SECTION A

1. Multiplicative inverse of $\frac{-7}{3}$ is ----------

2. If $\frac{8x}{4}$ = 16, then the value of x is ----------

3. How many natural numbers lie between 8^2 and9^2?

4. The cube root of 216 is ----------

5. The product of 2x, 3y and 4z is ----------

6. The name of a regular polygon of 3 sides is ----------

SECTION B

7. Multiply $\frac{63}{4}$ by the reciprocal of$\frac{9}{16}$.

8. Solve 2x – 3 = x +2

9. How many sides does a regular polygon have if the measure of an exterior angle is 24°.

10. If you have a spinning wheel with 3 green sectors, one blue sector and one red sector. What is the probability of getting a green sector? What is the probability of getting a non blue sector?

11. Find a Pythagorean triplet in which one member is 12.

12. Is 256 a perfect cube? If not, find the smallest number by which it should be multiplied so as to get a perfect cube number?

13. Write any three rational numbers between -2 and 0?

14. The present age of Sahil's mother is 3 times the present age of Sahil. After 5 years their ages will add to 66 years .Find their present ages?

15. Name the quadrilaterals whose diagonals

i) are perpendicular bisectors of each other

ii) are equal.

SECTION C

16. Find 3 rational numbers between $\frac{2}{3}$ and $\frac{4}{5}$.

17. Multiply $\frac{6}{13}$ by the reciprocal of $\frac{-7}{6}$.

18. Two numbers are in the ratio 5:3.If they differ by 18, what are the numbers?

19. Solve $\frac{x+2}{2x+4} = \frac{4}{9}$

20. Two angles of a quadrilateral are 70°and 80°.The other two angles are equal. Find the other two angles?

21. Construct a quadrilateral ABCD, given that BC = 4.5 cm, AD = 5.5 cm, CD = 5 cm, the diagonal AC = 5.5 cm and the other diagonal BD = 7 cm.

22. Find the square root of 5776 by division method.

23. 2025 plants are to be planted in a garden in such a way that each row contains as many plants as the number of rows. Find the number of rows and the number of plants in each row?

24. Find the cube root of 13824 by Prime factorization method.

25. Aman's age is three times his son's age. Ten years ago he was five times his son's age. Find their present ages?

26. Solve 8x + 4 = 3(x – 1) + 7

27. Write

i) The rational number that does not have a reciprocal.

ii) The rational numbers that is equal to their reciprocals.

iii) The rational number that is equal to its negative.

SECTION D

28. Find using appropriate properties

$\frac{-2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$

29. The number of boys and girls in a class are in the ratio 7:5.The number of boys is 8 more than the number of girls. What is the total class strength?

30. 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.

31. Present ages of Anu and Raj are in the ratio 4:5.Eight years from now the ratio of their ages will be5:6.Find their present ages.

32The number of students in a hostel speaking different languages is given below. Display the data in a pie chart.

Languages	Hindi	English	Marathi	Tamil	Bengali	Total
Number of	40	12	9	7	4	72

students						

ANSWERS:

1. $\frac{-3}{7}$

2. $\frac{8X}{4}$ = 16

8x = 16 × 4 = 64

X = $\frac{64}{8}$ = 8.

3. The number of natural numbers lies between n^2 and $(n+1)^2$ is 2n.

2n = 2 x 8 = 16.

4. 6

5. 2x × 3y × 4z = 24 xyz.

6. Equilateral Triangle.

7. The reciprocal of $\frac{9}{16}$ is$\frac{16}{9}$.

Therefore, $\frac{63}{4} \times \frac{16}{9}$ = 28.

8. 2x – 3 = x + 2

2x – x = 2 +3

X = 5

9. Total measure of all exterior angle = 360°.

Here measure of each exterior angle = 24°.

Number of exterior angles = $\frac{360}{24}$ = 15.

The polygon has 15 sides.

10. Probability of getting a green sector = $\frac{3}{5}$

Probability of getting a non blue sector = $\frac{4}{5}$

11. 2m, m^2 - 1 and m^2 + 1 forms a Pythagorean triplet.

If we take 2m = 12, then m = 6

We get m^2 - 1 = 6^2 - 1 = 36 – 1 =35

m^2 + 1 = 6^2+ 1 = 36 + 1 = 37

Required triplet is 12, 35 and 37.

12.

2	256
2	128
2	64
2	32
2	16
2	8
2	4
2	2
	1

Here 256 can be written as 256 = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

256 can't be expressed as a group of 3.

So 256 is not a perfect cube.

The smallest number by which it should be multiplied so as to get a perfect cube number is 2.

13. We can express -2 as $\frac{-6}{3}$ and 0 as $\frac{0}{3}$.

Three rational numbers between -2 and 0 are $\frac{-5}{3}, \frac{-4}{3}, \frac{-3}{3}$.

14. Let present age of Sahil be x.

Then present age of Sahil's mother = 3x.

After 5 years, their ages will be x + 5 and 3x + 5 respectively.

Given x + 5 + 3x + 5 = 66

4x + 10 = 66

4x = 66 – 10 = 56

X = $\frac{56}{4}$ = 14

Therefore, Sahil's present age is 14 and his mother's age is 3 × 14 = 42.

15. i) Rhombus, Square

ii) Square, Rectangle

16. We need to find out 3 rational numbers between $\frac{2}{3}$ and $\frac{4}{5}$.

First we can write the equivalent rational numbers.

$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{10}{15} = \frac{12}{18} = \frac{14}{21} = \frac{16}{24} = \frac{18}{27} = \frac{20}{30}$……

$\frac{4}{5} = \frac{8}{10} = \frac{12}{15} = \frac{16}{20} = \frac{20}{25} = \frac{24}{30} = \frac{28}{35}$ ……..

So the 3 rational numbers between $\frac{20}{30}$ and $\frac{24}{30}$ are $\frac{21}{30}, \frac{22}{30}, \frac{23}{30}$.

17. The reciprocal of $\frac{-7}{16}$ are $\frac{-16}{7}$.

Then $\frac{6}{13} \times \frac{-16}{7} = \frac{96}{91}$.

18. Since the 2 numbers are in the ratio 5:3, let the numbers be 5x and 3x.

Given 5x – 3x = 18.

2x = 18

X = 9

Therefore, the numbers are 5x = 5 ×9 = 45 and 3x = 3 × 9 = 27.

19. $\frac{x+2}{2x+4} = \frac{4}{9}$

By Cross Multiplication, 9(x + 2) = 4 (2x + 4)

9x + 18 = 8x + 16

9x – 8x = 16 – 18

X = -2

20. The angle sum of a quadrilateral is 360°.

Given the two angles are 70° and 80°.

Therefore, the sum of other two angles = 360 – (70 + 80) = 360 – 150 = 210

Given the other two angles are equal, so each angle must be 105°.

21. Do the construction yourself.

22.

```
      76
    ------
7 | 5776
    49
  ------
146 | 876
      876
    ------
        0
```

Square root of 5776 is 76.

23. Here we need to find out the square root of 2025.

Here we can use division method to find the square root.

```
      45
    ------
4 | 2025
    16
  ------
85 | 425
     425
   ------
       0
```

So the number of rows and the number of plants in each row are equal and is equal to 45.

24. Cube root of 13824 by Prime Factorization.

```
2 | 13824
  ------
2 |  6912
  ------
2 |  3456
  ------
```

2	1728
2	864
2	432
2	216
2	108
2	54
3	27
3	9
3	3
	1

From these, we can write 13824 = $2\times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

Cube root of 13824 = $2 \times 2 \times 2 \times 3$ = 24.

25. Let Aman's son's age be x.

Then Aman's age = 3x.

Ten years ago, Aman's son's age be x – 10.

Ten years ago, Aman's age = 3x – 10

Given, 3x – 10 = 5(x – 10)

3x – 10 = 5x – 50

3x – 5x = -50 + 10

-2x = -40

X = 20 is the present age of Aman's son.

Then Aman's present age = 3x = 3 × 20 = 60 years.

26. 8x + 4 = 3(x-1) +7

8x + 4 = 3x – 3 + 7

8x + 4 = 3x + 4

8x – 3x = 4 – 4

5x = 0

X = 0

27. i) Zero

ii) 1 & -1

iii) Zero

28. $-\frac{2}{3} \times \frac{3}{5} + \frac{5}{2} - \frac{3}{5} \times \frac{1}{6}$

$= -\frac{3}{5}(\frac{2}{3} + \frac{1}{6}) + \frac{5}{2}$

$= -\frac{3}{5}(\frac{4}{6} + \frac{1}{6}) + \frac{5}{2}$

$= -\frac{3}{5} \times \frac{5}{6} + \frac{5}{2}$

$= -\frac{15}{30} + \frac{5}{2}$

$= -\frac{1}{2} + \frac{5}{2}$

$= \frac{4}{2} = 2$

29. Given the number of boys and girls in a class are in the ratio 7:5.

So we can take the number of boys as 7x and number of girls as 5x.

Also given, the number of boys is 8 more than the number of girls.

So 7x = 5x + 8

7x – 5x = 8

2x = 8

X = 4

Therfore, the number of boys = 7x = 7 × 4 =28.

The number of girls = 5x = 5 × 4 = 20.

30. Let us try to find $\sqrt{5607}$ by Long division method.

74

```
 7    5607
      49
 ------------
144    707
       576
 ------------
       131
```

We get the remainder as 131.It shows that 74^2 is less than 5607 by 131.This means if we subtract the remainder from the number, we get a perfect square.

Therefore, the required perfect square is 5607 – 131 = 5476

And $\sqrt{5476}$ = 74.

31. Let present ages of Anu and Raj is 4x years and 5x years respectively.

After 8 years,Anu's age = (4x + 8) years

After 8 years, Raj's age = (5x + 8) years

Therefore, the ratio of their ages after 8 years = $\frac{4x+8}{5x+8}$

This is given to be 5:6.

Therefore, $\frac{4x+8}{5x+8} = \frac{5}{6}$

By Cross Multiplication, we get (4x + 8) × 6 = (5x + 8) × 5

24x +48 = 25x + 40

24x – 25x = 40 – 48

-x = -8

X = 8

Therefore, the present ages of Anu and Raj is 4x = 4×8 = 32 years and 5x = 5× 8 = 40 years.

32.

Languages	Number of students	In fraction	Central Angle

Hindi	40	$\frac{40}{72}$	$\frac{40}{72} \times 360° = 200°$
English	12	$\frac{12}{72}$	$\frac{12}{72} \times 360° = 60°$
Marathi	9	$\frac{9}{72}$	$\frac{9}{72} \times 360° = 45°$
Tamil	7	$\frac{7}{72}$	$\frac{7}{72} \times 360° = 35°$
Bengali	4	$\frac{4}{72}$	$\frac{4}{72} \times 360° = 20°$

Using the above table, we can easily construct a pie diagram.

Construction you can do yourself.

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