 (iii) $(y+9)(y-5)$ (iv) $(a-8)(a+11)$
 (v) $(x-7)(x+3)$

7. (i) $3ab$
 (ii) $-9ab^2$
 (iii) $(-a^2 + 3a - 4)$ or $-(a^2 - 3a + 4)$
 (iv) $(x - 2)$
 (v) $(x - y)$
 (vi) $(y + 2)$

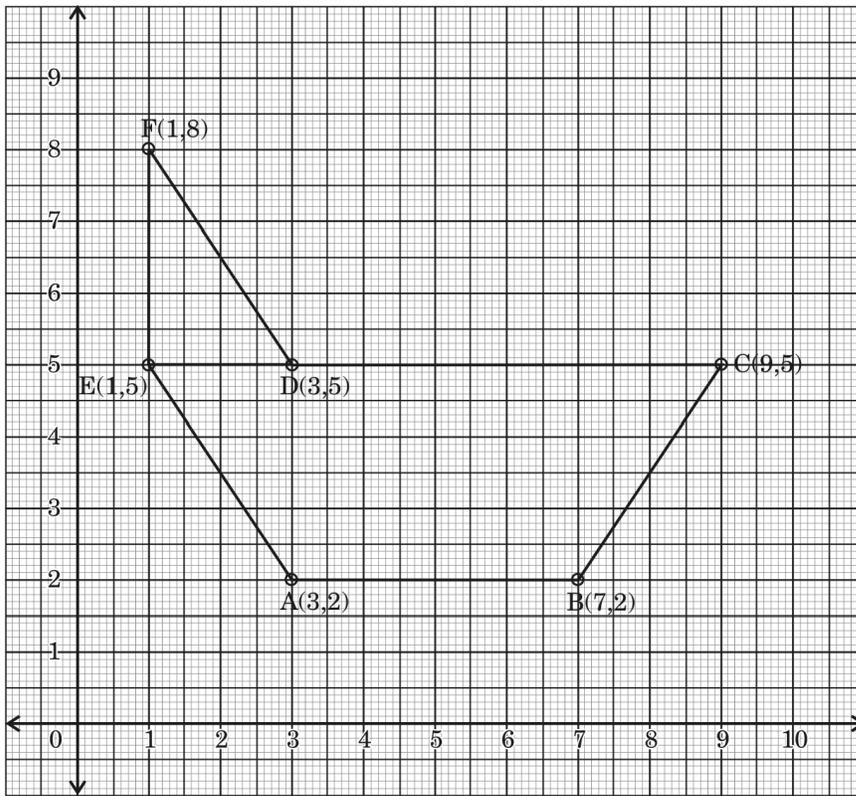
8. (i) False $\because \frac{2x-5}{2x} = \frac{2x}{2x} - \frac{5}{2x} = 1 - \frac{5}{2x} \neq -5$
 (ii) False $\because 3(y-2) = 3y - 3 \times 2 = 3y - 6 \neq 3y - 2$
 (iii) False $\because 4x$ and $3y$ are not like terms so we can not add them
 (iv) False $\because (3x)^2 = 3^2 \times x^2 = 9x^2$
 (v) True $\because a(5a + 2) = 5a \times a + 2 \times a = 5a^2 + 2a = \text{R.H.S.}$

Chapter—15

1. (i) Origin (ii) Rene Descartes
 (iii) 3 (iv) 3 units
 (v) 1 (vi) 5units.
2. A (3, 2), B (4, 0), C (2, 6), D (7, 4), E (0, 5)
- 3.

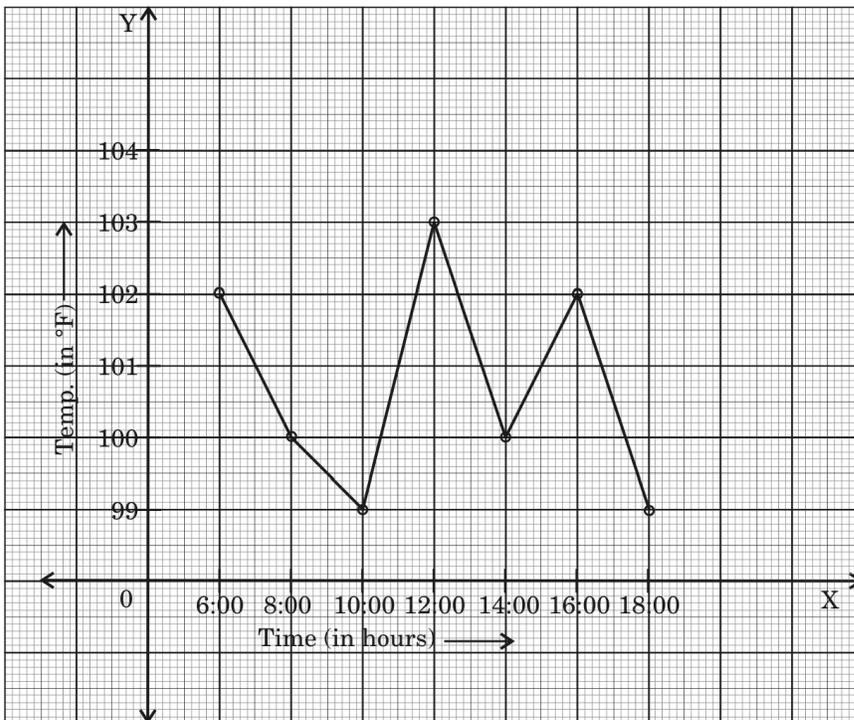


4.

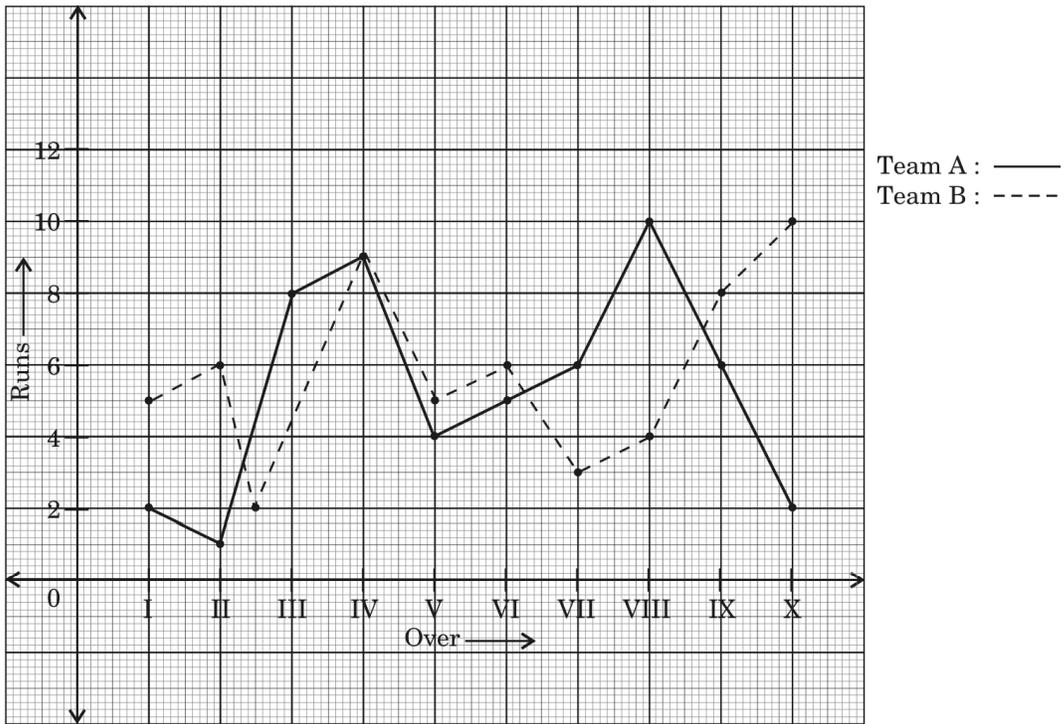


Trapezium ABCE and Right angled triangle DEF together forming a boat.

5.

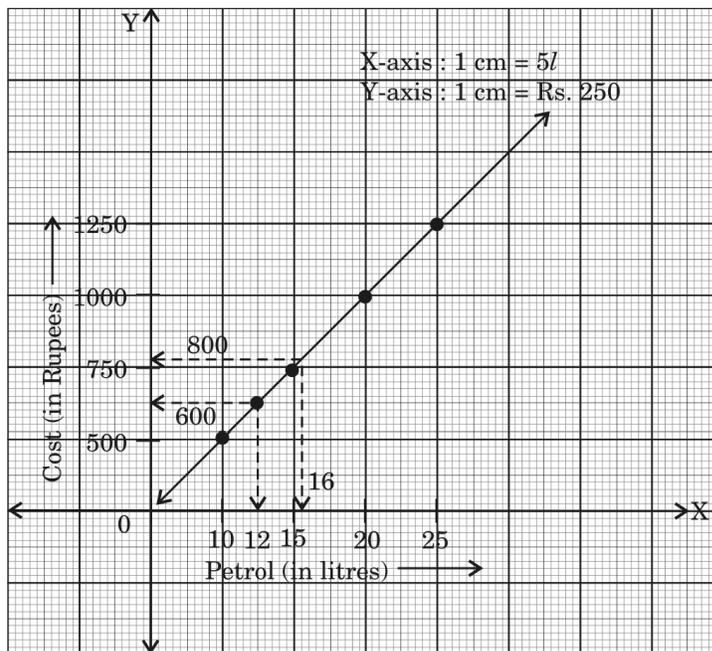


6.



7. (i) (a) Plant A = 8 cm Plant B = 7 cm
 (b) Plant A = 19 cm Plant B = 20 cm
 (ii) Difference in height = $20 - 19 = 1$ cm
 (iii) Plant A grew most during 5th week.
 (iv) Plant B grew least during 2nd week.

8. (i) Rs. 800
 (ii) 16 l



Chapter—16

1. $a = 1, 4, 7$
2. $y = 4$
3. $x = 1, 3, 5, 7, 9$
4. $x = 7$
5. (i) $A = 6, B = 1$ (ii) $A = 2, B = 5$
(iii) $A = 8, B = 1$ (iv) $A = 5, B = 2$
(v) $A = 5, B = 2$ (vi) $A = 1, B = 6$
6. (i) False
(ii) True
(iii) True
(iv) True
(v) False
7. (i) $a \times 10 + b \times 1$ or $(10a + 6)$
(ii) 996
(iii) 8
(iv) 6
(v) 1001