

15. PERIMETER, AREA AND VOLUME**PERIMETER AND AREA****TEACHING TASK****CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)****Multiple Choice Questions**

1. A triangular field has a base of 10 meters and a height of 6 meters. What is its area?
A) 60 m² B) 30 m² C) 50 m² D) 20 m²

Key: B

Explanation: Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 10 \times 6 = 30 \text{ m}^2$.

2. If a square has a side length of 4 cm, what is its area?
A) 8 cm² B) 16 cm² C) 12 cm² D) 20 cm²

Key: B

Explanation: Area of square = side \times side = 4 \times 4 = 16 cm².

3. A playground is in the shape of a rectangle with a length of 15 meters and a width of 7 meters. What is the area of the playground?
A) 105 m² B) 120 m² C) 140 m² D) 200 m²

Key: A

Explanation: Area of rectangle = length \times width = 15 \times 7 = 105 m².

4. What is the perimeter of a rectangle with a length of 10 cm and a width of 5 cm?
A) 30 cm B) 40 cm C) 25 cm D) 20 cm

Key: A

Explanation: Perimeter of rectangle = 2 \times (length + width) = 2 \times (10 + 5) = 30 cm.

5. A triangle has a base of 8 cm and a height of 5 cm. What is its area?
A) 20 cm² B) 15 cm² C) 40 cm² D) 10 cm²

Key: A

Explanation: Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 8 \times 5 = 20 \text{ cm}^2$.

ADVANCED LEVEL

More than One Answer Type

6. A rectangular garden has a length of 18 meters and a width of 6 meters, What is the perimeter of the garden?

What is the area of the garden? Select all correct answers.

- A) Perimeter = 48 meters, Area = 108 square meters
 B) Perimeter = 36 meters, Area = 108 square meters
 C) Perimeter = 36 meters, Area = 108 square feet
 D) Perimeter = 48 meters, Area = 110 square meters

Key: A

Explanation: Perimeter = $2 \times (18 + 6) = 48$ m; Area = $18 \times 6 = 108$ m².

7. The length of a rectangle is 10 meters, and its width is 4 meters. What is the perimeter of the rectangle? Select all correct answers.

- A) 28 meters B) 36 meters C) 48 meters D) 28 meters

Key: A, D

Explanation: Perimeter = $2 \times (10 + 4) = 28$ m. A and D are the same.

Fill In the Blanks

8. The area of a square is found by multiplying the length of one side by

Key: $\frac{9}{8}$

Explanation: area of square = side \times side.

9. The area of a triangle is calculated by multiplying the base by the height and then dividing by ____.

Key: 2

Explanation: Triangle area = $\frac{1}{2} \times \text{base} \times \text{height} = (\text{base} \times \text{height}) \div 2$.

Matching Type

10. Questions

1. The perimeter of a square with a side length of 10 m.
2. The area of a rectangle with a length of 15 m and a width of 8 m.
3. The perimeter of a triangle with sides 4 m, 6 m, and 5 m.
4. The area of a triangle with a base of 14 cm and a height of 6 cm.

Answers

- A. 56 cm²
- B. 30 m
- C. 200 cm²
- D. 36 m

5. The perimeter of a rectangle with a length of 20 cm and a width of 5 cm.
 6. The area of a square with a side length of 7 cm.

- E. 108 cm^2
 F. 16 m

Key: 1 – F, 2 – C, 3 – B, 4 – A, 5 – D, 6 – E

Answer the Following Questions

11. John is planning to build a rectangular swimming pool in his backyard. The pool will be 15 meters long and 8 meters wide. How much space does the pool cover?

Key: 120 m^2

Explanation: Area = length \times width = $15 \times 8 = 120 \text{ m}^2$.

12. A house has a triangular-shaped roof with a base of 20 feet and a height of 6 feet. What is the area of the roof?

Key: 60 ft^2

Explanation: Area of triangle = $\frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 20 \times 6 = 60 \text{ ft}^2$.

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. What is the perimeter of a square with a side length of 6 cm?
 A) 12 cm B) 18 cm C) 24 cm D) 30 cm

Key: C

Explanation: Perimeter of square = $4 \times \text{side} = 4 \times 6 = 24 \text{ cm}$.

2. A rectangle has a length of 10 cm and a width of 4 cm. What is its area?
 A) 40 cm^2 B) 14 cm^2 C) 20 cm^2 D) 30 cm^2

Key: A

Explanation: Area = length \times width = $10 \times 4 = 40 \text{ cm}^2$.

3. A triangle has sides of 5 cm, 7 cm, and 8 cm. What is the perimeter of the triangle?
 A) 20 cm B) 15 cm C) 12 cm D) 10 cm

Key: A

Explanation: Perimeter = sum of sides = $5 + 7 + 8 = 20 \text{ cm}$.

4. The side length of a square is 9 meters. What is the perimeter of the square?
 A) 27 meters B) 36 meters C) 18 meters D) 45 meters

Key: B

Explanation: Perimeter = $4 \times \text{side} = 4 \times 9 = 36 \text{ m}$.

5. The length of a rectangular garden is 8 meters, and the width is 3 meters. What is the perimeter?
 A) 22 meters B) 26 meters C) 18 meters D) 24 meters

Key: A

Explanation: Perimeter = $2 \times (\text{length} + \text{width}) = 2 \times (8 + 3) = 22 \text{ m}$.

ADVANCED LEVEL

More than One Answer Type

6. The sides of a triangle measure 4 cm, 7 cm, and 9 cm. What is the perimeter of the triangle? Select all correct answers.
 A) 20 cm B) 18 cm C) 21 cm D) 24 cm

Key: A

Explanation: Perimeter = $4 + 7 + 9 = 20 \text{ cm}$.

7. A rectangular field has a length of 16 meters and a width of 9 meters. What is the area of the field? Select all correct answers.
 A) 144 square meters B) 140 square meters
 C) 144 square feet D) 144 square meters

Key: A, D

Explanation: Area = $16 \times 9 = 144 \text{ m}^2$. a and d are the same.

Fill In the Blanks

8. The perimeter of a triangle is the sum of the lengths of all ___ sides.

Key: three

Explanation: A triangle has 3 sides; perimeter = sum of all three.

9. The perimeter of a square is calculated by multiplying the length of one side by ____.

Key: 4

Explanation: Perimeter of square = $4 \times \text{side}$.

Matching Type

- | 10. Questions | Answers |
|---|-----------------------|
| 1. The perimeter of a square with a side length of 6 cm. | A. 26 cm |
| 2. The area of a rectangle with a length of 7 cm and a width of 4 cm. | B. 36 cm ² |
| 3. The perimeter of a triangle with sides measuring 5 cm, 7 cm, and 8 cm. | C. 24 cm |
| 4. The area of a triangle with a base of 10 m | D. 25 cm |

and a height of 5 m.

5. The perimeter of a rectangle with a length of 12 cm and a width of 9 cm. E. 10 cm
6. The area of a square with a side length of 9 cm. F. 45 cm²

Key: 1-C, 2-F, 3-A, 4-D, 5-E, 6-B

Answer the Following Questions

11. Sara wants to build a small square-shaped garden in her backyard. Each side of the garden will be 10 feet long. How much fencing does Sara need to put around the garden?

Key: 40 feet

Explanation: Perimeter of square = $4 \times \text{side} = 4 \times 10 = 40$ ft.

12. A triangular garden in a park has sides measuring 12 meters, 9 meters, and 15 meters. How much fencing is required to put around the garden?

Key: 36 meters

Explanation: Perimeter = sum of sides = $12 + 9 + 15 = 36$ m.

VOLUME

TEACHING TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

Multiple Choice Questions

1. A box has a height of 9 meters, a length of 3 meters, and a width of 2 meters. What is the volume of the box?
- A) 54 cubic meters B) 56 cubic meters
C) 48 cubic meters D) 45 cubic meters

Key: A

Explanation: Volume = length \times width \times height = $3 \times 2 \times 9 = 54$ m³.

2. A rectangular aquarium has a length of 8 meters, width of 6 meters, and height of 3 meters. What is the volume of the aquarium?
- A) 144 cubic meters B) 180 cubic meters
C) 24 cubic meters D) 168 cubic meters

Key: A

Explanation: Volume = $8 \times 6 \times 3 = 144$ m³.

3. A cube has a side length of 4 cm. What is the volume of the cube?
- A) 12 cubic cm B) 16 cubic cm

C) 64 cubic cm

D) 36 cubic cm

Key: C**Explanation:** Volume of cube = $\text{side}^3 = 4 \times 4 \times 4 = 64 \text{ cm}^3$.

4. A storage container is in the shape of a rectangular prism with a length of 18 meters, width of 6 meters, and height of 5 meters. What is the volume of the container?

A) 540 cubic meters

B) 600 cubic meters

C) 720 cubic meters

D) 5400 cubic meters

Key: A**Explanation:** Volume = $18 \times 6 \times 5 = 540 \text{ m}^3$.

5. A gift box is a cube, and each side has a length of 10 cm. What is the volume of the gift box?

A) 100 cubic cm

B) 200 cubic cm

C) 1000 cubic cm

D) 150 cubic cm

Key: C**Explanation:** Volume = $10^3 = 1000 \text{ cm}^3$.

ADVANCED LEVEL

More than One Answer Type

6. Which of the following formulas can be used to calculate the volume of a cube?

A) Volume = Side \times Side \times SideB) Volume = Length \times Width \times HeightC) Volume = $p \times \text{Radius}^2 \times \text{Height}$ D) Volume = Side^3 **Key:** A, B, D**Explanation:** For a cube, all sides equal, so A and D are same; B also works because length=width=height.

7. Which of the following statements is true regarding the volume of a rectangular prism?

A) The volume is calculated by multiplying its length, width, and height.

B) The volume is found by adding the length, width, and height together.

C) The volume can only be calculated if the height is greater than the width.

D) The volume is a measure of how much space is inside the object.

Key: A, D**Explanation:** A is correct formula; D is correct definition.

Fill In the Blanks

8. An aquarium is 10 meters long, 3 meters wide, and 2 meters high. The volume of the aquarium is ___ cubic meters.

Key: 60

Explanation: Volume = $10 \times 3 \times 2 = 60 \text{ m}^3$.

9. To find the volume of a rectangular prism, multiply the ____, width, and height together.

Key: length

Explanation: Volume = length \times width \times height.

Matching Type

10.

Questions

1. The volume of a rectangular box with dimensions 5 meters (length), 3 meters (width), and 2 meters (height).
2. The volume of a cube with a side length of 6 cm.
3. The volume of a rectangular aquarium with dimensions 10 meters (length), 6 meters (width), and 5 meters (height).
4. The volume of a rectangular swimming pool with dimensions 30 meters (length), 15 meters (width), and 2 meters (height).
5. The volume of a cube with a side length of 2 cm.
6. The volume of a gift box with dimensions 12 cm (length), 8 cm (width), and 4 cm (height).

Answers

- A. 72 cubic cm
- B. 100 cubic meters
- C. 96 cubic cm
- D. 900 cubic meters
- E. 192 cubic cm
- F. 30 cubic meters

Key: 1 – F, 2 – C, 3 – B, 4 – D, 5 – A, 6 – E

Answer the Following Questions

11. Liam has a cube-shaped gift box that he wants to wrap. Each side of the cube is 8 cm long. How much space is inside the gift box?

Key: 512 cm^3

Explanation: Volume = $\text{side}^3 = 8 \times 8 \times 8 = 512 \text{ cm}^3$.

12. Sophia is setting up a rectangular aquarium for her fish. The aquarium has a length of 10 meters, a width of 6 meters, and a height of 3 meters. How much water can the aquarium hold?

Key: 180 m^3

Explanation: Volume = $10 \times 6 \times 3 = 180 \text{ m}^3$.

LEARNERS TASK

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

1. What is the volume of a rectangular prism that is 7 cm long, 4 cm wide, and 3 cm high?
- A) 60 cubic cm
B) 70 cubic cm
C) 84 cubic cm
D) 75 cubic cm

Key: C**Explanation:** Volume = $7 \times 4 \times 3 = 84 \text{ cm}^3$.

2. A box has a length of 10 cm, width of 5 cm, and height of 8 cm. What is the volume of the box?
- A) 400 cubic cm
B) 350 cubic cm
C) 500 cubic cm
D) 4000 cubic cm

Key: A**Explanation:** Volume = $10 \times 5 \times 8 = 400 \text{ cm}^3$.

3. A swimming pool is shaped like a rectangular prism. It is 30 meters long, 15 meters wide, and 5 meters deep. What is the volume of the pool?
- A) 1500 cubic meters
B) 2250 cubic meters
C) 1000 cubic meters
D) 900 cubic meters

Key: B**Explanation:** Volume = $30 \times 15 \times 5 = 2250 \text{ m}^3$.

4. A cube has a side length of 6 cm. What is its volume?
- A) 36 cubic cm
B) 216 cubic cm
C) 72 cubic cm
D) 18 cubic cm

Key: B**Explanation:** Volume = $6^3 = 216 \text{ cm}^3$.

5. A fish tank is shaped like a rectangular prism. It has a length of 20 cm, width of 10 cm, and height of 12 cm. What is the volume of the tank?
- A) 2400 cubic cm
B) 1200 cubic cm
C) 400 cubic cm
D) 800 cubic cm

Key: A**Explanation:** Volume = $20 \times 10 \times 12 = 2400 \text{ cm}^3$.

ADVANCED LEVEL**More than One Answer Type**

6. What is the formula for calculating the volume of a rectangular prism?
- A) Volume = Length \times Width \times Height
 B) Volume = Length \times Width \times Depth
 C) Volume = Side \times Side \times Side
 D) Volume = Height \times Width \times Depth

Key: A, B, D

Explanation: All are essentially same: depth = height.

7. What is the volume of a cube with each side measuring 8 cm?
- A) 512 cubic centimeters
 B) 64 cubic centimeters
 C) 128 cubic centimeters
 D) 32 cubic centimeters

Key: A

Explanation: Volume = $8^3 = 512 \text{ cm}^3$.

Fill In the Blanks

8. A cube has sides of length 8 cm. The volume of the cube is calculated as Volume = $8 \times \underline{\quad} \times \underline{\quad}$.

Key: 8, 8

Explanation: Volume of cube = side \times side \times side = $8 \times 8 \times 8$.

9. To find the volume of a rectangular prism, multiply the $\underline{\quad}$, width, and height together.

Key: length

Explanation: Volume = length \times width \times height.

Matching Type

- | 10. Questions | Answers |
|---|---------------------|
| 1. The volume of a cube with a side length of 3 cm. | A. 72 cubic cm |
| 2. The volume of a rectangular box with dimensions 6 cm (length), 4 cm (width), and 2 cm (height). | B. 120 cubic meters |
| 3. The volume of a rectangular aquarium with dimensions 8 meters (length), 3 meters (width), and 2 meters (height). | C. 60 cubic cm |
| 4. The volume of a rectangular swimming | D. 840 cubic meters |

pool with dimensions 20 meters (length),
10 meters (width), and 3 meters (height).

5. The volume of a cube with a side length E. 64 cubic cm

of 4 cm.

6. The volume of a gift box with dimensions F. 210 cubic cm

7 cm (length), 5 cm (width), and 3 cm (height).

Key: 1 – A, 2 – C, 3 – B, 4 – D, 5 – E, 6 – F

Answer the Following Questions

11. Lucas wants to know how much water his swimming pool can hold. The pool is 30 meters long, 12 meters wide, and 4 meters deep. How much water will the pool hold?

Key: 1440 m³

Explanation: Volume = $30 \times 12 \times 4 = 1440 \text{ m}^3$.

12. Emma has a storage box that is 15 cm long, 8 cm wide, and 10 cm high. How much space is inside the box?

Key: 1200 cm³

Explanation: Volume = $15 \times 8 \times 10 = 1200 \text{ cm}^3$.