# Maharashtra Board (Class VII) <br> Mathematics Sample Paper 1 Solution 

Time: 2 hrs
Total Marks: 60
SECTION - A

1. 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.
7. 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 $(\mathrm{a}+\mathrm{b})(\mathrm{a}-\mathrm{b})$ is $(a+b)(a-b)=a^{2}-b^{2}$.
9. Correct Answer: (D)

The total surface area of a cuboid is 2 (length $\times$ breadth + breadth $\times$ height + length $\times$ 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 $\triangle K L P$, seg $K N$ is an altitude.
ii. In $\triangle K L P$, 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( $\left.y^{2}-2 y+7\right)$
$=\left(4 \times y^{2}\right)-(4 \times 2 y)+(4 \times 7)$
$=4 y^{2}-8 y+28$
17. $y-2=9$
$\therefore y-2+2=9+2$
$\therefore \mathrm{y}=11$
The solution of the equation is 11 .
18. $\frac{9}{7} \times \frac{(-14) \times 2}{15 \times 3}=\frac{9 \times(-28)}{7 \times 45}=\frac{9 \times(-2 \times 7)}{7 \times 3 \times 5} \times \frac{2}{3}=\frac{-2 \times 2}{5}=\frac{-4}{5}$.
19. $\mathrm{CP}=$ Rs $100, \mathrm{SP}=$ Rs 120

SP $>$ CP $\quad \therefore$ Profit
Profit $=$ SP $-\mathrm{CP}=$ Rs $(120-100)=$ Rs 20
The profit is Rs 20.
20. The area of a rectangle $=\mathrm{l} \times \mathrm{b}$

$$
\begin{aligned}
& =4 \mathrm{~cm} \times 2 \mathrm{~cm} \\
& =8 \mathrm{~cm}^{2}
\end{aligned}
$$

The area of rectangle $=8 \mathrm{sqcm}$.

## SECTION - C

21. The length of the bag $=36 \mathrm{~cm}$ and its breadth $=24 \mathrm{~cm}$.

The area of the cloth required for one bag $=\mathrm{l} \times \mathrm{b}$

$$
=36 \times 24=864 \text { sq. cm }
$$

The length of the square piece of cloth $=3.6 \mathrm{~m}=3.6 \times 100 \mathrm{~cm}$
$=360 \mathrm{~cm}$
The area of the cloth $=(\text { side })^{2}=(360)^{2}=360 \times 360=129600$ sq. cm
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
$\therefore \frac{10000}{100}=\frac{2000}{\mathrm{x}} \therefore 10000 \times \mathrm{x}=2000 \times 100$
$\therefore \mathrm{x}=20$
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
$\therefore \frac{2500}{100}=\frac{200}{\mathrm{x}} \therefore 2500 \times \mathrm{x}=200 \times 100$
$\therefore \mathrm{x}=8$
Answer: Profit: 8\%.
23. Suppose John gets $x$ litres of milk.

Then, Saurabh gets $(x+2)$ litres of milk.
$\therefore$ Total quantity of milk given to them $=[\mathrm{x}+(\mathrm{x}+2)]$ litres.
From the given condition, $\mathrm{x}+(\mathrm{x}+2)=10$
$\therefore 2 \mathrm{x}+2=10$
$\therefore 2 \mathrm{x}+2-2=10-2$
$\therefore 2 \mathrm{x}=8$
$\therefore \frac{2 \mathrm{x}}{2}=\frac{8}{2}$
$\therefore \mathrm{x}=4$ and $\mathrm{x}+2=4+2=6$
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.
$\therefore$ This is an example of direct variation.
Number of bicycles $=16$, cost $=$ Rs 17600
$\therefore \frac{\text { Number of bicycles }}{\text { Cost }}=\frac{16}{17600}$
The number of bicycles $=9$, cost $=x$
$\therefore \frac{\text { The number of bicycles }}{\operatorname{cost}}=\frac{9}{x}$
In direct variation, the ratio of the number of bicycles to the cost remains costant.
$\therefore \frac{16}{17600}=\frac{9}{\mathrm{x}}$
$\therefore 16 \times \mathrm{x}=9 \times 17600$
$\therefore \mathrm{x}=\frac{9 \times 17600}{16}$
$\therefore \mathrm{x}=9 \times 1100 \quad \therefore \mathrm{x}=9900$
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, $12 \times 70=21 \times \mathrm{x}$
$\therefore \frac{12 \times 70}{21}=\mathrm{x}$
$\therefore \mathrm{x}=40$
Answer: 21 labourers will complete the work in 40 days.
25. Here, the number of students increases.
$\therefore$ 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
$\therefore \frac{\text { The number of student }}{\text { the expenditure for trip }}=\frac{25}{625}$
The number of student $=25$
The expenditure for trip = Rs x
$\therefore \frac{\text { The number of student }}{\text { the expenditure for trip }}=\frac{40}{\mathrm{x}}$
In direct variation, the ratio of the number of student to the expenditure remains costant.
$\therefore \frac{25}{625}=\frac{40}{\mathrm{x}} \therefore \frac{1}{25}=\frac{40}{\mathrm{x}} \quad \therefore \mathrm{x}=40 \times 25 \quad \therefore \mathrm{x}=1000$
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 $\mathrm{m} \angle \mathrm{BAP}=90^{\circ}$.
(3) With centre B and radius 4.2 cm , draw an arc interesting ray AP in point A .
(4) Join BC.
$\triangle \mathrm{ABC}$ is a required triangle.


Rough figure


OR

Steps for construction:
(1) Draw seg EF of length 4 cm .
(2) At point E , draw ray PE such that $\mathrm{m} \angle \mathrm{PEF}=90^{\circ}$
(3) With centre F and radius 4.5 cm , draw an arc interesting ray PE at point D .
(4) Join DF.
$\triangle \mathrm{DEF}$ is a required triangle.


Rough figure

27. Suppose rectangle $A B C D$ 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: $\mathrm{l}=20 \mathrm{~cm}, \mathrm{~b}=10 \mathrm{~cm}$
Area of the paper, i.e., area of $\square \mathrm{ABCD}=\mathrm{l} \times \mathrm{b}=20 \times 10=200 \mathrm{sq}$. cm
For $\square$ PQRS: $\mathrm{l}=(20-2-2) \mathrm{cm}=16 \mathrm{~cm}, \mathrm{~b}=(10-2-2) \mathrm{cm}=6 \mathrm{~cm}$
Area of $\square \mathrm{PQRS}=\mathrm{l} \times \mathrm{b}=16 \times 6=96 \mathrm{sq}$. cm
Area of the coloured part $=$ area of $\square \mathrm{ABCD}-$ area of $\square \mathrm{PQRS}$
$=(200-96)$ sq. $\mathrm{cm}=104$ sq. cm
The area of the coloured part = 104 sq. cm
28.In the figure, $\square \mathrm{ABCD}$ is a drawing board. Leaving 3 cm wide border, we get $\square \mathrm{PQRS}$.

The shaded portion in the figure shows the border.
For $\square$ ABCD: $\mathrm{l}=45 \mathrm{~cm}, \mathrm{~b}=20 \mathrm{~cm}$
Area of $\square \mathrm{ABCD}=1 \times \mathrm{b}=45 \times 20=900$ sq. cm
For $\square \mathrm{PQRS}: 1=(45-3-3) \mathrm{cm}=39 \mathrm{~cm}$;
$\mathrm{b}=(20-3-3) \mathrm{cm}=14 \mathrm{~cm}$
Area of $\square \mathrm{PQRS}=\mathrm{l} \times \mathrm{b}=39 \times 14=546 \mathrm{sq} . \mathrm{cm}$
Area of the coloured part $=$ area of $\square$ ABCD - area of $\square \mathrm{PQRS}=(900-546)$ sq. cm

$=354 \mathrm{sq} . \mathrm{cm}$
The area of the border $=354$ sq. cm

## SECTION - E

29. 



## OR

(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.

