Maharashtra Board (Class VII) Mathematics Sample Paper 1 Solution

Time: 2 hrs

Total Marks: 60

SECTION – A

- Correct Answer: (A) In a triangle, a segment drawn through a vertex perpendicular to the opposite side is called the altitude of the triangle.
- **2.** Correct Answer: (B) If a is any rational number and m and n are any positive integers, then $a^m \times a^n = a^{m+n}$
- **3.** Correct Answer: (C) Amount = Principal + Simple interest
- **4.** Correct Answer: (D) $\frac{9}{4}$ is a rational number.
- 5. Correct Answer: (A) Profit = S.P. – C.P.
- 6. Correct Answer: (B)A quadrilateral with all the sides congruent is called a rhombus.
- Correct Answer: (A)
 A quadrilateral in which only one pair of opposite sides is parallel is called a trapezium.
- 8. Correct Answer: (C) The expansion of (a + b)(a - b) is $(a+b)(a-b)=a^2-b^2$.
- 9. Correct Answer: (D)

The total surface area of a cuboid is 2(length × breadth + breadth × height + length × height)

10. Correct Answer: (B)

A perpendicular line drawn through the midpoint of the side of a triangle is called the perpendicular bisector of that side.

11. Correct Answer: (B)

When the lengths of all the three sides of a triangle are equal, the triangle is called an equilateral triangle.

12. Correct Answer: (A)

$$\left(a^{m}\right)^{n}=a^{m\times n}$$

SECTION – B

13.

- i. In \triangle KLP, seg KN is an altitude.
- ii. In Δ KLP, seg KN is a median.

14.
$$\frac{400}{49} = \frac{\sqrt{400}}{\sqrt{49}} = \frac{\sqrt{20 \times 20}}{\sqrt{7 \times 7}} = \frac{20}{7}.$$

15.We may observe that

$$\left[\left(-\frac{12}{13}\right)^2\right]^5 = \left(-\frac{12}{13}\right)^{2\times 5} = \left(-\frac{12}{13}\right)^{10}.$$

$$16.4(y^2 - 2y + 7)$$

= (4 × y²) - (4 × 2y) + (4 × 7)
= 4y² - 8y + 28

The solution of the equation is 11.

$$\mathbf{18.} \frac{9}{7} \times \frac{(-14) \times 2}{15 \times 3} = \frac{9 \times (-28)}{7 \times 45} = \frac{9 \times (-2 \times 7)}{7 \times 3 \times 5} \times \frac{2}{3} = \frac{-2 \times 2}{5} = \frac{-4}{5}.$$

20. The area of a rectangle = $l \times b$

 $= 4 \text{ cm} \times 2 \text{ cm}$

 $= 8 \text{ cm}^2$

The area of rectangle = 8 sq cm.

SECTION - C

21. The length of the bag = 36 cm and its breadth = 24 cm. The area of the cloth required for one bag = $l \times b$

The length of the square piece of cloth = $3.6 \text{ m} = 3.6 \times 100 \text{ cm}$

= 360 cm

The area of the cloth = $(side)^2 = (360)^2 = 360 \times 360 = 129600$ sq. cm

area of the cloth Number of bags = $\frac{\text{area of the cloth}}{\text{area of the cloth for one bag}}$

$$=\frac{129600}{864}=150$$

Answer: 150 bags can be made.

22. Cost price = Rs 10,000; Selling price = Rs 8000 Loss = C.P - S.P = Rs (10000 - 8000) = Rs 2000 Let the loss on C.P Rs 100 be Rs x Loss Rs 2000 on C.P Rs 10,000 $\therefore \frac{10000}{100} = \frac{2000}{x} \therefore 10000 \times x = 2000 \times 100$ ∴ x = 20 Answer: Loss: 20%.

OR

Cost price = Rs 2500; Selling price = Rs 2700 Profit = S.P - C.P = Rs (2700 - 2500) = Rs 200 Let the profit on C.P Rs 100 be Rs x Profit Rs 200 on C.P Rs 2500 $\therefore \frac{2500}{100} = \frac{200}{x} \therefore 2500 \times x = 200 \times 100$ $\therefore x = 8$ Answer: Profit: 8%.

23. Suppose John gets x litres of milk.

Then, Saurabh gets (x + 2) litres of milk.

: Total quantity of milk given to them = [x + (x + 2)] litres.

From the given condition, x + (x + 2) = 10

 $\therefore 2x + 2 = 10$ $\therefore 2x + 2 - 2 = 10 - 2$ $\therefore 2x = 8$ $\therefore \frac{2x}{2} = \frac{8}{2}$ $\therefore x = 4 \text{ and } x + 2 = 4 + 2 = 6$

Answer: John got 4 litres of milk and Saurabh got 6 litres of milk.

24. Here, the number of bicycles decreases, hence the cost also will decrease.

∴ This is an example of direct variation. Number of bicycles = 16, cost = Rs 17600 ∴ $\frac{\text{Number of bicycles}}{\text{Cost}} = \frac{16}{17600}$ The number of bicycles = 9, cost = x ∴ $\frac{\text{The number of bicycles}}{\text{cost}} = \frac{9}{x}$ In direct variation, the ratio of the number of bicycles to the cost remains costant. ∴ $\frac{16}{17600} = \frac{9}{x}$ ∴ $16 \times x = 9 \times 17600$ ∴ $x = \frac{9 \times 17600}{16}$

 $\therefore x = 9 \times 1100 \quad \therefore x = 9900$

Answer: The cost of 9 bicycles Rs 9900.

OR

Here, the number of labourers increases, hence, the work will be completed in less number of days. This is an example of inverse variation. \therefore the product of the number of labourers and the number of days they take remain constant. Let 21 labourers complete the work in x days Then, $12 \times 70 = 21 \times x$ $\therefore \frac{12 \times 70}{21} = x$

∴ x = 40

Answer: 21 labourers will complete the work in 40 days.

25. Here, the number of students increases.

: the expenditure for the trip will also increase.

This is an example of direct variation.

The number of student = 25, the expenditure for trip = Rs 625

The number of student 25

the expenditure for trip $\overline{625}$

The number of student = 25

The expenditure for trip = Rs x

. The number of student _ 40

 $\frac{1}{1}$ the expenditure for trip $\frac{1}{1}$

In direct variation, the ratio of the number of student to the

expenditure remains costant.

$$\therefore \frac{25}{625} = \frac{40}{x} \therefore \frac{1}{25} = \frac{40}{x} \therefore x = 40 \times 25 \therefore x = 1000$$

Answer: The expenditure of 40 students for the picinic is Rs 1000.

SECTION – D

26.Steps for construction:

(1) Draw seg AB of length 3.9 cm.

(2) At point A, draw ray AP such that $m \angle BAP = 90^{\circ}$.

(3) With centre B and radius 4.2 cm, draw an arc interesting ray AP in point A.

(4) Join BC.

 Δ ABC is a required triangle.



Steps for construction:

(1) Draw seg EF of length 4 cm.

(2) At point E, draw ray PE such that $m \angle PEF = 90^{\circ}$

(3) With centre F and radius 4.5 cm, draw an arc interesting ray PE at point D.

(4) Join DF.

 ΔDEF is a required triangle.



27.Suppose rectangle ABCD is the paper. Leaving 2 cm inside for the coloured part, we get rectangle PQRS.

The shaded portion shows the coloured part.



For \square ABCD: l = 20 cm, b = 10 cm Area of the paper, i.e., area of \square ABCD = l × b = 20 × 10 = 200 sq. cm For \square PQRS: l = (20 - 2 - 2) cm = 16 cm, b = (10 - 2 - 2) cm = 6 cm Area of \square PQRS = l × b = 16 × 6 = 96 sq. cm Area of the coloured part = area of \square ABCD - area of \square PQRS = (200 - 96) sq. cm = 104 sq. cm The area of the coloured part = 104 sq. cm **28.**In the figure, \square ABCD is a drawing board. Leaving 3 cm wide border, we get \square PQRS.

The shaded portion in the figure shows the border. For $\square ABCD: l = 45 \text{ cm}, b = 20 \text{ cm}$ Area of $\square ABCD = l \times b = 45 \times 20 = 900 \text{ sq. cm}$ For $\square PQRS: l = (45 - 3 - 3) \text{ cm} = 39 \text{ cm};$ b = (20 - 3 - 3) cm = 14 cmArea of $\square PQRS = l \times b = 39 \times 14 = 546 \text{ sq. cm}$ Area of the coloured part = area of $\square ABCD$ - area of $\square PQRS = (900 - 546) \text{ sq. cm}$ = 354 sq. cmThe area of the border = 354 sq. cm



SECTION – E



29.



(1) Niranjan gets the highest marks in Hindi.

- (2) Niranjan scores 90 marks in Math.
- (3) Niranjan gets 85 marks in English.
- (4) Niranjan scores the lowest marks in Science.