

Class VIII Session 2025-26

Subject - Mathematics

Sample Question Paper - 10

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions:

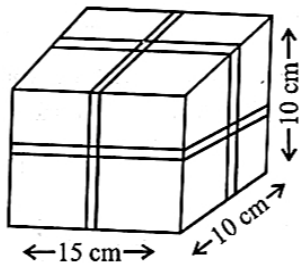
1. This Question Paper has 4 Sections A-D.
2. Section A has 20 MCQs carrying 1 mark each.
3. Section B has 6 questions carrying 02 marks each.
4. Section C has 8 questions carrying 03 marks each.
5. Section D has 6 questions carrying 04 marks each.
6. All Questions are compulsory.
7. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated

Section A

1. What is the surface area of the drawing box, if its length is 16 cm, width 6 cm, and height 3 cm? [1]
a) 25cm^2 b) 200cm^2
c) 162cm^2 d) 324cm^2
2. Samir purchased a pair of shoes and paid ₹441, including GST. If the sale price of shoes is ₹420, then the rate of GST is [1]
a) 8% b) 6%
c) 12% d) 5%
3. The perpendicular distance between the ends of a prism is called the _____ of the prim. [1]
a) line b) square
c) height d) base
4. The product of $\frac{2}{3}xy$ by $\frac{3}{2}xz$ is: [1]
a) $6x^2yz$ b) $\frac{1}{6}xyz$
c) x^2yz d) $3x^2yz$
5. Solve the equation: $2x - 3 = x + 2$ [1]
a) 3 b) 4
c) 0 d) 5
6. A die is tossed two times. The number of possible outcomes is: [1]
a) 30 b) 24



- c) 12 d) 36
7. Name the property under multiplication used in $\frac{-1}{3} \times (-3) = 1$. [1]
 a) Associative property b) Reciprocal
 c) Additive property d) Commutative property
8. The roots of $4x^2 - 20x + 25 = 0$ are [1]
 a) $\frac{7}{2}$ and $\frac{7}{2}$ b) $\frac{5}{2}$ and $\frac{5}{2}$
 c) $\frac{3}{2}$ and $\frac{3}{2}$ d) $\frac{5}{2}$ and $\frac{3}{2}$
9. The value of $(2x^2 + 4) \div 2$ is [1]
 a) $2x^2 + 4$ b) $x^2 + 4$
 c) $2x^2 + 2$ d) $x^2 + 2$
10. Which of the following will have 4 at the units place? [1]
 a) 27^2 b) 14^2
 c) 35^2 d) 62^2
11. Divide: $24xy^2z^3$ by $6yz^2$ [1]
 a) $4xy$ b) $4xyz$
 c) $4xz$ d) $4yz$
12. Find the ratio of Rs 6 to 50 paise. [1]
 a) It is 12:1 b) It is 1:30
 c) It is 30:1 d) It is 1:12
13. The number of Zeroes at the end of the cube of the number 20 is [1]
 a) 2 b) 1
 c) 3 d) 6
14. A box tied by a ribbon, as shown in the figure, is to be presented as a gift. After allowing an additional length of 10 cm. for the Knot, length of the ribbon required is- [1]



- a) 140 cm b) 150 cm
 c) 70 cm d) 80 cm
15. The hypotenuse of a right triangle with its legs of lengths $3x$ and $4x$ is [1]
 a) $25x$ b) $16x$
 c) $5x$ d) $7x$

16. The cubic root of $2\frac{43}{343}$ is: [1]
- a) $\frac{17}{7}$ b) $\frac{8}{7}$
c) $\frac{9}{7}$ d) $\frac{10}{7}$
17. Name the property under multiplication used in $\frac{-1}{3} \times (-3) = (-3) \times \frac{-1}{3} = 1$. [1]
- a) Reciprocal and commutative under multiplication b) Distributive property
c) Multiplicative identity d) Associative property
18. PQRS is a square. PR and SQ intersect at O. Then, $\angle POQ$ is a [1]
- a) Complete angle b) Reflex angle
c) Right angle d) Straight angle
19. The diagonals of a quadrilateral intersect at right angles and it has exactly one axis of symmetry. The quadrilateral is a: [1]
- a) kite b) Rectangle
c) rhombus d) square
20. Solve the following: $0.25(4x - 5) = 0.75x + 8$ [1]
- a) 39 b) -29
c) 37 d) -37

Section B

21. How many sides does a regular polygon have if each of its interior angles is 165° ? [2]
22. Find if 15625 is a perfect cube? [2]
23. The following table shows the distance travelled by one of the new eco-friendly energy-efficient car travelled on gas. [2]

Litres of gas	1	0.5	2	2.5	3	5
Distance (in km)	15	7.5	30	37.5	45	75

Which type of properties are indicated by the table? How much distance will be covered by the car in 8 litres of gas?

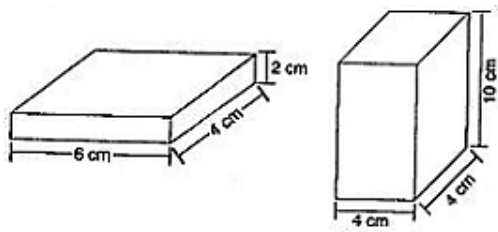
OR

Decide if the data in the table show direct or inverse variation.

a.	x	1	3	5	0.5
	y	5	15	25	2.5
b.	x	1	3	4	0.5
	y	30	10	7.5	60

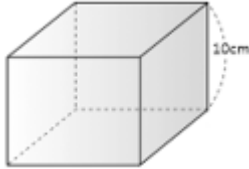
24. Find the multiplicative inverse of $(-7)^{-2} \div (90)^{-1}$ [2]
25. Find the total surface area of the following cuboids: [2]



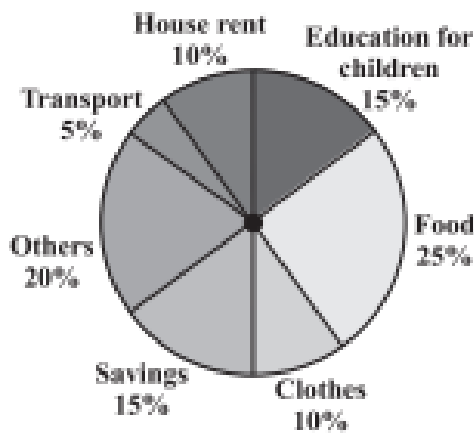


OR

There is a cuboid whose base is a square and height is 10 cm. If the area of one side face is 120 cm^2 . What is the total surface area of the cuboid?



26. Adjoining pie chart figure the expenditure (in percentage) on various items and savings of a family during a month. If the monthly savings of the family is ₹3000, what is the monthly expenditure on clothes? [2]



27. Find the least number which must be added to 252 so as to get a perfect square. Also find the square root of the perfect square so obtained. [3]
28. Express $\frac{5}{-3} + \left(\frac{3}{-2}\right) + \left(\frac{-7}{3}\right) + 3$ as a rational number in $\frac{p}{q}$ form. [3]
29. Two dices are rolled and the faces obtained are 4 and 6. Find the sum of the numbers on their opposite faces. [3]



30. Find the Simple Interest and amount on ₹ 5000 for 6 months at the rate of 5% per annum. [3]

OR

A picnic is being planned in a school for Class VII. Girls are 60% of the total number of students and are 18 in number. The picnic site is 55 km from the school and the transport company is charging at the rate of ₹12 per km. The total cost of refreshments will be ₹4280. If their first stop is at a place 22 km from the school, what per cent of the total distance of 55 km is this? What per cent of the distance is left to be covered?

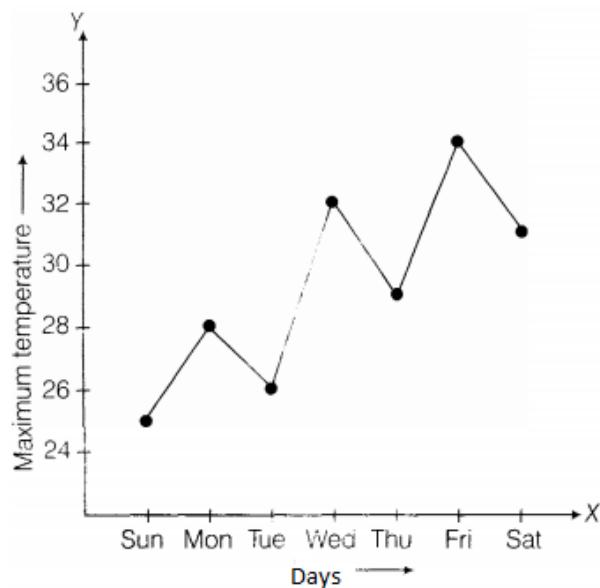
31. Solve: $4(3p + 2) - 5(6p - 1) = 2(p - 8) - 6(7p - 4)$ [3]

OR

Solve: $\frac{1}{2}(x + 1) + \frac{1}{3}(x - 1) = \frac{5}{12}(x - 2)$

32. Add: $10mn$, $-\frac{3}{8}mn$ and $-\frac{1}{4}mn$ [3]

33. Study the graph and answer the questions that follow. [3]



- What information does the graph give?
- On which day was the temperature the least?
- On which day was the temperature 31°C ?
- Which was the hottest day?

- RENT is a rectangle. Its diagonals meet at O. Find x, if $OR = 2x + 4$ and $OT = 3x + 1$. [3]
- Sunscreens block harmful ultraviolet (UV) rays produced by the sun. Each sunscreen has a Sun Protection Factor (SPF) that tells you how many minutes you can stay in the sun before you receive one minute of burning UV rays. e.g. If you apply sunscreen with SPF 15, you get one minute of UV rays for every 15 minutes you stay in the sun. [4]
 - A sunscreen with SPF 15 allows only $\frac{1}{15}$ of the sun's UV rays. What 15 per cent of UV rays does the sunscreen block?
 - Suppose, a sunscreen allows 25% of the sun's UV rays.
 - What fraction of UV rays does this sunscreen block? Give your answer in lowest terms.
 - Use your answer from part (a) calculate this sunscreen's SPF. Explain how you found your answer?
 - A label on a sunscreen with SPF 30 claims that the sunscreen blocks about 97% of harmful UV rays. Assuming the SPF factor is accurate, is this claim true. Explain.

OR

Raheem runs a readymade garment shop. He mark the garments at such a price that even after allowing a discount of 12.5%, gain a profit of 25%. Find the marked price of a jacket which costs him Rs. 2,100.

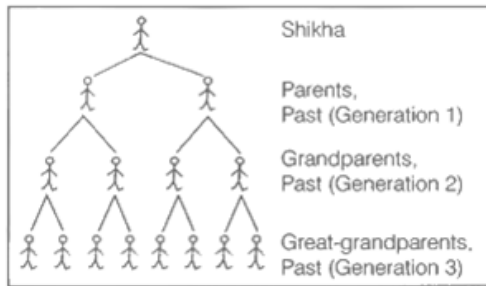
- The table shows the time four elevators take to travel various distances. Find, which elevator is fastest and which is slowest. [4]

	Distance (in m)	Time (in s)
Elevator A	435	29
Elevator B	448	28
Elevator C	130	10
Elevator D	85	5

How much distance will be travelled elevators B and C separately in 140 sec? Who travelled more and by how much?

37. Factorize $x^2 + 5x - 36$ [4]

38. While studying her family's history, Shikha discovers records of ancestors 12 generations back. She wonders how many ancestors she had in the past 12 generations. She starts to make a diagram to help her figure this out. The diagram soon becomes very complex. [4]



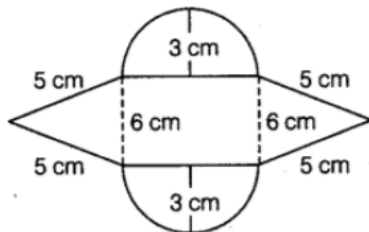
- Make a table and a graph showing the number of ancestors in each of the 12 generations.
- Write an equation for the number of ancestors in a given generation n .

39. Radius of a cylinder is r and the height is h . Find the change in the volume if the [4]

- height is doubled.
- height is doubled and the radius is halved.
- height remains same and the radius is halved.

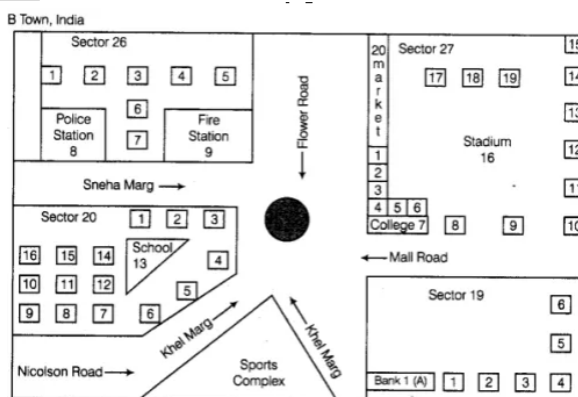
OR

Find the area of the given figure:



40. Look at the map given below. [4]

☐ represents House



Now answer the following questions.

- Name the roads that meet at the roundabout.
- What is the address of the stadium?
- On which road is the Police Station situated?
- If Ritika stays adjacent to bank and you have to send her a card, what address will you write?
- Which sector has the maximum number of houses?
- In which sector is Fire Station located?
- In the map, how many sectors have been shown?

Solution

Section A

1.

(d) 324cm^2

Explanation:

length of drawing box = 16 cm , breadth = 6 cm , height = 3 cm

Surface area of drawing box = $2(l \times b + b \times h + h \times l)$

$$S = 2(16 \times 6 + 6 \times 3 + 3 \times 16)$$

$$S = 2(96 + 18 + 48)$$

$$S = 2(162) = 2 \times 162 = 324\text{cm}^2$$

2.

(d) 5%

Explanation:

Let the rate of GST be $x\%$.

$$\text{Price including GST} = \text{SP} + \text{SP} \times \frac{\text{Rate of GST}}{100}$$

$$\Rightarrow 441 = 420 + 420 \times \frac{x}{100}$$

$$\Rightarrow 441 - 420 = 420 \times \frac{x}{100}$$

$$\Rightarrow 21 = 420 \times \frac{x}{100}$$

$$\Rightarrow x = \frac{21 \times 100}{420}$$

$$\therefore x = 5\%$$

3.

(c) height

Explanation:

height

4.

(c) x^2yz

Explanation:

$$\frac{2}{3}xy \times \frac{3}{2}xz = x^2yz$$

5.

(d) 5

Explanation:

$$2x - 3 = x + 2$$

By transposing both sides

$$2x - x = 2 + 3$$

$$x = 5$$

6.

(d) 36

Explanation:

When a dice is tossed two times,

The sample space is

$\{(1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6),$

(2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6),
 (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6),
 (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6),
 (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6),
 (6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)} = 36
 Hence, the number of possible outcomes is 36.

7.

(b) Reciprocal

Explanation:

The answer is reciprocal. Because (-3) and its reciprocal $\frac{-1}{3}$ are multiplied to get the answer.

8.

(b) $\frac{5}{2}$ and $\frac{5}{2}$

Explanation:

Given $4x^2 - 20x + 25 = 0$

$$\Rightarrow 4x^2 - 10x - 10x + 25 = 0$$

$$\Rightarrow 2x(2x - 5) - 5(2x - 5) = 0$$

$$\Rightarrow (2x - 5)(2x - 5) = 0$$

$$\Rightarrow 2x - 5 = 0 \text{ or } 2x - 5 = 0$$

$$\Rightarrow x = \frac{5}{2} \text{ or } x = \frac{5}{2}$$

\therefore The quadratic equation has equal roots

$$\frac{5}{2} \text{ and } \frac{5}{2}.$$

9.

(d) $x^2 + 2$

Explanation:

We have,

$$(2x^2 + 4) \div 2 = \frac{2x^2 + 4}{2} = \frac{2(x^2 + 2)}{2} \text{ [taking 2 as common]}$$

$$= x^2 + 2$$

10.

(d) 62^2

Explanation:

The unit place of the square of $62^2 = 2^2 = 4$ [$\because 2^2 = 4$]

Clearly, 62^2 has 4 at the unit's place.

11.

(b) $4xyz$

Explanation:

$24xy^2z^3$ by $6yz^2$

$$= \frac{24xy^2z^3}{6yz^2}$$

by dividing

$$= 4xyz$$

12.

(a) It is 12:1

Explanation:

Rs 1 = 100 paise

Rs 6 = 600 paise

So, the ratio is,
 $600:50$
 $= 12:1$

13.

(c) 3

Explanation:

\therefore Number of zeroes at the end of the number $20 = 1$
 \therefore Number of zeroes at the end of its cube $= 3 \times 1 = 3$.

14.

(b) 150 cm

Explanation:

Length = 15 cm

breadth = 10 cm

height = 10 cm

\therefore Total length of Ribbon required

$$= (10 + 15) \times 2 + (10 + 15) \times 2 + (10 + 10) + 10$$

$$= 25 \times 2 + 25 \times 2 + 20 \times 2 + 10$$

$$= 50 + 50 + 40 + 10$$

$$= 140 + 10$$

$$= 150 \text{ cm}$$

15.

(c) $5x$

Explanation:

Given, the lengths of the legs of the right angle triangle are $3x$ and $4x$.

Now, hypotenuse $= \sqrt{(3x)^2 + (4x)^2}$ [using Pythagoras theorem]

$$= \sqrt{9x^2 + 16x^2}$$

$$= \sqrt{25x^2} = 5x$$

16.

(c) $\frac{9}{7}$

Explanation:

$$\sqrt[3]{2\frac{43}{343}}$$

$$\sqrt[3]{\frac{729}{343}} = \frac{9}{7}$$

17. (a) Reciprocal and commutative under multiplication

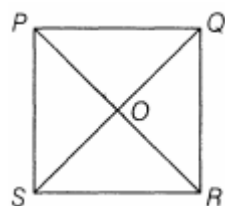
Explanation:

The property used here is both reciprocal and commutativity under multiplication. Reciprocal because both (-3) and its reciprocal $\frac{-1}{3}$ are multiplied. Commutative under multiplication because it follows the rule: $a \times b = b \times a$

18.

(c) Right angle

Explanation:



We know that the diagonals of a square intersect each other at a right angle.

Hence, $\angle POQ = 90^\circ$, i.e. right angle.

19. (a) kite

Explanation:

The diagonals of a quadrilateral intersect at right angles

\therefore This quadrilateral is a square.

But it is also given that this quadrilateral has exactly one axis of symmetry.

But square has 4 axes of symmetry.

So, this quadrilateral cannot be square and rhombus.

Hence, this quadrilateral is a kite

20.

(c) 37

Explanation:

$$0.25(4x - 5) = 0.75x + 8$$

$$1x - 1.25 = 0.75x + 8$$

$$x - 0.75x = 8 + 1.25$$

$$0.25x = 9.25$$

$$x = \frac{9.25}{0.25}$$

$$x = 37.$$

Section B

21. \therefore Each interior angle = 165°

\therefore Each exterior angle = $180^\circ - 165^\circ = 15^\circ$

Let the number of sides be n. Then,

$$n(15^\circ) = 360^\circ$$

$$\Rightarrow n = \frac{360^\circ}{15^\circ} = 24$$

Hence, the number of sides is 24.

$$\begin{array}{r|l} 5 & 15625 \\ \hline 5 & 3125 \\ \hline 5 & 625 \\ \hline 5 & 125 \\ \hline 5 & 25 \\ \hline 5 & 5 \\ \hline & 1 \end{array}$$

By prime factorisation,

$$15625 = \underline{5} \times \underline{5} \times \underline{5} \times \underline{5} \times \underline{5} \times \underline{5} \text{ [grouping the factors in triplets]}$$

$$= 5^3 \times 5^3 \text{ [by laws of exponents]}$$

$$= (5 \times 5)^3$$

$$= 25^3 \text{ which is a perfect cube.}$$

All the terms form triplets

Therefore, 15625 is a perfect cube.

23. On the basis of the given information in the table, the distance travelled by one of the new eco-friendly energy-efficient cars travelled on gas.

The car travelled 15 km in 1 L of gas. The car travelled 7.5 km in 0.5 L of gas.

The car travelled 30 km in 2 L of gas.

This rate shows a direct proportion between litres of gas and the distance covered

The car can cover the distance in 8 L of gas = $8 \times 15 = 120\text{km}$

OR

$$1. \ x/y = 1/5, \ x/y = 3/15 = 1/5, \ x/y = 5/25 = 1/5 \text{ and } x/y = 0.5/2.5 = 1/5$$

here x is directly proportional to y.



$$2. x/y = 1/30, x/y = 3/10$$

$$x/y \neq y/x$$

$$\text{Now } xy = 1 \times 30 = 30, xy = 3 \times 10 = 30, xy = 4 \times 7.5 = 30 \text{ and } xy = 0.5 \times 60 = 30.$$

Here x is inversely proportional to y.

24. a is called multiplicative inverse of b, if $a \times b = 1$

$$\text{We have, } (-7)^{-2} \div (90)^{-1} = \frac{1}{(7)^2} \div \frac{1}{(90)^1} = \frac{1}{49} \div \frac{1}{90} = \frac{1}{49} \times \frac{90}{1} = \frac{90}{49} \quad [\because (-a)^m = a^m, \text{ if } m \text{ is an even number and } a^{-m} = \frac{1}{a^m}]$$

$$\text{put } b = \frac{90}{49}$$

$$\therefore a \times \frac{90}{49} = 1$$

$$\Rightarrow a = \frac{49}{90}$$

25. A total surface area of the first cuboid = $2(lb + bh + lh)$

$$= 2(6 \times 4 + 4 \times 2 + 2 \times 6)$$

$$= 2(24 + 8 + 12)$$

$$= 88 \text{ cm}^2$$

Total surface area of the second cuboid

$$= 2(4 \times 4 + 4 \times 10 + 10 \times 4)$$

$$= 2(16 + 40 + 40)$$

$$= 192 \text{ cm}^2$$

OR

Since the area of one side face is 120 cm^2 and the height is 10.

$$\text{So length of the side of base} = \frac{120}{10} = 12 \text{ cm.}$$

Thus the cuboid is a $12 \text{ cm} \times 12 \text{ cm} \times 10 \text{ cm}$ cuboid. (as the base is a square)

$$\text{Hence the surface area of the cuboid is } 2(12 \times 12 + 12 \times 10 + 12 \times 10) = 768 \text{ cm}^2$$

26. From the graph it is clear that 15% represents ₹3000. Therefore, 10% represents ₹ $\frac{3000}{15} \times 10 = ₹ 2000$

Thus, the monthly expenditure on clothes is ₹ 2000.

$$27. \begin{array}{r} 15 \\ 1 \overline{) 252} \\ \underline{-1} \\ 152 \\ \underline{-125} \\ 27 \end{array}$$

This shows that $15^2 < 252$

Next perfect square is $16^2 = 256$

$$\text{Hence, the number to be added is } 16^2 - 252 = 256 - 252 = 4$$

Therefore, the perfect square so obtained is $252 + 4 = 256$

$$\text{Hence, } \sqrt{256} = 16.$$

$$28. \frac{3 \times -1}{(-2 \times -1)} = \frac{-3}{2}, \frac{5 \times -1}{(-3 \times -1)} = \frac{-5}{3}$$

LCM of 3, 2, 3 and 1 is 6

$$= \frac{[-10 + (-9) + (-14) + 18]}{6}$$

$$= \frac{[-10 - 9 - 14 + 18]}{6}$$

$$= \frac{-15}{6} = \frac{-5}{2}$$

29. We know that the sum of opposite faces of a dice is 7.

$$\text{So the face opposite to 4 is } 7 - 4 = 3$$

$$\text{And the face opposite to 6 is } 7 - 6 = 1$$

$$\text{Hence, required sum of the numbers} = 3 + 1 = 4$$

30. Principal (P) = ₹ 5000

$$\text{Time period (T)} = 6 \text{ months} = \frac{1}{2} \text{ year}$$

$$\text{Rate of interest (R)} = 5\% \text{ p.a.}$$

$$\text{Simple interest (S.I.)} = \frac{P \times T \times R}{100} = \frac{5000 \times 1 \times 5}{2 \times 100} = ₹ 125$$

$$\text{Amount to be paid after 6 months} = \text{Principal} + \text{Interest} = ₹ 5000 + 125 = ₹ 5125.$$



OR

We have,

The distance from picnic to school = 55 km

The distance of the place where first stop was made = 22 km

To find the percentage of distance:

$$= \frac{22}{55} \times 100$$
$$= 40\%$$

She is multiplying the ratio by $\frac{100}{100} = 1$ and converting to percentage.

Both came out with the same answer that the distance from their school of the place where they stopped at was 40% of the total distance they had to travel.

Therefore, the percent distance left to be travelled = $100\% - 40\%$
 $= 60\%$

31. Given, $4(3p + 2) - 5(6p - 1) = 2(p - 8) - 6(7p - 4)$

$$\Rightarrow 12p + 8 - 30p + 5 = 2p - 16 - 42p + 24$$
$$\Rightarrow -18p + 13 = -40p + 8$$
$$\Rightarrow -18p + 40p = 8 - 13 \text{ [transposing } -40p \text{ to LHS and } 13 \text{ to RHS]}$$
$$\Rightarrow 22p = -5$$
$$\Rightarrow \frac{22p}{22} = \frac{-5}{22} \text{ [dividing both sides by } 22]$$
$$\therefore p = \frac{-5}{22}$$

OR

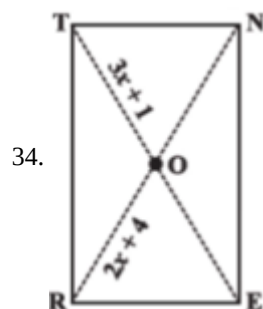
Given, $\frac{1}{2}(x + 1) + \frac{1}{3}(x - 1) = \frac{5}{12}(x - 2)$

$$\Rightarrow \frac{x}{2} + \frac{1}{2} + \frac{x}{3} - \frac{1}{3} = \frac{5x}{12} - \frac{5}{6}$$
$$\Rightarrow \frac{x}{2} + \frac{x}{3} - \frac{5x}{12} = \frac{1}{3} - \frac{1}{2} - \frac{5}{6} \text{ [transposing } \frac{1}{2}, \frac{1}{3} \text{ to RHS and } \frac{5x}{12} \text{ to LHS]}$$
$$\Rightarrow \frac{6x + 4x - 5x}{12} = \frac{2 - 3 - 5}{6}$$
$$\Rightarrow \frac{5x}{12} = \frac{-6}{6}$$
$$\Rightarrow 5x \times 6 = (-6) \times 12 \text{ [by cross-multiplication]}$$
$$\Rightarrow x = \frac{(-6) \times 12}{5 \times 6}$$
$$\therefore x = \frac{-12}{5}$$

32. $10mn + \left(-\frac{3}{8}mn\right) + \left(-\frac{1}{4}mn\right)$

$$= 10mn - \frac{3}{8}mn - \frac{1}{4}mn$$
$$= \left(10 - \frac{3}{8} - \frac{1}{4}\right)mn$$
$$= \frac{80 - 3 - 2}{8}mn$$
$$= \frac{75}{8}mn$$

33. a. The information obtained from the given graph is that the maximum temperature is 34°C and the minimum temperature is 25°C in a week.
- b. Or Sunday, the temperature was 25°C . So, it is the least temperature in the week.
- c. Or Saturday, the temperature was 31°C .
- d. Or Friday, the temperature was maximum i.e. 34°C . Hence, it is the hottest day of the week.



Diagonal of rectangle bisect each other

Since diagonals of a rectangle bisect each other, $TE = 2TO$

$$= 2(3x + 1)$$

$$= 6x + 2$$

$$\text{and } RN = 2RO = 2(2x + 4) = 4x + 8$$

Diagonals of a rectangle are equal.

So $TE = RN$

$$\text{or } 6x + 2 = 4x + 8$$

$$\text{or } 2x = 6$$

$$\text{or } x = 3$$

35. We have,

i. A sunscreen with SPF 15 allows only $\frac{1}{15}$ of the sun's UV rays.

$$\text{It means} = 1 - \frac{1}{15}$$

$$= \frac{14}{15} \text{ of the sun's UV rays absorb by sunscreen.}$$

$$\text{In percentage} = \frac{14}{15} \times 100$$

$$= \frac{1400}{15}$$

$$= 93.333\%$$

ii. a. Sunscreen allows 25% of the sun's UV rays.

$$\therefore \text{It blocks UV rays} = 100 - 25$$

$$= 75\%$$

$$= \frac{75}{100}$$

$$= \frac{3}{4}$$

b. Sunscreen allows 25% on - of UV rays. It means that it protects $= 1 - \frac{3}{4}$

$$= \frac{1}{4} \text{ of UV rays.}$$

Hence, it's an SPF 4,

iii. False,

According to the claim, for $\frac{3}{100}$ effect of UV rays

$$1 \text{ minute} = 33\frac{1}{3} \text{ SPF}$$

Therefore, Affect \neq 30 SPF claim

OR

Let marked price of the garments = ₹ x

Discount% = 12.5%

$$\text{Discount} = 12.5\% \text{ of } x = \frac{125}{10 \times 100} \times x = \frac{1}{8} \times x = \frac{x}{8}$$

S.P. = M.P. - Discount

$$= x - \frac{x}{8} = \frac{8x - x}{8} = \frac{7x}{8}$$

C.P. = ₹ 2,100

Gain% = 25%

$$S.P. = \frac{100 + \text{Profit}\%}{100} \times C.P.$$

$$= \frac{100 + 25}{100} \times 2100 = \frac{125}{100} \times 2,100 = ₹ 2,625$$

Therefore, $\frac{7x}{8} = ₹ 2,625$

$$x = \frac{2625 \times 8}{7} = 375 \times 8 = ₹ 3,000$$

Hence, Marked Price of Garments = ₹ 3,000.

36. On the basis of given table,

Elevator A takes 29 s to cover 435 m.

$$\therefore \text{Distance covered by elevator A in 1 s} = \frac{435}{29} = 15 \text{ m}$$

Elevator B takes 28 s to cover 448 m.

$$\therefore \text{Distance covered by elevator A in 1 s} = \frac{448}{28} = 16 \text{ m}$$

Elevator B takes 28 s to cover 130 m.

$$\therefore \text{Distance covered by elevator A in 1 s} = \frac{130}{13} = 13 \text{ m}$$

Elevator B takes 28 s to cover 85 m.

$$\therefore \text{Distance covered by elevator A in 1 s} = \frac{85}{5} = 17 \text{ m}$$

Hence, in 1s, elevator D covers more distance as compare to elevators A, B and C. So, elevator D is fastest, while elevator C covers least. Hence, elevator C is slowest.

Now, elevator B covers distance in 140 s = $140 \times 16 = 2240 \text{ m}$ [distance = speed \times time]

Elevator C covers distance in 140s = $140 \times 13 = 1820 \text{ m}$

\therefore Elevator B covers more distance than C = $2240 - 1820 = 420 \text{ m}$

37. In order to factorize $x^2 + 5x - 36$, we have to find two numbers p and q

Such that $p + q = 5$ and $pq = -36$

Clearly, $9 + (-4) = 5$ and $9 \times -4 = -36$

So we write the middle term $5x$ of $x^2 + 5x - 36$ as $9x - 4x$

$$\therefore x^2 + 5x - 36 = x^2 + 9x - 4x - 36$$

$$= (x^2 + 9x) - (4x + 36)$$

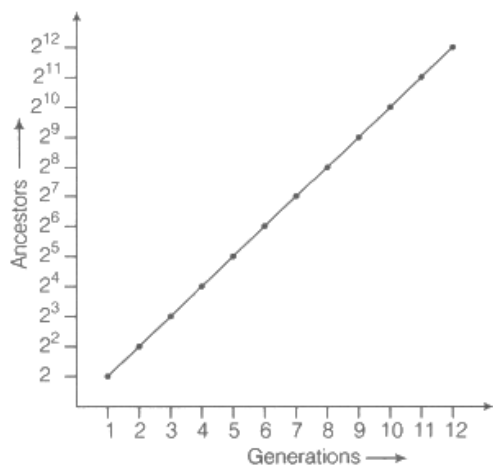
$$= x(x + 9) - 4(x + 9)$$

$$= (x + 9)(x - 4)$$

38. a. On the basis of the given information, we can make a table that shows the number of ancestors in each of the 12 generations.

Generations	Ancestors
1st	2^1
2nd	2^2
3rd	2^3
:	:
12th	2^{12}

Hence, we can draw a graph that shows the relationship between generation and ancestor.



b. On the basis of generation-ancestor graph,

the number of ancestors in n generations will be 2^n .

39. \therefore We know that Volume of a cylinder = $\pi r^2 h$

where, h is height and r is the radius of the base of the cylinder.

i. If height is double i.e. $h = 2 \times h$

$$= 2h$$

Then, its volume = $\pi r^2 \times 2h$

$$= 2\pi r^2 h$$

Hence, volume becomes double of original volume.

ii. If height is doubled and the radius is halved,

$$\text{i.e. } h = 2h \text{ and } r = \frac{r}{2}$$

$$\therefore \text{Volume} = \pi \times \left(\frac{r}{2}\right) \times \left(\frac{r}{2}\right) \times 2h$$

$$= \pi \times \frac{r^2}{4} \times 2h$$

$$= \frac{\pi r^2 h}{2}$$

Hence, volume becomes half of the original volume.

iii. If height remains same and radius is halved,

$$\text{i.e. } h = h \text{ and } r = \frac{r}{2}$$

$$\therefore \text{Volume} = \pi \times \frac{r}{2} \times \frac{r}{2} \times h$$

$$\text{Volume} = \pi \times \frac{r^2}{4} \times h$$

Hence, volume becomes $\frac{1}{4}$ th of the original volume.

OR

Area of the given figure = Area of two semi-circles + Area of two triangles + Area of a square

\therefore Area of triangle = $\sqrt{s(s-a)(s-b)(s-c)}$ [\because a = 5cm, b = 5 cm and c = 6 cm, given]

$$\text{Where, } s = \frac{a+b+c}{2} = \frac{5+5+6}{2} = \frac{16}{2} = 8\text{cm}$$

$$\therefore \text{Area of triangle} = \sqrt{8(8-5)(8-5)(8-6)}$$

$$= \sqrt{8 \times 3 \times 3 \times 2} = \sqrt{144} = 12\text{cm}^2$$

$$\therefore \text{Area of triangle} = 2 \times 12 = 24\text{cm}^2$$

\therefore Area of semi- circles = Area of 1 circle

$$\therefore \text{Area of circles} = \pi r^2 = \frac{22}{7} \times 3 \times 3 = \frac{9 \times 22}{7} = \frac{198}{7} = 28.28\text{cm}^2$$

$$\therefore \text{Area of square} = 6 \times 6 = 36\text{ cm}^2$$

$$\text{Area of the given figure} = (24 + 28.28 + 36) = 88.28\text{ cm}^2$$

40. Carefully see the map.

- a. Flower road, Khel marg, Mall road and Sneha marg meet at round.
- b. The address of the stadium is given below:
Sector 27
BTown, India
- c. The police station is situated on Sneha marg.
- d. Sneha's address is given below:
H.N-1Nr. Bank 1 (A)
Sector 19, B town, India.
- e. Sector 27 has maximum number of houses.
- f. Fire station is located in sector 26.
- g. In the map, four sectors have been shown.