Composite Figures Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is a composite figure?

Hint: Think about the definition of composite figures in geometry.

- ◯ A) A figure made up of only circles
- ◯ **B) A figure made up of two or more simple geometric shapes ✓**
- ◯ C) A figure that is always a rectangle
- ◯ D) A figure that cannot be measured

> A composite figure is made up of two or more simple geometric shapes.

Which of the following shapes can be part of a composite figure? (Select all that apply)

Hint: Consider the basic geometric shapes.

- ☐ **A) Triangle ✓**
- ☐ **B) Circle ✓**
- ☐ **C) Square ✓**
- ☐ **D) Pentagon ✓**

> Shapes like triangles, circles, squares, and pentagons can all be part of composite figures.

Explain why it is important to understand the properties of individual shapes when working with composite figures.

Hint: Think about how individual shapes contribute to the overall figure.

Understanding the properties of individual shapes helps in accurately calculating area, perimeter, and other characteristics of composite figures.

List the formulas for calculating the area of a rectangle and a triangle.

Hint: Recall the basic area formulas for these shapes.

1. Area of a rectangle

Length × Width

2. Area of a triangle

1/2 × Base × Height

The area of a rectangle is calculated as length times width, and the area of a triangle is calculated as one-half times base times height.

What is the first step in finding the area of a composite figure?

Hint: Consider the process of breaking down the figure.

- ◯ A) Calculate the perimeter
- ◯ **B) Decompose the figure into simpler shapes ✓**
- ◯ C) Multiply all sides together
- ◯ D) Subtract the smallest shape's area

The first step is to decompose the figure into simpler shapes.

Part 2: Application and Analysis

A composite figure consists of a rectangle with a length of 8 cm and a width of 3 cm, and a semicircle with a diameter of 3 cm. What is the area of the composite figure? (Use $\pi \approx 3.14$)

Hint: Calculate the area of both shapes and add them together.

- ◯ A) 24 cm²
- ◯ **B) 28.5 cm² ✓**
- ◯ C) 36 cm²
- ◯ D) 32.5 cm²

> The area of the composite figure is 28.5 cm².

You have a composite figure made of a square and a triangle. Which of the following methods can be used to find the total area? (Select all that apply)

Hint: Think about how to combine areas of different shapes.

- ☐ **A) Add the areas of the square and triangle ✓**
- ☐ B) Subtract the area of the triangle from the square
- ☐ C) Multiply the areas of the square and triangle
- ☐ **D) Decompose into simpler shapes and add their areas ✓**

> You can add the areas of the square and triangle or decompose into simpler shapes and add their areas.

A garden is designed in the shape of a composite figure consisting of a rectangle and a semicircle. If the rectangle measures 10 meters by 5 meters and the semicircle has a radius of 5 meters, calculate the total area of the garden.

Hint: Use the area formulas for both shapes to find the total area.

> **The total area of the garden is 78.5 m².**

Which of the following best describes the relationship between the perimeter and area of a composite figure?

Hint: Consider how perimeter and area are defined.

- ◯ A) They are always equal
- ◯ B) The perimeter is always greater than the area
- ◯ **C) They are independent properties ✓**
- ◯ D) The area is always greater than the perimeter

> The perimeter and area are independent properties of a composite figure.

In analyzing a composite figure, which factors must be considered to accurately calculate its perimeter? (Select all that apply)

Hint: Think about the edges and dimensions of the shapes involved.

- ☐ **A) Length of all outer edges ✓**
- ☐ **B) Shared edges between shapes ✓**
- ☐ C) The height of each shape
- ☐ D) The type of shapes involved

> Factors include the length of all outer edges and shared edges between shapes.

Analyze a composite figure made of a rectangle and a semicircle. Discuss how the perimeter calculation changes if the semicircle is positioned on one of the rectangle's longer sides versus a shorter side.

Hint: Consider how the placement of the semicircle affects the total perimeter.

> **The perimeter calculation will differ based on whether the semicircle is on a longer or shorter side, affecting the total length of the outer edges.**

Part 3: Evaluation and Creation

Which method would be most efficient for calculating the area of a complex composite figure?

Hint: Consider the methods that simplify the calculation process.

- ◯ A) GuessING the area
- ◯ B) Using only the perimeter
- ◯ **C) DeCOMposing into simpler shapes and summING their areas ✓**
- ◯ D) Estimating based on visual inspection

> The most efficient method is to decompose into simpler shapes and sum their areas.

You are tasked with designing a park that includes a composite figure of a rectangle and a circle. Which considerations are important for your design? (Select all that apply)

Hint: Think about the practical aspects of your design.

- ☐ **A) Ensuring the shapes fit together without gaps ✓**
- ☐ **B) Calculating the total area for landscaping ✓**
- ☐ **C) Determining the perimeter for fencing ✓**
- ☐ D) Ignoring the shapes' dimensions

> Important considerations include ensuring the shapes fit together without gaps, calculating the total area for landscaping, and determining the perimeter for fencing.

Design a composite figure using at least three different shapes. Describe your design and explain how you would calculate its total area and perimeter.

Hint: Think creatively about the shapes you can combine.

> **The design should include at least three shapes, and the total area and perimeter can be calculated by finding the area and perimeter of each shape and summation.**

Evaluate the following statement: "The perimeter of a composite figure is always less than the sum of the perimeters of its individual shapes." Provide reasoning and examples to support your evaluation.

Hint: Consider how shared edges affect the total perimeter.

1. Reason for evaluation

> Shared edges reduce total perimeter.

2. Example

> A square and a triangle sharing a side.

> The statement is generally true because shared edges reduce the total perimeter compared to the sum of individual shapes.