Question Bank:
Rational Numbers:

1. Write the multiplicative inverse of $\frac{-12}{7}$.
2. $\frac{3}{4} + \_\_\_\_\_ = 0$
3. Subtract $-\frac{32}{13}$ from $-\frac{6}{5}$
4. Find the reciprocal of -2.
5. Write the rational number that is equal to its negative
6. Write the additive inverse of $\frac{1}{3}$.
7. Name the property under multiplication used in $\frac{-1}{5} \times 5 = 5 \times \frac{-1}{5}$
8. Evaluate:
   a. $\frac{3}{7} + \left(-\frac{6}{11}\right) + \left(-\frac{8}{21}\right) + \frac{5}{22}$
   b. $-2\frac{1}{20} \div \frac{41}{5}$
   c. $-\frac{2}{5} \times \left(-\frac{3}{7}\right) - \frac{1}{6} \times \frac{3}{2} + \frac{1}{4} \times \left(-\frac{2}{5}\right)$
   d. $\frac{2}{3}\left[\frac{5}{6} + \frac{3}{5}\right] + \frac{9}{2}$
   e. $\left[3\frac{4}{2} \times \frac{3}{5}\right] \times \frac{1}{7} - 2\frac{1}{4} \times \frac{3}{5}$
   f. $\left[13\frac{1}{2} - 7\frac{2}{3}\right]\frac{2}{7}$
   g. $\frac{7}{11} \times \left[\frac{6}{5} \times \frac{7}{9}\right] = \left[\frac{7}{11} \times \frac{6}{5}\right] \times \frac{7}{9}$
   h. $2\frac{1}{3} \times \left[\frac{3}{2} - \frac{2}{3}\right] = 2\frac{1}{3}\left[\frac{3}{2}\right] - \left[\frac{2}{3}\right] \times 2\frac{1}{3}$
9. Find any ten rational numbers between $-\frac{5}{6}$ and $\frac{5}{8}$.
10. Verify: $\left(\frac{5}{9} \div \frac{1}{3}\right) \div \frac{5}{2} = \frac{5}{9} \div \left(\frac{1}{3} \div \frac{5}{2}\right)$
11. Multiply $\frac{7}{3}$ by the reciprocal of $-\frac{14}{21}$.

12. The product of two rational numbers is $-\frac{28}{81}$. If one of the number is $\frac{14}{27}$, find the other.
13. Show the following on the number line;
    a. $\frac{3}{7}$
    b. $-\frac{7}{12}$
    c. $1\frac{2}{5}$
    d. $-\frac{6}{5},-\frac{1}{5},\frac{4}{5},\frac{8}{5}$
    e. $-\frac{5}{9},-\frac{7}{9},\frac{1}{9},\frac{11}{9}$

Linear Equations In One variables:

1. Find the value of the following equations:
    a. $3x+10=1$
    b. $8x+7=71$
    c. $\frac{7}{8}-2x=-\frac{2}{16}$
    d. $8x-\frac{4}{7}=4$
    e. $8t+4=3(t-1)+7$
    f. $6.3-1.5x=0.8-x$
    g. $3(5x-4)=4(3-3x)$
    h. $x\frac{1}{4}+2=2$
    i. $5x+15=\frac{7x-12}{2}$
    j. $\frac{3y+2}{3}=\frac{6y-5}{2}$
    k. $\frac{y+6}{4}-\frac{y-3}{5}=\frac{5y-4}{8}$
    l. $\frac{x+2}{3}-\frac{x-3}{4}=5-\frac{x-1}{2}$
    m. $\frac{3}{2x}+\frac{5}{3x}=38$
    n. $\frac{x}{2}+\frac{x}{3}+\frac{x}{4}=13$

o. $2\frac{1}{4}-\left(-3\frac{7}{8}+5\right)\left(\frac{4}{9}-3\right)$

2. Complete the following table find a, b and c.

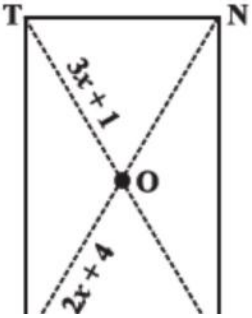
n	$6n+10$
a	22
b	40
30	c

3. Two number are in the ratio $5:8$. If the sum of the number is 182, find the numbers.
4. Two angles of a triangle are in the ratio 4:5. If the sum of these angles is equal to the third angle, find the angles of the triangle.
5. The sum of 3 consecutive odd natural numbers is 153. Find the numbers.
6. Divide 900 into two parts such that 60% of one part is equal to 30% of other.
7. Out of two complementary angles one is $15°$ more than the other. Find the angles.
8. The sum of the ages of Anup and his father is 100. When Anup is as old as his father now, he will be five times as old as his son Anuj is now. Anuj will be eight years older than Anup is now, when Anup is as old as his father. What are their present ages now?
9. Arjun is twice as old as Shreya. Five years ago his age was three times Shriya's age. Find their present ages.
10. The perimeter of a rectangle is 13 cm and its width is $2\frac{3}{4}$ cm. Find its length.
11. The difference between two whole numbers is 66. The ratio of the two numbers is 2:5. What are the two numbers?
12. The present age of Sahil's mother is three times the present age of Sahil. After 5 years their ages will add to 66 years. Find their present ages.
13. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.
14. Amina thinks of a number and subtract $\frac{5}{2}$ from it. She multiplies the result by 8. The result now obtained is 3 times the same number she thought of. What is the number?
15. A positive number is 5 times another number. If 21 is added to both the numbers, then one of the new numbers becomes twice the other new number. What are the numbers?
16. The sum of three consecutive multiples of 11 is 363. Find these multiples
17. Three consecutive integers add up to 51. What are these integers?
18. Manu's father is 26 years younger than Manu's grandfather and 29 years older than Manu. The sum of the ages of all the three is 135 years. What is the age of each of them?
19. The sum of two numbers is 216. If one of the numbers is three times the other, then find the numbers.
20. If Murthy's salary is Rs.$18,000$ more than his friend Kirthy and the sum of their salaries is Rs.$43,000$, find the salaries of both.
21. Angles of a triangle are $(p)°, (p+4)°$ and $(2p+3)°$. Find each angle of the triangle.

22. The numerator and denominator of a fraction are in the ratio $5:7$. If 7 is added to both numerator and denominator the ratio becomes $3:4$. Find the fraction.
23. The length of a rectangle exceeds its breadth by 9 cm. If the length and breadth are each increased by 3cm, the area of the new rectangle will be 284 cm more than that of the given rectangle. Find the length and breadth of the given rectangle.

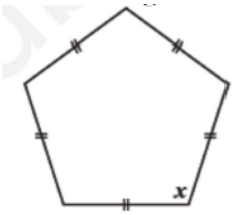
Understanding Quadrilaterals:

1. RENT is a rectangle. Its diagonals meet at O. Find *x*, if OR = 2*x* + 4 and OT = 3*x* + 1.

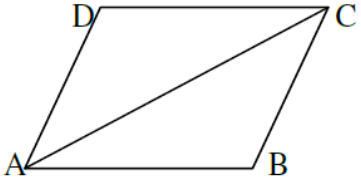


2. Find the values of the unknowns *x*, *y*, *z*.

3. State the name of a regular polygon of 5 sides.
4. Find the number of sides of a regular polygon whose each exterior angle has a measure of 45°.
5. Find the angle measure *x* in the following figure.



6. Find the measure of each exterior angle of a regular polygon of 15 sides.
7. Two adjacent angles of a parallelogram have equal measure. Find the measure of each of the angles of the parallelogram. Name parallelogram so formed.
8. How many sides does a regular polygon have if the measure of an exterior angle is24°?
9. Diagonals of a regular polygon is 12. Find the number of sides and the exterior angle.
10. The sum of two opposite angles of a parallelogram in $130°$. Find the measure of each of its angels.
11. The angles of a quadrilateral are in the ratio $3:4:6:7$, find the four angles
12. In the given figure $ABCD$ is a rhombus.
    a. Is AB = AD? Why?
    b. Is BC = DC? Why?
    c. Is $\Delta ABC = \Delta ADC$? Why?
    d. Is $\angle BAC = \angle DAC$? Why?

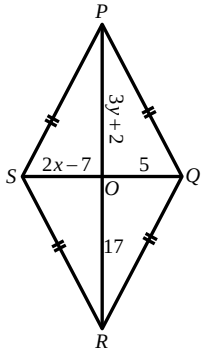


13. Two angles of a hexagon are $120°$ and $160°$. If the remaining angles are equal find each angle.
14. Find the number of diagonals, if the exterior angle of a regular polygon is $72°$.
15. Give reasons for the following:
    a. A square is a parallelogram
    b. A parallelogram is a trapezium

c. A rhombus is a kite

16. $ABCD$ is a parallelogram, what kind of quadrilateral is it if
   a. $AC = BD$ and AC is perpendicular to BD.
   b. AC is perpendicular to BD but is not equal to it.
   c. $AC = BD$ but AC is not perpendicular BD.

17. In the adjacent figure, find x and y.



Data Handling and Probability:

1. Construct a frequency distribution table for the following data:

(i)

11	2	25	10	11	5	7	11
4	16	9	21	5	1	13	26
30	3	18	24	11	27	18	14
13	4	12	10	6	27	22	28
2	1	29	22	0	7	2	16

(ii)

3	0	14	29	15	6	25	23
5	1	3	26	21	6	22	20
2	6	24	4	24	9	6	12
18	8	13	23	26	25	2	21
1	24	6	14	23	30	16	16
30	19	16	3	2	25	13	6
14	6	25	12	30	7	29	4
23	24	23	25	16	10	20	6
23	24	3	17	30	19	26	28
18	12	26	9	5	19	20	16

2. Construct a frequency distribution table for the following data:

2	14	20	16	3	11	5	1	13	11
6	6	19	2	20	14	13	13	15	13
18	15	19	1	14	1	13	4	12	5

Hence construct a histogram for the data.

3. Construct a frequency distribution table for the following data:

16	12	9	10	18	3	16	17	12	7
17	17	8	13	5	16	6	14	16	18
15	14	16	8	5	13	16	7	6	18

Construct a pi-chart for the following.

4. Construct a frequency distribution table for the following data.

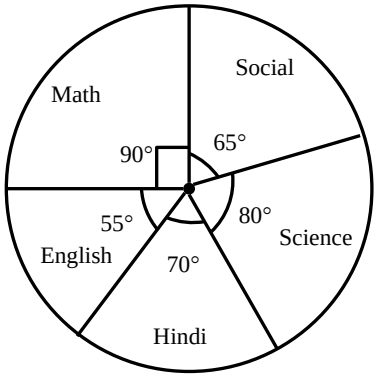
3,	4,	1,	14,	1,	15,	6,	4,	3,	1,
14,	14,	19,	20,	19,	3,	13,	13,	16,	11,
20,	11,	12,	3,	14,	17,	6,	15,	6,	17,
11,	2,	8,	14,	18,	3,	15,	6,	17,	2.

   Hence present the data in form of histogram

5. Draw a pie chart showing the following information. The table shows the colours proffered by a group of people.

Colours	Blue	Green	Red	Yellow	Others
No. of peoples	15	12	9	6	3

6. Numbers 1 to 10 are written on ten separate slips (one number on one slip), kept in a box and mixed well. One slip is chosen from the box without looking into it. What is the probability of getting
   a. Multiple of 6?
   b. Greater than 5?
   c. Prime number?
   d. Even number?
7. A bag contains 7 blue card, 4 orange card and 3 red card. A card is drawn from the bag without looking into the bag. What is the probability if getting
   a. A red card?
   b. A non-blue card?
8. What is the probability that a number selected from the numbers 1 to 15 is multiple of 4?
9. The adjoining pie chart gives the marks scored in an examination by a student in Hindi, English, Mathematics, Social Science and Science. If the total marks obtained by the students were 540, answer the following questions.



   a. How many more marks were obtained by the student in Mathematics than in English?
   b. In which subject did the students score 105 marks?
10. The data given below is the mode of transport used by 720 students are given below.

Mode of Transport	School bus	Cycle	Car	Scooter
Number of students	240	180	200	100

    Present the above data in the form of pie chart.
11. Two coins are tossed together. Write all the possible outcomes and hence find the probability of getting least two tales

Cubes and Cube Roots

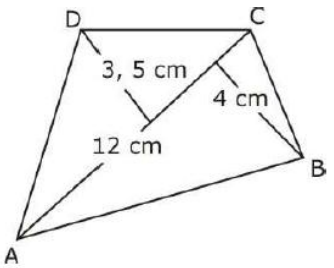
1. Find the cube of 75.
2. Find the prime factorisation of 175616 as well as shortcut.
3. Find the ones digit of cube root of 2197.
4. Find the cube root of 3375.
5. Is 53240 a perfect cube? If not, then by which smallest natural number should 53240 be divided so that the quotient is a perfect cube?
6. Is 68600 a perfect cube? If not, find the smallest number by which 68600 must be multiplied to get a perfect cube.
7. Find the smallest number by which 54 must be multiplied so that the product is a perfect cube.
8. Find the side of the cubical box whose volume is 474.552 dm^3.
9. Divide 5673375 by the smallest number so that the product is perfect cube. Also find out the cube root of the resulting number.
10. The volume of a cube is 9261 cm3. Find the side of the cube.
11. Find the smallest number which when multiplied with 137592 will make the product a perfect cube. Further find the cube root of the product.
12. Find the smallest number by which 243 must be multiplied to obtain a perfect cube.

Visualising Solid Shapes

1. A pyramid with square base has 5 faces and 8 edges. By Euler's formula, find the vertices of the pyramid.
2. State and verify the Euler's Formula for a rectangular prism.
3. If any object has 20 faces ,12 vertices then find the value of Edges by using Euler's formula.
4. How many vertices are there in a pyramid with a square base?
5. By using Euler's formula find the unknown.
   a. Vertices = 12, Faces = 4, Edges =?
   b. Faces = 5, Edges = 8, Vertices =?
   c. Edges = 2, Vertices = 3, Faces =?
6. How many vertices are there in a triangular pyramid?

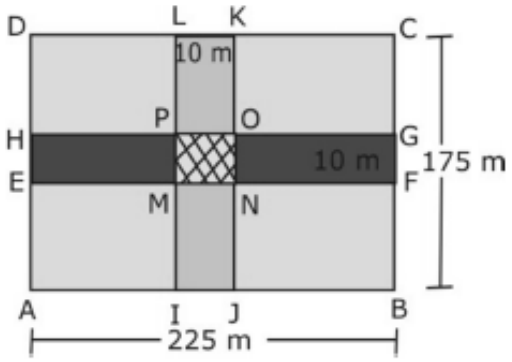
Mensuration:

1. The diagonal of a quadrilateral shaped field is 24 cm and perpendicular dropped on it from the remaining opposite vertices are 6 m and 12 m. Find the area of the field.
2. Find the area of the given quadrilateral.

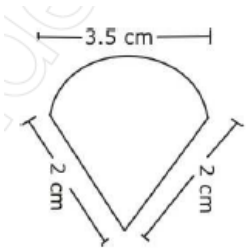


3. The parallel sides of a trapezium are 25 cm and 13 cm. Its non-parallel sides are equal, each being 10 cm. Find the area of the trapezium.
4. Find the altitude of a trapezium, the sum of the lengths of whose bases is 6.5 cm and whose area is 26 cm^2.

5. The perimeter of a trapezium is 52 cm. Its non-parallel sides are 10 cm each and the distance between two parallel sides is 8 cm. Find the area of the trapezium.
6. Square and a rectangle have the same perimeter; if the side of the square is 16m and the length of the rectangle is 18 m, find the breadth of the rectangle.
7. Find the area of the roads, if two roads are running in cross-section, through the middle of a ground.



8. Find the perimeter of the given figure.



9. The diagonals of a rhombus are 16 cm and 12 cm, find its area.
10. The parallel sides of a trapezium are in the ratio 2: 3 and the area of the trapezium is 125cm^2. The distance between the parallel lines is 10 cm. Find the length of the parallel sides of the trapezium.
11. If the area of a rhombus is $91cm^2$ and one of the diagonal is $10cm$ find the other diagonal.
12. Area of a trapezium if $34cm^2$ and the length of one of the parallel sides is $10m$ and its height is $4cm$. Find the length of other parallel side.
13. Area of the square field is $200m^2$. Find the length of one side.
14. The ratio on two sides of a parallelogram is $3:5$ and its perimeter is $96cm$. Find the sides of the parallelogram.
15. The angles of a quadrilateral are in the ration $2:4:5:7$, so what is the smallest angle?

Squares and Square Roots

1. Which of the following is a perfect square number?
   a. 2061 b. 23453
   c. 222222 d. 1057
2. Which of the following would end with digit 1?
   a. 1232 b. 1612
   c. 822 d. 772
3. The squares of which of the following would be odd numbers?
   a. 434 b. 2826
   c. 7779 d. 82004
4. Without adding, find the sum.
   1 + 3 + 5 + 7 + 9

a. 16 b. 9
c. 36 d. 25

5. Without doing any calculation, find the numbers which are surely perfect squares.
   a. 441 b. 257
   c. 408 d. 153
6. What will be the number of zeros in the square of 400?
   a. 4 b. 3
   c. 2 d. 1
7. How many natural numbers lie between 112 and 122?
   a. 11 b. 22
   c. 33 d. 44
8. Find the square of 42.
   a. 84 b. 1700
   c. 1764 d. none of these
9. Without adding, find the sum.
   1 + 3 + 5 + 7 + 9 + I1 + 13 + 15 + 17 +19
   a. 49 b. 64
   c. 81 d. 100
10. Find the square roots of 529.
    a. 23 b. 22
    c. 20 d. 19
11. What will be the number of zeros in the square of 30?
    a. 2 b. 4
    c. 3 d. 1
12. How many natural numbers lie between 1002 and 1012?
    a. 100 b. 200
    c. 300 d. 400

a. Find the square of 48.
   a. 96 b. 2200
   c. 2304 d. none of these

13. Without adding, find the sum.
    1 + 3 + 5 + 7 + 9 + I1 + 13 + 15 + 17
    a. 36 b. 49
    c. 64 d. 81
14. Find the square roots of 484.
    a. 22 b. 23
    c. 24 d. 25
15. The students of Class VIII of a school donated 3136 in all, for Prime Minister's National Relief Fund. Each student donated as many rupees as the number of students in the class. Find the number of students in the class.
16. Find the least number to be added to 6880 to get a perfect square number. Also find the square root of the perfect square obtained.
17. Find the perfect square numbers between 30 and 40.
18. Find the smallest number by which 9408 must be divided so that the quotient is a perfect square. Find the square root of the quotient.
19. Find the least number that must be subtracted from 5607 so as to get a perfect square. Also find the square root of the perfect square
20. Find the perfect square numbers between 60 and 70.
21. Find the smallest square number that is divisible by each of the numbers 4, 9 and 10.
22. Find the least number that must be added to 1300 so as to get a perfect square. Also find the square root of the perfect square.

23. Find the perfect square numbers between 80 and 90.
24. Find the smallest square number that is divisible by each of the numbers 8, 15 and 20.
25. A gardener has 1000 plants. He wants to plant these in such a way that the number of rows and the number of columns remain same. Find the minimum number of plants he needs more for this.
26. Find the square root by prime factorisation method:
    a. 1089
    b. 1764
    c. 3844
    d. 16384
    e. 15876
    f. 63504
    g. 129600
27. Find square root of the following numbers by division method:(Numbers are not perfects squares)
    a. 3417 Ans: 58.45
    b. 13452 Ans: 115.98
    c. 12.45 Ans: 3.52
    d. 654.78 Ans: 25.588
    e. 123.5 Ans: 11.1
    f. 7.5543 Ans: 2.74
    g. 8977751 Ans: 2996.28
    h. 32465431 Ans: 569.844
    i. 321.546 Ans: 17.931
    j. 12132.5461 Ans: 110.14