

**In this paper there are three parts of questions answer all the questions**

**Write explanation for each response that you have chosen in the space provided**

1. A right-angled triangle with legs of lengths 5 cm and 12 cm, find the area. Investigate how the area changes when one leg is fixed, and the other varies?

a)  $30 \text{ cm}^2$

## Explanation

b)  $36 \text{ cm}^2$

c)  $40 \text{ cm}^2$

d)  $60 \text{ cm}^2$

2. A rectangular garden has a length of 15 meters and a width of 8 meters. Calculate the perimeter of the garden. Investigate how the perimeter changes when the length or width is altered while maintaining the area constant.

a) 46 meters

## Explanation

b) 48 meters

c) 56 meters

d) 60 meters

3. A rectangular prism has a base area of 25 square units and a height of 8 units. Calculate the volume. Investigate how changes in the base area or height affect the volume.

a) 200 cubic units

## Explanation

b) 250 cubic units

c) 300 cubic units

d) 400 cubic units

4. Given a semi-circle with a diameter of 10 meters, calculate its area. Clearly show the steps involved in finding the area.

a)  $78.5 \text{ m}^2$

**Explanation**

b)  $157 \text{ m}^2$

c)  $235.5 \text{ m}^2$

d)  $314 \text{ m}^2$

5. Determine the area of a quarter circle with a radius of 6 cm. Explain how the formula for the area of a quarter circle is derived from the formula for a full circle.

a)  $28.26 \text{ cm}^2$

**Explanation**

b)  $56.52 \text{ cm}^2$

c)  $113 \text{ cm}^2$

d)  $37.68 \text{ cm}^2$

6. If the area of a circle is 154 square centimeters, calculate the radius. Use the formula for the area of a circle and show all the steps in your solution.

a) 7 cm

**Explanation**

b) 8 cm

c) 9 cm

d) 10 cm

7. Consider a circle with a radius of 5 cm and a semi-circle attached to it. Find the combined area of the circle and the semi-circle.

a)  $50\pi \text{ cm}^2$

**Explanation**

b)  $75\pi \text{ cm}^2$

c)  $100\pi \text{ cm}^2$

d)  $125\pi \text{ cm}^2$

**Find the correct answers and write in the space provide;**

1. In a right-angled triangle, if one leg is 8 cm and the hypotenuse is 10 cm, find the length of the other leg using Pythagoras' theorem. (Answer: \_\_\_\_\_ cm)
2. A ladder is leaning against a wall with the base 6 meters away from the wall. If the ladder is 8 meters long, find the height it reaches on the wall using Pythagoras' theorem. (Answer: \_\_\_\_\_ meters)
3. The sides of a right-angled triangle are in the ratio 3:4:5. If the shortest side is 6 cm, find the lengths of the other two sides. (Answer: Shortest side = 6 cm, Second side = \_\_\_\_\_ cm, Hypotenuse = \_\_\_\_\_ cm)

**Read the question carefully and draw the net:**

1. Consider a rectangular prism with dimensions  $4 \text{ cm} \times 3 \text{ cm} \times 6 \text{ cm}$ . Draw the net of this prism, labeling each face.

Answer:

2. A triangular prism has a base with sides of length 5 cm, 6 cm, and 7 cm. Draw the net of this prism, indicating the shape of each face.

Answer:

3. If you unfold a cube with side length 2 cm, what would be the resulting net? Draw the net and label each square face.

Answer:

4. Consider a rectangle with a fixed perimeter of 30 cm. Draw possible dimensions of the rectangle and find the area. Explore how different combinations of length and width affect the area.

Answer: