

Class VIII Session 2025-26
Subject - Mathematics
Sample Question Paper - 8

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. The value of $\frac{\left(-\frac{1}{2}\right)^5}{\left(-\frac{1}{2}\right)^4} \div \frac{\left(-\frac{1}{8}\right)}{\left(-\frac{1}{4}\right)}$ is _____. [1]
 - a) -1
 - b) 1
 - c) 2
 - d) 0
2. $-\frac{19}{21} \times \left(-\frac{21}{19}\right) =$ _____. [1]
 - a) 21
 - b) 1
 - c) 19
 - d) $\frac{19}{21}$
3. The angles of a quadrilateral are in the ratio 1 : 2 : 3 : 4. The largest angle is [1]
 - a) 144°
 - b) 108°
 - c) 72°
 - d) 36°
4. The number of diagonals in a polygon of n sides is [1]
 - a) $n(n-3)$
 - b) $\frac{n(n-2)}{2}$
 - c) $\frac{n(n-3)}{2}$
 - d) $\frac{n(n-1)}{2}$
5. The edges of a cuboid are in the ratio 1 : 2 : 3 and its total surface area is 198 cm^2 . The volume of the cuboid is [1]
 - a) 36 cm^3
 - b) 81 cm^3
 - c) 27 cm^3
 - d) 162 cm^3
6. Multiply $(x - y)$ and $(3x + 5y)$. [1]
 - a) $5x^2 + 2xy - 5y^2$
 - b) $3x^2 + 2xy - 5y^2$

c) $3x^2 + 2xy - 7y^2$

d) $2xy$

7. Asha can stitch x shirts in $\frac{3}{4}$ minutes. At this rate, how many shirts can she stitch in $\frac{3}{4}$ th of an hour? [1]

a) $50x$

b) $60x$

c) $\frac{9}{16}x$

d) $\frac{16}{9}x$

8. Solve: $\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$ [1]

a) $\frac{27}{10}$

b) 9

c) 27

d) 10

9. Height of a building is 9 m and this building is represented by 9 cm on a map. What is the scale used for the map? [1]

a) 100 : 1

b) 10 : 1

c) 100 : 10

d) 1 : 100

10. 10 men working for 6 days mow an area of 5 acres. If there are 8 men working to mow 3 acres of land, how many days will it take? [1]

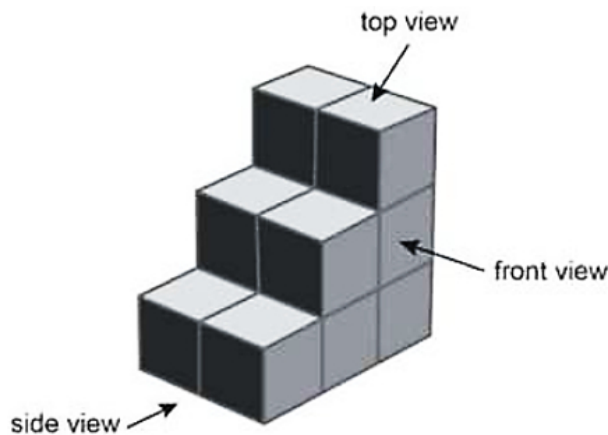
a) 2 days

b) 4 days

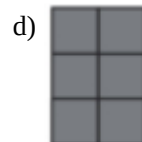
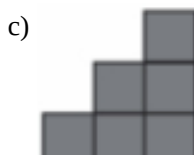
c) 12.5 days

d) 8 days

11. Which of the following shows the side view of the arrangement? [1]



Which of the following shows the side view of the arrangement?



12. If $2^{m-7} = 32$, then find the value of 2^{m-3} . [1]

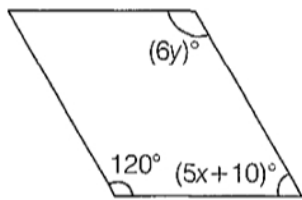
a) 256

b) 2048

c) 512

d) 1024

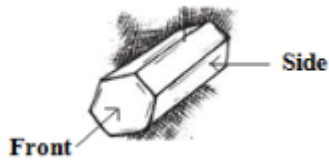
13. The values of x and y in the following parallelogram is [1]



14. $-\frac{17}{18} \times \left(-\frac{18}{17}\right) = \underline{\hspace{2cm}}$. [1]
15. The price of a washing machine is Rs 15,000. The sales tax charged on it is at the rate of 15%. Find the amount that Arjun will have to pay if he buys it. [1]
16. If one side of a cube is 33 m, then the volume of the cube is [1]
17. 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]
-
18. The number of boys and girls in a class is in the ratio 7:5. The number of boys is 8 more than the number of girls. What is the total class strength? [1]
19. What is the value of $\sqrt{1522756}$? [1]
20. By which smallest number must 675 is divided, so that the quotient is a perfect cube? [1]

Section B

21. Find three numbers in the ratio 2 : 3 : 5, the sum of whose squares is 608. [2]
22. What is the probability that a student chosen at random out of 3 girls and 4 boys is a boy? [2]
23. For the given solid draw the side view and front view? [2]



OR

Draw a prism with its base as regular hexagon with one of its face facing you. Now draw the top view, front view and side view of this solid.

24. Solve the equation and check your result: $4z + 3 = 6 + 2z$ [2]

OR

Solve: $\frac{3t-2}{3} + \frac{2t+3}{2} = t + \frac{7}{6}$

25. Solve: $\frac{5}{6} + \left(\frac{-2}{5}\right) - \left(\frac{-2}{15}\right)$. [2]

26. Write 16250000000 in standard form. [2]

27. The price of a TV is ₹13000. The sales tax charged on it is at the rate of 12%. Find the amount that Vinod will have to pay if he buys it. [3]

OR

Find the difference between compound interest and simple interest on ₹45000 at 12% per annum for 5yr.

28. Solve: $\frac{2y-3}{4} - \frac{3y-5}{2} = y + \frac{3}{4}$ [3]

29. Find the cube root of 110592 by prime factorisation method. [3]

30. Without adding, find the sum : [3]

i. $1 + 3 + 5 + 7 + 9$

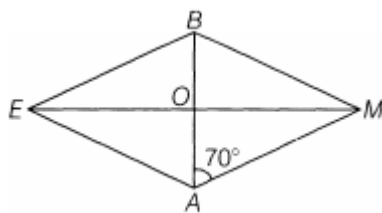
ii. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19$

iii. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23$.

31. The sides of rectangle are $3a^2 + 2b$ and $5a^2 - 4b$. Find its perimeter. [3]

32. The ratio of the radius and height of a cylinder is 2 : 3. If its volume is 12936 cm^3 , find the total surface area of the cylinder. [3]

33. In rhombus BEAM, find $\angle AME$ and $\angle AEM$. [3]



OR

The adjacent angles of a parallelogram are $(2x - 4)^\circ$ and $(3x - 1)^\circ$. Find the measures of all angles of the parallelogram.

34. Work out the division: $9x^2y^2(3z - 24) \div 27xy(z - 8)$ [3]

35. Draw a graph for the following. [4]

Side of square (in cm)	2	3	4	5	6
Area (in cm^2)	4	9	16	25	36



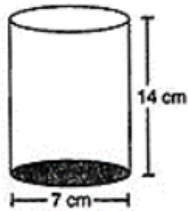
Is it a line graph?

36. The number of hours spent by a school student on various activities on a working day, is given below. Construct a pie chart using the angle measurement. [4]

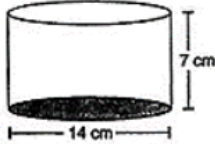
Activity	Sleep	School	Play	Homework	Others
Number of hours	8	6	3	3	4

37. Diameter of cylinder A is 7 cm, and the height is 14 cm. Diameter of cylinder B is 14 cm and height is 7 cm. Without doing any calculations can you suggest whose volume is greater? Verify it by finding the volume of both the cylinders. Check whether the cylinder with greater volume also has greater surface area? [4]

i.



ii.



38. Factorise: $25a^2 - 4b^2 + 28bc - 49c^2$ [4]

OR

Factorize $x^2 + 5x - 36$

39. The adjacent sides of a rectangle are $x^2 - 4xy + 7y^2$ and $x^3 - 5xy^2$. Find the area. [4]
40. What price should a shopkeeper mark on article that costs him ₹600 to gain 20%, after allowing a discount of 10%? [4]

Solution

Section A

1. (a) -1

Explanation:

$$\frac{\left(-\frac{1}{2}\right)^5}{\left(-\frac{1}{2}\right)^4} \div \frac{\left(-\frac{1}{8}\right)}{\left(-\frac{1}{4}\right)} = \left(-\frac{1}{2}\right)^{5-4} \div \left[\left(\frac{1}{2}\right)^3 \times \left(\frac{1}{2}\right)^{-2}\right]$$
$$= \left(-\frac{1}{2}\right)^1 \div \left(\frac{1}{2}\right)^1 = -1$$

2.

(b) 1

Explanation:

$$\frac{-19}{21} \times \left(\frac{-21}{19}\right)$$
$$= \frac{399}{399}$$
$$= 1$$

3. (a) 144°

Explanation:

Let the angles of quadrilateral be x , $2x$, $3x$ and $4x$.

According to the question,

Sum of all angles of quadrilateral = 360°

$$x + 2x + 3x + 4x = 360^\circ$$

$$\Rightarrow 10x = 360^\circ$$

$$\therefore x = 36^\circ$$

Hence, largest angle of quadrilateral = $4 \times 36^\circ$

$$= 144^\circ$$

4.

(c) $\frac{n(n-3)}{2}$

Explanation:

We know that the number of diagonals in a polygon of n sides = $\frac{n(n-3)}{2}$

5.

(d) 162 cm^3

Explanation:

Let edges of a cuboid be x , $2x$ and $3x$, respectively.

$$\therefore l = x, b = 2x, h = 3x$$

Total surface area of cuboid = $2(lb + bh + hn)$

$$\Rightarrow 198 = 2(x \cdot 2x + 2x \cdot 3x + 3x \cdot x)$$

$$\Rightarrow 99 = 2x^2 + 6x^2 + 3x^2$$

$$\Rightarrow 11x^2 = 99$$

$$\Rightarrow x^2 = \frac{99}{11} \Rightarrow x^2 = 9$$

$$\therefore x = 3$$

\therefore Volume of cuboid = $x \times 2x \times 3x$

$$= 6x^3 = 6(3)^3$$

$$= 6 \times 27 = 162 \text{ cm}^3$$



6.

(b) $3x^2 + 2xy - 5y^2$

Explanation:

$$(x - y)(3x + 5y)$$

solving brackets we get,

$$x(3x + 5y) - y(3x + 5y)$$

$$3x^2 + 5xy - 3xy - 5y^2$$

$$3x^2 + 2xy - 5y^2$$

7.

(b) $60x$

Explanation:

No. of shirts Time

$$x \times \frac{3}{4} \text{ min}$$

$$s \times \frac{3}{4} \times 60 = 45 \text{ min}$$

∴ It is direct variation

$$x : \frac{3}{4} :: s : 45$$

$$s = \frac{45x}{3/4} = 60x$$

8. (a) $\frac{27}{10}$

Explanation:

$$\frac{x}{2} - \frac{1}{5} = \frac{x}{3} + \frac{1}{4}$$

By L.C.M

$$\text{or, } \frac{(5x-2)}{10} = \frac{(4x+3)}{12}$$

by cross multiplication

$$\text{or, } 60x - 24 = 40x + 30$$

by transposing

$$\text{or, } 60x - 40x = 30 + 24$$

$$\text{or, } 20x = 54$$

$$\text{or, } x = \frac{54}{20}$$

in lowest term

$$\text{or, } x = \frac{27}{10}$$

9.

(d) $1 : 100$

Explanation:

$$\text{Scale of map} = \frac{\text{Size drawn}}{\text{Actual size}}$$

$$= \frac{9 \text{ cm}}{900 \text{ cm}} \text{ (because } 9 \text{ m} = 900 \text{ cm)}$$

$$= \frac{1}{100}$$

Thus, scale is $1 : 100$.

10.

(c) 12.5 days

Explanation:

This is a case of inverse proportion as with a decrease in the number of men more days will be needed to complete the work

In inverse proportion, the value of constant is given by $x \times y$

$$10 \times 6 \times 5 = 8 \times a \times 3 \text{ (where } a \text{ is the number of days)}$$

$$\frac{300}{24} = a$$

$$12.5 \text{ days} = a$$



11.

(c)



Explanation:



12.

(c) 512

Explanation:

512

13.

(d) 10° , 20°

Explanation:

In a parallelogram, adjacent angles are supplementary.

$$\therefore 120^\circ + (5x + 10)^\circ = 180^\circ$$

$$\Rightarrow 5x + 10^\circ + 120^\circ = 180^\circ$$

$$\Rightarrow 5x = 180^\circ - 130^\circ$$

$$\Rightarrow 5x = 50^\circ$$

$$\Rightarrow x = 10^\circ$$

Also, opposite angles are equal in a parallelogram.

$$\text{Therefore, } 6y = 120^\circ \Rightarrow y = 20^\circ$$

14.

(d) 1

Explanation:

$$\frac{-17}{18} \times \left(\frac{-18}{17}\right)$$

$$= \frac{306}{306}$$

$$= 1$$

15.

(d) Rs 17,250

Explanation:

Price of the Washing Machine = Rs.15,000

$$\text{Sale tax} = ₹ \frac{15000 \times 15}{100}$$

$$= \text{Rs } 2,250$$

Amount Arjun will have to pay = Rs (15,000 + 2,250)

$$= \text{Rs.17,250}$$

16.

(b) 35937

Explanation:

$$\text{Volume of cube} = (33)^3 = 35937$$

17.

(b) 150 cm

Explanation:

Length = 15 cm

breadth = 10 cm

height = 10 cm

\therefore Total length of Ribbon required

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

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

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

$$= 140 + 10$$

$$= 150 \text{ cm}$$

18. **(a) 48**

Explanation:

let the number of boys and girls = x

ratio = 7 : 5

boys = 7x

girls = 5x

According to question,

$$7x = 5x + 8$$

By transposing,

$$7x - 5x = 8$$

$$2x = 8$$

$$x = \frac{8}{2}$$

$$x = 4$$

now the number of boys = 7x = 28

the number of girls = 5x = 20

total students = 28 + 20 = 48

19.

(d) 1234

Explanation:

From the prime factorization of $\sqrt{1522756}$ we get 1234.

20.

(c) 25

Explanation:

Prime factors of 675,

3	675
3	225
3	75
5	25
5	5
	1

$$\therefore 675 = 3 \times 3 \times 3 \times 5 \times 5$$

Hence, quotient, on dividing of 675 by 25 = $3 \times 3 \times 3$, it is a perfect cube number.

Section B

21. Let the three numbers be 2x, 3x and 5x, respectively.

According to the question,

$$\Rightarrow (2x)^2 + (3x)^2 + (5x)^2 = 608 \text{ [given]}$$

$$\Rightarrow 4x^2 + 9x^2 + 25x^2 = 608$$

$$\Rightarrow 38x^2 = 608$$

$$\Rightarrow x^2 = \frac{608}{38}$$

$$\Rightarrow x^2 = 16 = (4)^2$$

$$\therefore x = 4$$

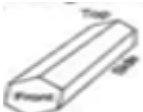

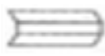
Hence, the numbers are $2 \times 4, 3 \times 4, 5 \times 4$, i.e. 8, 12 and 20.

$$22. \text{Probability} = \frac{\text{Number of favourable outcomes}}{\text{Total number of possible outcomes}}$$

Number of favourable chance to get boys = 4

$$\text{Total} = 4 + 3 = 7$$

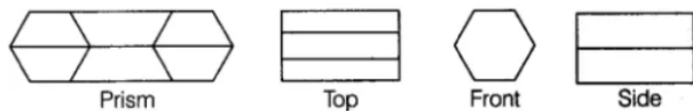
$$\text{Probability} = \frac{4}{7}$$

23. Object	Front View	Side View
		

OR

The following figure shows a prism with its base as a regular hexagon with one of its faces to us.

And also, we show the top view, front view and side view of the prism.



$$24. 4z + 3 = 6 + 2z$$

$$4z - 2z = 6 - 3 \dots \text{[Transposing } 2z \text{ to L.H.S. and } 3 \text{ to R.H.S.]}$$

$$\therefore 2z = 3$$

$$\therefore z = \frac{3}{2} \dots \text{[Dividing both sides by 2]}$$

This is the required solution.

Verification,

$$\text{L.H.S} = 4 \left(\frac{3}{2} \right) + 3 = 6 + 3 = 9$$

$$\text{R.H.S} = 6 + 2z = 6 + 2 \left(\frac{3}{2} \right) = 6 + 3 = 9$$

Therefore, L.H.S = R.H.S

OR

$$\text{Given, } \frac{3t-2}{3} + \frac{2t+3}{2} = t + \frac{7}{6}$$

$$\Rightarrow \frac{2(3t-2)+3(2t+3)}{6} = \frac{6t+7}{6}$$

$$\Rightarrow 6t - 4 + 6t + 9 = 6t + 7$$

$$\Rightarrow 12t + 5 = 6t + 7$$

$$\Rightarrow 12t - 6t = 7 - 5 \text{ [transposing } 6t \text{ to LHS and } 5 \text{ to RHS]}$$

$$\Rightarrow 6t = 2$$

$$\Rightarrow \frac{6t}{6} = \frac{2}{6} \text{ [dividing both sides by 6]}$$

$$\therefore t = \frac{1}{3}$$

$$25. \text{LCM of } 6, 5 \text{ and } 15 \text{ is } 30$$

$$= \frac{[25+(-12)-(-4)]}{30}$$

$$= \frac{[25-12+4]}{30}$$

$$= \frac{[29-12]}{30}$$

$$= \frac{17}{30}$$

$$26. 16250000000 = 1625 \times 10000000 = 1.625 \times 1000 \times 10000000 = 1.625 \times 10^3 \times 10^7 = 1.625 \times 10^{10}$$

$$27. \text{Price of TV} = ₹ 13000$$

Sales tax charged on it = 12% of ₹ 13000

$$= ₹ \frac{12}{100} \times 13000$$

$$= ₹ 1560$$

∴ Sale price + sales tax

$$= ₹ 13000 + ₹ 1560$$

$$= ₹ 14560$$

Hence, the amount that Vinod will have to pay if he buys it is ₹ 14560.

OR

We have,

$$\text{Principal (P)} = ₹ 45000$$

$$\text{Rate of interest (R)} = 12\% \text{ per annum}$$

$$\text{Time period (T)} = 5 \text{ yr}$$

$$\text{Simple interest, SI} = \frac{P \times R \times T}{100}$$

$$= \frac{45000 \times 12 \times 5}{100}$$

$$= 450 \times 60$$

$$= ₹ 27000$$

$$\text{Compound interest, CI} = A - P$$

$$\text{where, } A = P \left(1 + \frac{R}{100} \right)^T$$

$$\therefore A = 45000 \left(1 + \frac{12}{100} \right)^5$$

$$= 45000 \left(\frac{28}{25} \right)^5$$

$$= 45000 \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25}$$

$$= \frac{45000 \times 17210368}{9765625}$$

$$= ₹ 79200$$

$$\therefore \text{Compound interest, CI} = ₹ 79200 - ₹ 45000$$

$$= ₹ 34200$$

$$\therefore \text{Difference between SI and CI} = ₹ 34200 - ₹ 27000$$

$$= ₹ 7200$$

$$28. \text{ Given, } \frac{2y-3}{4} - \frac{3y-5}{2} = y + \frac{3}{4}$$

$$\Rightarrow \frac{2y-3-2(3y-5)}{4} = \frac{4y+3}{4}$$

$$\Rightarrow 2y - 3 - 6y + 10 = 4y + 3$$

$$\Rightarrow -4y + 7 = 4y + 3$$

$$\Rightarrow -4y - 4y = 3 - 7 \text{ [transposing } 4y \text{ to LHS and } 7 \text{ to RHS]}$$

$$\Rightarrow -8y = -4$$

$$\Rightarrow \frac{-8y}{-8} = \frac{-4}{-8} \text{ [dividing both sides by } -8]$$

$$\therefore y = \frac{1}{2}$$

$$\begin{array}{r|l} 2 & 110592 \end{array}$$

$$\begin{array}{r|l} 2 & 55296 \end{array}$$

$$29. \begin{array}{r|l} 2 & 27648 \end{array}$$

$$\begin{array}{r|l} 2 & 13824 \end{array}$$

$$\begin{array}{r|l} 2 & 6912 \end{array}$$

$$\begin{array}{r|l} 2 & 3456 \end{array}$$

$$\begin{array}{r|l} 2 & 1728 \end{array}$$

$$\begin{array}{r|l} 2 & 864 \end{array}$$

$$\begin{array}{r|l} 2 & 432 \end{array}$$

$$\begin{array}{r|l} 2 & 216 \end{array}$$

$$\begin{array}{r|l} 2 & 108 \end{array}$$

$$\begin{array}{r|l} 2 & 54 \end{array}$$

$$\begin{array}{r|l} 3 & 27 \end{array}$$

$$\begin{array}{r|l} 3 & 9 \end{array}$$

$$\begin{array}{r|l} 3 & 3 \end{array}$$

$$\begin{array}{r|l} & 1 \end{array}$$

Prime factorisation of 110592 is

$$\underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{2} \times \underline{3} \times \underline{3} \times \underline{3} \text{ [grouping the factors in triplets]}$$

$$= 2^3 \times 2^3 \times 2^3 \times 2^3 \times 3^3 = (2 \times 2 \times 2 \times 2 \times 3)^3 = 48^3$$

$$\text{Therefore, } \sqrt[3]{110592} = 2 \times 2 \times 2 \times 2 \times 3 = 48.$$

30. i. $1 + 3 + 5 + 7 + 9 = 5^2 = 25$

ii. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = 10^2 = 100$

iii. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23 = 12^2 = 144.$

31. Perimeter of a rectangle = 2(Sum of the sides)

$$= 2 [(3a^2 + 2b) + (5a^2 - 4b)]$$

$$= 2 [3a^2 + 2b + 5a^2 - 4b]$$

$$= 2 [8a^2 - 2b]$$

$$= 16a^2 - 4b$$

32. The ratio of the radius and height of a cylinder = 2 : 3

Let the radius of the cylinder be $2x$ and the height of the cylinder be $3x$.

$$\text{Volume of the cylinder} = 12936 \text{ cm}^3$$

$$\text{Volume of a cylinder} = \pi r^2 h$$

$$\therefore 12936 = \frac{22}{7} \times (2x)^2 \times 3x$$

$$\Rightarrow 12936 = \frac{22}{7} \times 4x^2 \times 3x$$

$$\Rightarrow 12936 = \frac{264}{7} x^3$$

$$\Rightarrow x^3 = \frac{12936 \times 7}{264} = 49 \times 7$$

$$\Rightarrow x^3 = 7 \times 7 \times 7 = (7)^3$$

$$\Rightarrow x^3 = (7)^3$$

$$\therefore x = 7$$

$$\text{So, radius} = 2x = 2 \times 7 = 14 \text{ cm and height} = 3x = 3 \times 7 = 21 \text{ cm}$$

$$\text{The total surface area of the cylinder} = 2\pi r(r + h)$$

$$= 2 \times \frac{22}{7} \times 14(14 + 21)$$

$$= \frac{44 \times 14}{7} \times 35 = 44 \times 14 \times 5 = 3080 \text{ cm}^2$$

33. Given, $\angle BAM = 70^\circ$

We know that, in rhombus, diagonals bisect each other at right angles.

$$\therefore \angle BOM = \angle BOE = \angle AOM = \angle AOE = 90^\circ$$

Now, in $\triangle AOM$;

$$\angle AOM + \angle AMO + \angle OAM = 180^\circ \text{ [angle sum property of triangle]}$$

$$90^\circ + \angle AMO + 70^\circ = 180^\circ$$

$$\Rightarrow \angle AMO = 180^\circ - 90^\circ - 70^\circ = 20^\circ$$

$$\Rightarrow \angle AMO = 20^\circ$$

$$\text{Also, } AM = BM = BE = EA$$

In $\triangle AME$, we have,

$$AM = EA$$

$$\therefore \angle AME = \angle AEM = 20^\circ \text{ [}\because \text{equal sides make equal angles]}$$

OR

Since, the adjacent angles of a parallelogram are supplementary.

$$\therefore (2x - 4)^\circ + (3x - 1)^\circ = 180^\circ$$

$$\Rightarrow 5x - 5^\circ = 180^\circ$$

$$\Rightarrow 5x = 185^\circ$$

$$\Rightarrow x = \frac{185^\circ}{5} \Rightarrow x = 37^\circ$$

Thus, the adjacent angles are

$$x = 37^\circ$$

$$2x - 4 = 2 \times 37^\circ - 4 = 74^\circ - 4 = 70^\circ$$

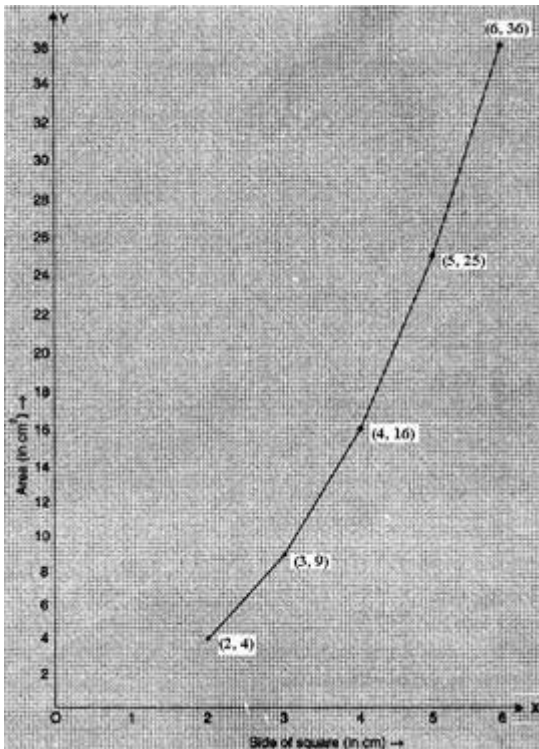
$$\text{and } 3x - 1 = 3 \times 37^\circ - 1 = 111^\circ - 1 = 110^\circ$$

Hence, the angles are 70° , 110° , 70° , 110°

[\because opposite angles in a parallelogram are equal]

$$\begin{aligned}
 34. & 9x^2y^2(3z-24) \div 27xy(z-8) \\
 &= \frac{9x^2y^2(3z-24)}{27xy(z-8)} \\
 &= \frac{9x^2y^2 \cdot 3(z-8)}{27xy(z-8)} \\
 &= xy
 \end{aligned}$$

35.



i. Horizontal : 1 unit = 1 cm

Vertical : 1 unit = 2 cm

ii. Mark side of the square (in cm) on horizontal axis.

iii. Mark area (in cm^2) on vertical axis.

iv. Plot the points (2, 4), (3, 9), (4, 16), (5, 25), (6, 36).

v. Join the points.

The graph we get is not line.

$$36. \text{ Total enrolment } 8 + 6 + 3 + 3 + 4 = 24$$

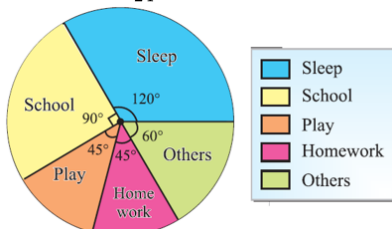
$$\therefore \text{ Sleep } = \frac{8}{24} \times 360 = 120^\circ$$

$$\therefore \text{ School } = \frac{6}{24} \times 360 = 90^\circ$$

$$\therefore \text{ Play } = \frac{3}{24} \times 360 = 45^\circ$$

$$\therefore \text{ Homework } = \frac{3}{24} \times 360 = 45^\circ$$

$$\therefore \text{ Others } = \frac{4}{24} \times 360 = 60^\circ$$



37. The volume of cylinder B is greater.

i. For Cylinder A

$$r = \frac{7}{2} \text{ cm}$$

$$h = 14 \text{ cm}$$

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

$$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 14$$

$$= 539 \text{ cm}^3$$

ii. For Cylinder B

$$r = \frac{14}{2} \text{ cm} = 7 \text{ cm}$$

$$h = 7 \text{ cm}$$

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

$$= \frac{22}{7} \times 7 \times 7 \times 7$$

$$= 1078 \text{ cm}^3.$$

By actual calculation of volumes of both, it is verified that the volume of cylinder B is greater.

i. For Cylinder A

$$\text{Surface area} = 2\pi r(r + h)$$

$$= 2 \times \frac{22}{7} \times \frac{7}{2} \times \left(\frac{7}{2} + 14\right)$$

$$= 2 \times \frac{22}{7} \times \frac{7}{2} \times \frac{35}{2}$$

$$= 385 \text{ cm}^2$$

ii. For Cylinder B

$$\text{Surface area} = 2\pi r(r + h)$$

$$= 2 \times \frac{22}{7} \times 7 \times (7 + 7)$$

$$= 2 \times \frac{22}{7} \times 7 \times 14$$

$$= 616 \text{ cm}^2.$$

By actual calculation of surface area of both, we observe that the cylinder with greater volume has greater surface area.

$$38. 25a^2 - 4b^2 + 28bc - 49c^2$$

$$= 25a^2 - (4b^2 - 28bc + 49c^2)$$

$$= 25a^2 - \{(2b)^2 - 2(2b)(7c) + (7c)^2\}$$

$$= (5a)^2 - (2b - 7c)^2 \dots [\text{Using Identity II}]$$

$$= \{5a - (2b - 7c)\} \{5a + (2b - 7c)\}$$

$$= (5a - 2b + 7c)(5a + 2b - 7c)$$

OR

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 $9x - 4x$

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

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

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

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

$$39. \text{Length} = x^2 - 4xy + 7y^2 \text{ and Breadth} = x^3 - 5xy^2$$

$$\text{Area of rectangle} = \text{Length} \times \text{Breadth}$$

$$= (x^2 - 4xy + 7y^2) \times (x^3 - 5xy^2)$$

$$= x^3(x^2 - 4xy + 7y^2) - 5xy^2(x^2 - 4xy + 7y^2)$$

$$= x^5 - 4x^4y + 7x^3y^2 - 5x^3y^2 + 20x^2y^3 - 35xy^4$$

$$= [x^5 - 4x^4y + 2x^3y^2 + 20x^2y^3 - 35xy^4] \text{ sq. unit}$$

40. We have given that,

The cost price of the article = ₹ 600

Gain% = 20%

$$\therefore \text{Total Gain} = \frac{600 \times 20}{100} = ₹ 120$$

$$\therefore \text{SP} = \text{Gain} + \text{CP} = ₹ 600 + ₹ 120 = ₹ 720$$

Let marked price be ₹ x.

Now shopkeeper allows a discount of 10%

According to the question, $x - 10\% \text{ of } x = ₹720$

$$\Rightarrow x - \frac{10 \times x}{100} = 720$$

$$\Rightarrow \frac{100x - 10x}{100} = 720$$

$$\Rightarrow \frac{90x}{100} = 720$$

$$\Rightarrow x = \frac{720 \times 100}{90}$$

$$x = ₹ 800$$

Hence, the required marked price is ₹ 800.