

## 11. PERIMETER AND AREA

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### PERIMETER AND AREA

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#### Teaching Task

#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

##### Multiple Choice Questions

1. Answer: C) 24 cm

Explanation: A regular octagon has 8 sides, and the perimeter is the sum of all the sides.  $\text{Perimeter} = 8 \times 3 = 24\text{cm}$ .

2. Answer: B) 24 cm

Explanation: The perimeter of a quadrilateral is the sum of all its sides.  $7 + 5 + 7 + 5 = 24\text{cm}$ .

3. Answer: B) 48 cm

Explanation: A square has 4 sides of equal length, and the perimeter is the sum of all the sides.  $4 \times 12 = 48\text{cm}$ .

4. Answer: B) 28 cm

Explanation: A heptagon has 7 sides, and the perimeter is the sum of all the sides.  $7 \times 4 = 28\text{cm}$ .

5. Answer: B) 60 cm

Explanation: A decagon has 10 sides, and the perimeter is the sum of all the sides.  $10 \times 6 = 60\text{cm}$ .

6. Answer: B) 9 cm

Explanation: A quadrilateral has 4 sides, and if the perimeter is 36 cm, the length of one side is  $36/4 = 9\text{ cm}$ .

#### ADVANCED LEVEL

##### More than One Answer Type

7. A) Length = 12 cm, Width = 8 cm, C) Length = 14 cm, Width = 7 cm

Explanation: A rectangle has a perimeter of  $P = 2L + 2W$ . If the length is twice the width, the perimeter equation becomes:  $2 \times 2W + 2W = 40$ . Solving for W, we get  $W = 8\text{cm}$ , and  $L = 2W = 16\text{cm}$ .

8. Answer: B) 20 cm , C) 24 cm.

Explanation: The perimeter of a regular pentagon is the sum of the lengths of its sides.  $5 \times 4 = 20\text{cm}$ .

**Fill In the Blanks**

9. Answer: 30 cm

Explanation: The perimeter of a regular pentagon is calculated as  $5 \times 6 = 30\text{cm}$ .

10. Answer: 32 cm

Explanation: The perimeter of a square is calculated as  $4 \times 8 = 32\text{cm}$ .

**Matching Type**

11. Match each shape with its given dimensions and the corresponding perimeter calculation:

1. A rectangle with Length = 7 cm and Width = 4 cm ---- C. Perimeter = 7 cm + 4 cm + 7 cm + 4 cm
2. A square with Side length = 9 cm ----- B. Perimeter =  $4 \times 9$  cm
3. A regular hexagon with Side length = 5 cm ----- A. Perimeter =  $6 \times 5$  cm
4. A triangle with sides 6 cm, 8 cm, and 10 cm ----- D. Perimeter = 6 cm + 8 cm + 10 cm
5. A regular pentagon with Side length = 8 cm ----- E. Perimeter =  $8 \text{ cm} \times 5$

**Answer the Following Questions**

12. Answer: 140 cm

Explanation: The perimeter of a rectangle is the sum of all its sides.  
 $50 + 20 + 50 + 20 = 140\text{cm}$ .

13. Answer: 26 cm

Explanation: The perimeter of a rectangle is  $2L + 2W$ .  $2 \times 9 + 2 \times 4 = 18 + 8 = 26\text{cm}$ .

**Learners Task****CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)****Multiple Choice Questions**

1. Answer: A) 26 cm

Explanation: The perimeter of a rectangle is given by the formula:

$$P = 2 \times (\text{Length} + \text{Width})$$

For a rectangle with length 8 cm and width 5 cm:  $P = 2 \times (8 + 5) = 2 \times 13 = 26\text{cm}$

2. Answer: B) 28 cm

Explanation: The perimeter of a square is given by the formula:

$$P = 4 \times \text{Side length}$$

For a square with side length 7 cm:  $P = 4 \times 7 = 28\text{cm}$

3. Answer: A) 18 cm

Explanation: The perimeter of a triangle is the sum of all its sides:  $P = 4 + 6 + 8 = 18\text{cm}$

4. Answer: B) 60 cm

Explanation: The perimeter of a regular hexagon is given by:  $P = 6 \times \text{Side length}$

For a hexagon with each side measuring 10 cm:  $P=6 \times 10=60\text{cm}$

5. Answer: B) 25 cm

Explanation: The perimeter of a regular pentagon is given by:  $P=5 \times \text{Side length}$

For a pentagon with each side measuring 5 cm:  $P=5 \times 5=25\text{cm}$

6. Answer: A) 26 cm

Explanation: The perimeter of a rectangle is given by:  $P=2 \times (\text{Length} + \text{Width})$

For a rectangle with length 9 cm and width 4 cm:  $P=2 \times (9+4)=2 \times 13=26\text{cm}$ .

## ADVANCED LEVEL

### More than One Answer Type

7. Answer: A) 26 cm

Explanation: The perimeter of a rectangle is:  $P=2 \times (\text{Length} + \text{Width})$

For a rectangle with length 8 cm and width 5 cm:  $P=2 \times (8+5)=2 \times 13=26\text{cm}$

8. Answer: A) 28 cm

Explanation: The perimeter of a square is:  $P=4 \times \text{Side length}$

For a square with side length 7 cm:  $P=4 \times 7=28\text{cm}$

### Fill In the Blanks

9. Answer: 42 cm

Explanation: The perimeter of a rectangle is:  $P=2 \times (\text{Length} + \text{Width})$

For a rectangle with length 15 cm and width 6 cm:  $P=2 \times (15+6)=2 \times 21=42\text{cm}$

10. Answer: 32 cm

Explanation: The perimeter of a regular octagon is:  $P=8 \times \text{Side length}$

For a regular octagon with each side measuring 4 cm:  $P=8 \times 4=32\text{cm}$

### Matching Type

11. Match each shape with its perimeter formula

1. Rectangle ----- B.  $P = 2 \times (\text{Length} + \text{Width})$

2. Square ----- C.  $P = 4 \times \text{Side length}$

3. Regular Hexagon ----- D.  $P = 6 \times \text{Side length}$

4. Regular Pentagon ----- A.  $P = 5 \times \text{Side length}$

### Answer the Following Questions

12. Answer: 28 cm

Explanation: The perimeter of a square is:  $P=4 \times \text{Side length}$

For a square with side 7 cm:  $P=4 \times 7=28\text{cm}$

13. Answer: 30 cm

Explanation: The perimeter of a rectangle is:  $P=2 \times (\text{Length} + \text{Width})$

For a rectangle with length 4 cm and width 11 cm:  $P=2 \times (4+11)=2 \times 15=30\text{cm}$

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## AREA

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### Teaching Task

#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

##### Multiple Choice Questions

1. Answer: C) 8 cm

Explanation: The area of a square is given by:  $\text{Area} = \text{Side}^2$

If the area is 64 square cm, then:  $\text{Side} = \sqrt{64} = 8\text{cm}$

2. Answer: B) 25 square cm

Explanation: The total area is the sum of the areas of the rectangle and the triangle:

Total Area =  $15 + 10 = 25$  square cm

3. Answer: B) 45 square cm

Explanation: The area of a rectangle is given by:  $\text{Area} = \text{Length} \times \text{Width}$

For a rectangle with length 9 cm and width 5 cm:  $\text{Area} = 9 \times 5 = 45$  square cm

4. Answer: B) 60 square cm

Explanation: The area of a triangle is given by:  $\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height}$

For a triangle with base 10 cm and height 12 cm:  $\text{Area} = \frac{1}{2} \times 10 \times 12 = 60$  square cm

5. Answer: A) 24 square cm

Explanation: The area of a trapezoid is given by:  $\text{Area} = \frac{1}{2} \times (\text{Base}_1 + \text{Base}_2) \times \text{Height}$

For a trapezoid with bases 8 cm and 5 cm, and height 4 cm:  $\text{Area} = \frac{1}{2} \times (8 + 5) \times 4 = \frac{1}{2} \times 13 \times 4 = 24$  square cm

6. Answer: B) 15 square units

Explanation: The area is approximately:  $14 + \frac{6}{2} = 14 + 3 = 15$  square units

#### ADVANCED LEVEL

##### More than One Answer Type

7. Answer: A) 49 square cm

Explanation: The area of a square is given by:  $\text{Area} = \text{Side}^2$

For a square with side length 7 cm:  $\text{Area} = 7^2 = 49$  square cm.

8. Answer: B) 45 square cm

Explanation: The area of a trapezoid is given by:

$\text{Area} = \frac{1}{2} \times (\text{Base}_1 + \text{Base}_2) \times \text{Height}$

For a trapezoid with bases 10 cm and 6 cm, and height 5 cm:  $\text{Area} = \frac{1}{2} \times (10 + 6) \times 5 = \frac{1}{2} \times 16 \times 5 = 45$  square cm.

### Fill In the Blanks

9. Answer: 18 square units

Explanation: If the shape covers 15 full squares and half of 6 additional squares, the area is approximately:  $15 + \frac{6}{2} = 15 + 3 = 18$  square units.

10. Answer: 8 cm

Explanation: If the area of a square is 64 square cm, each side length of the square is: Side =  $\sqrt{64} = 8$  cm.

### Matching Type

11. Match each example with the appropriate area calculation method:

1. Area of a rectangle with Length = 8 cm and Width = 5 cm ----- D. Area = 8 cm  $\times$  5 cm
2. Area of a square with Side length = 7 cm ----- E. Area = 7 cm  $\times$  7 cm
3. Area of a triangle with Base = 12 cm and Height = 5 cm ----- C. Area =  $\frac{1}{2} \times 12$  cm  $\times$  5 cm
4. Area of an irregular shape covering approximately 10 full grid squares and 3 half squares ----- B. Area =  $10 + \frac{3}{2} = 11.5$  square units
5. Area of a trapezoid with Base<sub>1</sub> = 6 cm, Base<sub>2</sub> = 4 cm, and Height = 3 cm ----- A. Area =  $\frac{1}{2} \times (6 \text{ cm} + 4 \text{ cm}) \times 3 \text{ cm}$ .

### Answer the Following Questions

12. Answer: 18 square units

Explanation: The shape covers 14 full squares and half of 6 additional squares:  $14 + \frac{6}{2} = 14 + 3 = 18$  square units

13. Answer: 31 square cm

Explanation: The area of the rectangle is: Area of rectangle =  $5 \times 3 = 15$  square cm

The area of the triangle is: Area of triangle =  $\frac{1}{2} \times 5 \times 4 = 10$  square cm

Total area =  $15 + 10 = 31$  square cm.

### Learners Task

#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

#### Multiple Choice Questions

1. Answer: B) 40 square cm

Explanation: The area of a rectangle is given by: Area = Length  $\times$  Width

For a rectangle with a length of 10 cm and width of 4 cm: Area =  $10 \times 4 = 40$  square cm

2. Answer: B) 25 square cm

Explanation: The area of a square is given by: Area = Side<sup>2</sup>

For a square with side length 5 cm: Area =  $5^2 = 25$  square cm

3. Answer: A) 20 square cm

Explanation: The area of a triangle is given by: Area =  $\frac{1}{2} \times \text{Base} \times \text{Height}$

For a triangle with a base of 8 cm and a height of 5 cm: Area =  $\frac{1}{2} \times 8 \times 5 = 20$  square cm

$$\times 8 \times 5 = 20 \text{ square cm}$$

4. Answer: A) 144 square cm

Explanation: The area of a square is given by:  $\text{Area} = \text{Side}^2$

For a square with side length 12 cm:  $\text{Area} = 12^2 = 144 \text{ square cm}$

5. Answer: A) 21 square cm

Explanation: The area of a rectangle is given by:  $\text{Area} = \text{Length} \times \text{Width}$

For a rectangle with a length of 7 cm and a width of 3 cm:  $\text{Area} = 7 \times 3 = 21 \text{ square cm}$

6. Answer: A) 24 square cm

Explanation: The area of a triangle is given by:  $\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height}$

For a triangle with a base of 6 cm and a height of 8 cm:  $\text{Area} = \frac{1}{2}$

$$\times 6 \times 8 = 24 \text{ square cm}$$

### **ADVANCED LEVEL**

#### **More than One Answer Type**

7. Answer: A) 24 cm

Explanation: The perimeter of a regular hexagon is given by:  $\text{Perimeter} = 6 \times \text{Side length}$

For a regular hexagon with side length 4 cm:  $\text{Perimeter} = 6 \times 4 = 24 \text{ cm}$

8. Answer: A) 15.75 square units

Explanation: The area is approximately the sum of 15 full squares and three-quarters of an additional square:  $\text{Area} = 15 + 0.75 = 15.75 \text{ square units}$

#### **Fill In the Blanks**

9. Answer: 81 square cm

Explanation: The area of a square is given by:  $\text{Area} = \text{Side}^2$

For a square with side length 9 cm:  $\text{Area} = 9^2 = 81 \text{ square cm}$ .

10. Answer: 150 square cm

Explanation: The area of a rectangle is given by:  $\text{Area} = \text{Length} \times \text{Width}$

For a rectangle with length 15 cm and width 10 cm:  $\text{Area} = 15 \times 10 = 150 \text{ square cm}$ .

#### **Matching Type**

11. Match each shape with the correct area formula:

1. Rectangle ----- C.  $\text{Area} = \text{Length} \times \text{Width}$

2. Square ----- B.  $\text{Area} = \text{Side length} \times \text{side length}$

3. Triangle ----- A.  $\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height}$

4. Irregular Shape (using grid method) ----- D. Estimate using grid coverage

5. Trapezoid ----- E.  $\text{Area} = \frac{1}{2} \times (\text{Base}_1 + \text{Base}_2) \times \text{Height}$

#### **Answer the Following Questions**

12. Answer: 24 square cm

Explanation: The area of a trapezoid is given by:  $\text{Area} = \frac{1}{2} \times (\text{Base}_1 + \text{Base}_2) \times \text{Height}$

For a trapezoid with bases 7 cm and 5 cm, and height 4 cm:

$$\text{Area} = \frac{1}{2} \times (7+5) \times 4 = \frac{1}{2} \times 12 \times 4 = 24 \text{ square cm}$$

13. Answer: 24 square cm

Explanation: The area of a triangle is given by:  $\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height}$

For a triangle with base 8 cm and height 6 cm:  $\text{Area} = \frac{1}{2} \times 8 \times 6 = 24 \text{ square cm}$