

Class – 8

Practice set 1

1. Show the following numbers on a number line. Draw a separate number line for each example.

(i) $\frac{3}{2}, \frac{5}{2}, -\frac{3}{2}$ (ii) $\frac{7}{5}, \frac{-2}{5}, \frac{-4}{5}$ (iii) $\frac{-5}{8}, \frac{11}{8}$ (iv) $\frac{13}{10}, \frac{-17}{10}$

Practice Set 2

1. Compare the following numbers.

(1) -7, -2 (2) $0, \frac{-9}{5}$ (3) $\frac{8}{7}, 0$ (4) $\frac{-5}{4}, \frac{1}{4}$ (5) $\frac{40}{29}, \frac{141}{29}$ (6) $-\frac{17}{20}, \frac{-13}{20}$ (7) $\frac{17}{12}, \frac{7}{16}$

Practice Set 3

1. Write the following rational numbers in decimal form.

(1) $\frac{9}{37}$ (2) $\frac{18}{42}$ (3) $\frac{9}{14}$ (4) $\frac{-103}{5}$ (5) $-\frac{11}{13}$

Practice Set 4

1. The number $\sqrt{2}$ is shown on a number line. Steps are given to show $\sqrt{3}$ on the number line using $\sqrt{2}$. Fill in the boxes properly and complete the activity.

Practice Set 5

1. Draw a line l. Take a point A outside the line. Through point A draw a line parallel to line l.
2. Draw a line l. Take a point T outside the line. Through point T draw a line parallel to line l.
3. Draw a line m. Draw a line n which is parallel to line m at a distance of 4 cm from it.

Practice Set 6

1. Express the following numbers in index form.

- (1) Fifth root of 13 (2) Sixth root of 9
(3) Square root of 256 (4) Cube root of 17
(5) Eighth root of 100 (6) Seventh root of 30

Practice Set 7

2. Write the following numbers in the form of rational indices.

- (1) Square root of 5th power of 121.
(2) Cube of 4th root of 324
(3) 5th root of square of 264
(4) Cube of cube root of 3

3. Find the cube roots of the following numbers. 3

- (1) 8000 (2) 729 (3) 343 (4) -512 (5) -2744 (6) 32768

Practice Set 8

1. Expand.

- (1) $(a+2)(a-1)$
(2) $(m-4)(m+6)$
(3) $(p+8)(p-3)$
(4) $(13+x)(13-x)$
(5) $(3x+4y)(3x+5y)$

(6) $(9x - 5t)(9x + 3t)$

Practice Set 9

1. Expand.

(1) $(k + 4)^3$ (2) $(7x + 8y)^3$ (3) $(7 + m)^3$ (4) $(52)^3$ (5) $(101)^3$

2. Simplify.

(1) $(2a + b)^3 - (2a - b)^3$
(2) $(3r - 2k)^3 + (3r + 2k)^3$
(3) $(4a - 3)^3 - (4a + 3)^3$
(4) $(5x - 7y)^3 + (5x + 7y)^3$

Practice Set 10

1. Expand.

(1) $(2p + q + 5)^2$ (2) $(m + 2n + 3r)^2$ (3) $(3x + 4y - 5p)^2$ (4) $(7m - 3n - 4k)^2$

2. Simplify.

(1) $(x - 2y + 3)^2 + (x + 2y - 3)^2$
(2) $(3k - 4r - 2m)^2 - (3k + 4r - 2m)^2$
(3) $(7a - 6b + 5c)^2 + (7a + 6b - 5c)^2$

Practice Set – 11

1. Factorise.

(1) $x^2 + 9x + 18$
(2) $x^2 - 10x + 9$
(3) $y^2 + 24y + 144$
(4) $5y^2 + 5y - 10$
(5) $p^2 - 2p - 35$
(6) $p^2 - 7p - 44$
(7) $m^2 - 23m + 120$
(8) $m^2 - 25m + 100$
(9) $3x^2 + 14x + 15$
(10) $2x^2 + x - 45$
(11) $20x^2 - 26x + 8$
(12) $44x^2 - x - 3$

Practice Set – 12

1. Factorise.

(1) $x^3 + 64y^3$ (2) $125p^3 + q^3$ (3) $125k^3 + 27m^3$ (4) $2l^3 + 432m^3$ (5) $24a^3 + 81b^3$

Practice Set – 13

1. Factorise :

(1) $y^3 - 27$ (2) $x^3 - 64y^3$ (3) $27m^3 - 216n^3$ (4) $125y^3 - 1$ (6) $343a^3 - 512b^3$ (7) $64x^3 - 729y^3$

2. Simplify :

(1) $(x + y)^3 - (x - y)^3$
(2) $(3a + 5b)^3 - (3a - 5b)^3$
(3) $(a + b)^3 - a^3 - b^3$
(4) $p^3 - (p + 1)^3$
(5) $(3xy - 2ab)^3 - (3xy + 2ab)^3$

Practice Set – 14

1. Write the following statements using the symbol of variation.

- (1) Circumference (c) of a circle is directly proportional to its radius (r).
 (2) Consumption of petrol (l) in a car and distance travelled by that car (d) are in direct variation.

2. Complete the following table considering that the cost of apples and their number are in direct variation

Number of apples (x)	1	4	...	12	...
Cost of apples (y)	8	32	56	...	160

3. If $m \propto n$ and when $m = 154$, $n = 7$. Find the value of m , when $n = 14$

4. If n varies directly as m, complete the following table.

M	3	5	6.5	...	1.25
N	8	32	56	...	160

5. y varies directly as square root of x. When $x = 16$, $y = 24$. Find the constant of variation and equation of variation.

Practice Set – 15

1. The information about numbers of workers and number of days to complete a work is given in the following table. Complete the table.

Number of workers	30	20		10	
Days	6	9	12		36

2. Find constant of variation and write equation of variation for every example given below.

(1) $p \propto \frac{1}{q}$; if $p = 15$ then $q = 4$

(2) $z \propto \frac{1}{w}$; when $z = 2.5$ then $w = 24$

(3) $s \propto \frac{1}{2t}$ - if $s = 4$ then $t = 5$

3. The boxes are to be filled with apples in a heap. If 24 apples are put in a box then 27 boxes are needed. If 36 apples are filled in a box how many boxes will be needed ?

4. Write the following statements using symbol of variation . (1) The wavelength of sound (l) and its frequency (f) are in inverse variation. (2) The intensity (I) of light varies inversely with the square of the distance (d) of a screen from the lamp.

5. x varies inversely as y, when $x = 15$ then $y = 10$, if $x = 20$ then $y = ?$

Practice Set – 16

1. Which of the following statements are of inverse variation ?](1) Number of workers on a job and time taken by them to complete the job.

(2) Number of pipes of same size to fill a tank and the time taken by them to fill the tank.

(3) Petrol filled in the tank of a vehical and its cost

(4) Area of circle and its radius.

2. If 15 workers can build a wall in 48 hours, how many workers will be required to do the same work in 30 hours ?

3. 120 bags of half litre milk can be filled by a machine within 3 minutes find the time to fill such 1800 bags ?

Practice Set – 17

1. Draw a rectangle ABCD such that $l(AB) = 6.0$ cm and $l(BC) = 4.5$ cm.

2. Draw a square WXYZ with side 5.2 cm.

3. Draw a rhombus KLMN such that its side is 4 cm and $m'K = 75^\circ$.

4. If diagonal of a rectangle is 26 cm and one side is 24 cm, find the other side.

5. Lengths of diagonals of a rhombus ABCD are 16 cm and 12 cm. Find the side and perimeter of the rhombus.

6. Find the length of diagonal of a square with side 8 cm

7. Measure of one angle of a rhombus is 50° , find the measures of remaining three angles.

Practice Set – 18

1. Measures of opposite angles of a parallelogram are $(3x-2)^\circ$ and $(50 - x)^\circ$. Find the measure of its each angle.

2. Construct a parallelogram ABCD such that $l(BC) = 7$ cm, $m'ABC = 40^\circ$, $l(AB) = 3$ cm.

3. Ratio of consecutive angles of a quadrilateral is 1:2:3:4. Find the measure of its each angle. Write, with reason, what type of a quadrilateral it is.

Practice Set – 19

1. If marked price = Rs. 1700, selling price = Rs. 1540 then find the discount.
2. If marked price = ` 990 and percentage of discount is 10, then find the selling price.
3. If selling price = ` 900. Discount is 20 %, then find the marked price.
4. The marked price of the fan is 3000 rupees. Shopkeeper gave 12% discount on it. Find the total discount and selling price of the fan.
5. The marked price of a mixer is 2300 rupees. A customer purchased it for Rs.1955. Find percentage of discount offered to the customer.
6. A shopkeeper gives 11% discount on a television set, hence the cost price of it is Rs. 22,250. Then find the marked price of the television set.
7. A shopkeeper decides to sell a certain item at a certain price. He tags the price on the item by increasing the decided price by 25%. While selling the item, he offers 20% discount. Find how many more or less percent he gets on the decided price.

Practice Set – 20

1. Rafique sold flowers worth ` 15,000 by giving 4% commission to the agent. Find the commission he paid. Find the amount received by Rafique.
2. A farmer sold foodgrains for 9200 rupees through an agent. The rate of commission was 2%. How much amount did the agent get?
3. Umatai purchased following items from a Khadi - Bhandar.
(i) 3 sarees for 560 rupees each.
(ii) 6 bottles of honey for 90 rupees each. On the purchase, she received a rebate of 12%. How much total amount did Umatai pay ?

Practice Set – 21

1. Divide. Write the quotient and the remainder.

- (1) $21m^2 \div 7m$ (2) $40a^3 \div (-10a)$ (3) $(-48p^4) \div (-9p^2)$ (4) $40m^5 \div 30m^3$ (5) $(5x^3 - 3x^2) \div x^2$
(6) $(8p^3 - 4p^2) \div 2p^2$ (7) $(2y^3 + 4y^2 + 3) \div 2y^2$ (8) $(21x^4 - 14x^2 + 7x) \div 7x^3$
(9) $(6x^5 - 4x^4 + 8x^3 + 2x^2) \div 2x^2$ (10) $(25m^4 - 15m^3 + 10m + 8) \div 5m^3$

Practice Set – 22

1. Divide and write the quotient and the remainder.

- (1) $(y^2 + 10y + 24) \div (y + 4)$
(2) $(p^2 + 7p - 5) \div (p + 3)$
(3) $(3x + 2x^2 + 4x^3) \div (x - 4)$
(4) $(2m^3 + m^2 + m + 9) \div (2m - 1)$
(5) $(3x - 3x^2 - 12 + x^4 + x^3) \div (2 + x^2)$
(6) $(a^4 - a^3 + a^2 - a + 1) \div (a^3 - 2)$
(7) $(4x^4 - 5x^3 - 7x + 1) \div (4x - 1)$

Practice Set – 23

1. The number of boys and girls, in std 5 to std 8 in a Z.P. school is given in the table. Draw a subdivided bar graph to show the data.

(Scale : On Y axis, 1cm= 10 students)

Standard	5th	6th	7th	8th
Boys	34	26	21	25
Girls	17	14	14	20

2. In the following table number of trees planted in the year 2016 and 2017 in four towns is given. Show the data with the help of subdivided bar graph.

Town	Karjat	Wadgoan	Shivapur	Khandala
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year				
2016	150	250	200	100
2017	200	300	250	150

Practice Set – 24

1. Show the following information by a percentage bar graph.

Division of standard 8	A	B	C	D
Number of students securing grade A	45	33	10	15
Total number of students	60	55	40	75

2. The following data is collected in a survey of some students of 10th standard from some schools. Draw the percentage bar graph of the data.

School	1 ST	2 ND	3 rd	4 th
Inclination towards science stream	90	60	25	16
Inclination towards commerce stream	60	20	25	24

Practice Set – 25

1. Each equation is followed by the values of the variable. Decide whether these values are the solutions of that equation.

(1) $x - 4 = 3$, $x = -1, 7, -7$ (2) $9m = 81$, $m = 3, 9, -3$ (3) $2a + 4 = 0$, $a = 2, -2, 1$ (4) $3 - y = 4$, $y = -1, 1, 2$

2. Solve the following equations.

(1) $17p - 2 = 49$ (2) $2m + 7 = 9$ (3) $3x + 12 = 2x - 4$ (4) $5(x - 3) = 3(x + 2)$ (5) $3(y + 8) = 10(y - 4) + 8$

Practice Set – 26

- Mother is 25 year older than her son. Find son's age if after 8 years ratio of son's age to mother's age will be $\frac{4}{9}$.
- The denominator of a fraction is greater than its numerator by 12. If the numerator is decreased by 2 and the denominator is increased by 7, the new fraction is equivalent with $\frac{1}{2}$. Find the fraction.
- The ratio of weights of copper and zinc in brass is 13:7. Find the weight of zinc in a brass utensil weighing 700 gm.
- Find three consecutive whole numbers whose sum is more than 45 but less than 54.
- In a two digit number, digit at the ten's place is twice the digit at unit's place. If the number obtained by interchanging the digits is added to the original number, the sum is 66. Find the number.
- Some tickets of Rs. 200 and some of Rs. 100, of a drama in a theatre were sold. The number of tickets of Rs. 200 sold was 20 more than the number of tickets of Rs. 100. The total amount received by the theatre by sale of tickets was Rs. 37000. Find the number of Rs. 100 tickets sold.
- Of the three consecutive natural numbers, five times the smallest number is 9 more than four times the greatest number, find the numbers.
- Raju sold a bicycle to Amit at 8% profit. Amit repaired it spending Rs. 54. Then he sold the bicycle to Nikhil for Rs. 1134 with no loss and no profit. Find the cost price of the bicycle for which Raju purchased it.
- A Cricket player scored 180 runs in the first match and 257 runs in the second match. Find the number of runs he should score in the third match so that the average of runs in the three matches be 230.
- Sudhir's present age is 5 more than three times the age of Viru. Anil's age is half the age of Sudhir. If the ratio of the sum of Sudhir's and Viru's age to three times Anil's age is 5:6, then find Viru's age.

Practice Set – 27

- Sameerrao has taken a loan of ₹12500 at a rate of 12 p.c.p.a. for 3 years. If the interest is compounded annually then how many rupees should he pay to clear his loan?

2. To start a business Shalaka has taken a loan of `8000 at a rate of $10\frac{1}{2}$ p.c.p.a. After two years how much compound interest will she have to pay ?

Practice Set – 28

1. On the construction work of a flyover bridge there were 320 workers initially. The number of workers were increased by 25% every year. Find the number of workers after 2 years.
2. A shepherd has 200 sheep with him. Find the number of sheep with him after 3 years if the increase in number of sheep is 8% every year.
3. In a forest there are 40,000 trees. Find the expected number of trees after 3 years if the objective is to increase the number at the rate 5% per year.
4. The cost price of a machine is 2,50,000. If the rate of depreciation is 10% per year find the depreciation in price of the machine after two years.
5. Find the compound interest if the amount of a certain principal after two years is Rs. 4036.80 at the rate of 16 p.c.p.a.
6. A loan of Rs.15000 was taken on compound interest. If the rate of compound interest is 12 p.c.p.a. find the amount to settle the loan after 3 years.
7. A principal amounts to Rs.13924 in 2 years by compound interest at 18 p.c.p.a. Find the principal.
8. The population of a suburb is 16000. Find the rate of increase in the population if the population after two years is 17640.
9. In how many years Rs. 700 will amount to Rs. 847 at a compound interest rate of 10 p.c.p.a.
10. Find the difference between simple interest and compound interest on Rs. 20000 at 8 p.c.p.a.

Practice Set – 29

1. If base of a parallelogram is 18 cm and its height is 11 cm, find its area.
2. If area of a parallelogram is 29.6 sq cm and its base is 8 cm, find its height.
3. Area of a parallelogram is 83.2 sq cm. If its height is 6.4 cm, find the length of its base.

Practice Set – 30

1. Lengths of the diagonals of a rhombus are 15cm and 24 cm, find its area.
2. Lengths of the diagonals of a rhombus are 16.5 cm and 14.2 cm, find its area.
3. If perimeter of a rhombus is 100 cm and length of one diagonal is 48 cm, what is the area of the quadrilateral?
4. If length of a diagonal of a rhombus is 30 cm and its area is 240 sq cm, find its perimeter.

Practice Set – 31

1. Find the volume of a box if its length, breadth and height are 20 cm, 10.5 cm and 8 cm respectively.
2. A cuboid shape soap bar has volume 150 cc. Find its thickness if its length is 10 cm and breadth is 5 cm.
3. How many bricks of length 25 cm, breadth 15 cm and height 10 cm are required to build a wall of length 6 m, height 2.5 m and breadth 0.5 m?
4. For rain water harvesting a tank of length 10 m, breadth 6 m and depth 3m is built. What is the capacity of the tank ? How many litre of water can it hold?

Practice Set – 32

1. In each example given below, radius of base of a cylinder and its height are given. Then find the curved surface area and total surface area.
(1) $r = 7$ cm, $h = 10$ cm (2) $r = 1.4$ cm, $h = 2.1$ cm (3) $r = 2.5$ cm, $h = 7$ cm (4) $r = 70$ cm, $h = 1.4$ cm (5) $r = 4.2$ cm, $h = 14$ cm
2. Find the total surface area of a closed cylindrical drum if its diameter is 50 cm and height is 45 cm. ($\pi = 3.14$)
3. Find the area of base and radius of a cylinder if its curved surface area is 660 sqcm and height is 21 cm
4. Find the area of the sheet required to make a cylindrical container which is open at one side and whose diameter is 28 cm and height is 20 cm. Find the approximate area of the sheet required to make a lid of height 2 cm for this container.

Practice Set - 33

1. Find the volume of the cylinder if height (h) and radius of the base (r) are as given below.

(1) $r = 10.5$ cm, $h = 8$ cm

(2) $r = 2.5$ m, $h = 7$ m

(3) $r = 4.2$ cm, $h = 5$ cm

(4) $r = 5.6$ cm, $h = 5$ cm

2. How much iron is needed to make a rod of length 90 cm and diameter 1.4 cm?

3. How much water will a tank hold if the interior diameter of the tank is 1.6 m and its depth is 0.7 m ?

4. Find the volume of the cylinder if the circumference of the cylinder is 132 cm and height is 25 cm.

Practice Set – 34

1. Questions and their alternative answers are given. Choose the correct alternative answer.

(1) Find the circumference of a circle whose area is 1386 cm^2 .

(A) 132 cm^2 (B) 132 cm (C) 42 cm (D) 21 cm^2

(2) The side of a cube is 4 m. If it is doubled, how many times will be the volume of the new cube, as compared with the original cube ?

(A) Two times (B) Three times (C) Four times (D) Eight times

2. Pranalee was practising for a 100 m running race. She ran 100 m distance 20 times. The time required, in seconds, for each attempt was as follows.

18, 17, 17, 16, 15, 16, 15, 14, 16, 15, 15, 17, 15, 16, 15, 17, 16, 15, 14, 15 Find the mean of the times taken for running.

3. The length of a chord of a circle of 16.8 cm, radius is 9.1 cm. Find its distance from the centre.

4. Solve the following equations.

(1) $17(x+4) + 8(x+6) = 11(x+5) + 15(x+3)$

(2) $5(1-2x) = 9(1-x)$

5. The shape of a farm is a quadrilateral. Measurements taken of the farm, by naming its corners as P, Q, R, S in order are as follows. $l(PQ) = 170$ m, $l(QR) = 250$ m, $l(RS) = 100$ m, $l(PS) = 240$ m, $l(PR) = 260$ m. Find the area of the field in hectare (1 hectare = $10,000 \text{ sq.m}$)

6. Divide the polynomial $(6x^3 + 11x^2 - 10x - 7)$ by the binomial $(2x + 1)$. Write the quotient and the remainder.