

Scale Factor Worksheet

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Part 1: Building a Foundation

What is a scale factor?

Hint: Think about how scale factors relate to multiplication.

- A) A number that divides a quantity
- B) A number that adds to a quantity
- C) A number that scales or multiplies a quantity
- D) A number that subtracts from a quantity

Which of the following are applications of scale factors?

Hint: Consider different fields where scale factors might be used.

- A) Resizing geometric shapes
- B) Creating scale models
- C) Calculating interest rates
- D) Designing maps

Explain how a scale factor is used in creating a scale model.

Hint: Think about the relationship between the model and the actual object.

List two types of scale factors and briefly describe each.

Hint: Consider both enlargement and reduction.

1. Enlargement

2. Reduction

If a shape is enlarged by a scale factor of 2, what happens to its dimensions?

Hint: Consider how multiplication affects size.

- A) They are halved
- B) They remain the same
- C) They are doubled
- D) They are tripled

Part 2: Application and Analysis

A rectangle has dimensions 4 cm by 6 cm. If the scale factor is 3, what are the new dimensions?

Hint: Multiply each dimension by the scale factor.

- A) 12 cm by 18 cm
- B) 8 cm by 12 cm
- C) 6 cm by 9 cm
- D) 10 cm by 15 cm

You have a blueprint with a scale factor of 1:100. Which of the following are true?

Hint: Think about how scale factors relate to real measurements.

- A) 1 cm on the blueprint represents 100 cm in reality
- B) 1 cm on the blueprint represents 10 cm in reality
- C) The blueprint is an enlargement of the actual object
- D) The blueprint is a reduction of the actual object

Given a triangle with sides 3 cm, 4 cm, and 5 cm, apply a scale factor of 2 and find the new side lengths.

Hint: Multiply each side length by the scale factor.

How does the area of a shape change when the scale factor is applied?

Hint: Consider the relationship between dimensions and area.

- A) It remains the same
- B) It changes by the square of the scale factor
- C) It changes by the cube of the scale factor
- D) It doubles

Which of the following relationships are affected by a scale factor?

Hint: Think about different properties of shapes.

- A) Perimeter
- B) Volume
- C) Area
- D) Weight

Analyze how changing the scale factor affects the dimensions and area of a square. Provide a detailed explanation.

Hint: Consider both the linear and area changes.

Part 3: Evaluation and Creation

Which scale factor would you choose to double the volume of a cube?

Hint: Think about how volume scales with dimensions.

- A) 2
- B) 1.26
- C) 1.5
- D) 1.1

Evaluate the following scenarios and determine which involve an incorrect application of scale factors:

Hint: Think critically about each scenario.

- A) A map with a scale factor of 1:50,000 is used to measure a distance of 5 km as 10 cm
- B) A model car is built with a scale factor of 1:10 and measures 20 cm in length, representing a real car of 2 meters
- C) A painting is enlarged by a scale factor of 3, and its area increases by a factor of 9
- D) A blueprint uses a scale factor of 1:100, and a 3-meter wall is represented as 3 cm

Design a simple geometric shape and describe how you would use a scale factor to create a larger version for a project. Explain your choice of scale factor and its impact on the shape's dimensions.

Hint: Think about the shape and the desired size.