Exploring Circles: Finding Area and Circumference

Introduction

Welcome to this worksheet on finding the area and circumference of a circle. This activity is designed for 14-year-old students to practice and apply their knowledge of circle formulas.

Understanding Circle Formulas

Complete the following questions:

1. What is the formula for the area of a circle?

2. What is the formula for the circumference of a circle?

3. What is the relationship between the radius, diameter, and circumference of a circle?

Calculating Area and Circumference

Complete the following questions:

1. Calculate the area of a circle with a radius of 4 cm.

2. Calculate the circumference of a circle with a diameter of 10 cm.

3. Calculate the area and circumference of a circle with a radius of 6 cm.

Real-World Applications

Complete the following questions:

1. A circular garden has a radius of 3 meters. What is the area of the garden?

2. A circular ring has a diameter of 8 cm. What is the circumference of the ring?

3. A circular tank has a radius of 2 meters and a height of 5 meters. What is the volume of the tank?

Word Problems

Complete the following questions:

1. A bike wheel has a diameter of 26 inches. How many revolutions will the wheel make if it travels a distance of 1000 inches?

2. A circular picture frame has a diameter of 12 inches. What is the area of the frame?

3. A circular swimming pool has a radius of 5 meters. What is the circumference of the pool?

Circle Geometry

Complete the following questions:

1. What is the formula for the area of a semicircle?

2. What is the formula for the circumference of a sector?

3. Calculate the area and circumference of a semicircle with a radius of 4 cm.

Composite Shapes

Complete the following questions:

1. Calculate the area and circumference of a shape consisting of two semicircles with radii of 3 cm and 4 cm.

2. Calculate the area and circumference of a shape consisting of a circle and a semicircle with radii of 5 cm and 3 cm.

3D Shapes

Complete the following questions:

1. What is the formula for the volume of a sphere?

2. What is the formula for the surface area of a cylinder?

3. Calculate the volume and surface area of a sphere with a radius of 4 cm.

Real-World Problems

Complete the following questions:

1. A architect is designing a circular building with a radius of 10 meters. What is the area of the building?

2. A engineer is designing a circular bridge with a diameter of 20 meters. What is the circumference of the bridge?

3. A designer is creating a circular logo with a radius of 5 cm. What is the area of the logo?

Review

Complete the following questions:

1. What is the formula for the area of a circle?

2. What is the formula for the circumference of a circle?

3. What is the relationship between the radius, diameter, and circumference of a circle?

Challenge

Complete the following questions:

1. Calculate the area and circumference of a circle with a radius of 10 cm.

2. Calculate the area and circumference of a shape consisting of three semicircles with radii of 2 cm, 3 cm, and 4 cm.

3. Design a circular shape with a radius of 5 cm and calculate its area and circumference.