

Scale Factor Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is a scale factor?

undefined. A) A number that divides a quantity

undefined. B) A number that adds to a quantity

undefined. C) A number that scales or multiplies a quantity ✓

undefined. D) A number that subtracts from a quantity

A scale factor is a number that scales or multiplies a quantity.

Which of the following are applications of scale factors?

undefined. A) Resizing geometric shapes ✓

undefined. B) Creating scale models ✓

undefined. C) Calculating interest rates

undefined. D) Designing maps ✓

Scale factors are used in resizing shapes, creating models, and designing maps.

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

A scale factor is used to determine the dimensions of a model in relation to the actual object, allowing for accurate representation.

List two types of scale factors and briefly describe each.

1. Enlargement

A scale factor greater than 1 that increases the size of an object.

2. Reduction

A scale factor less than 1 that decreases the size of an object.

Types of scale factors include enlargement (making an object larger) and reduction (making an object smaller).

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

undefined. A) They are halved

undefined. B) They remain the same

undefined. C) They are doubled ✓

undefined. D) They are tripled

The dimensions of the shape are doubled.

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?

undefined. A) 12 cm by 18 cm ✓

undefined. B) 8 cm by 12 cm

undefined. C) 6 cm by 9 cm

undefined. D) 10 cm by 15 cm

The new dimensions are 12 cm by 18 cm.

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

undefined. A) 1 cm on the blueprint represents 100 cm in reality ✓

undefined. B) 1 cm on the blueprint represents 10 cm in reality

undefined. C) The blueprint is an enlargement of the actual object

undefined. D) The blueprint is a reduction of the actual object ✓

1 cm on the blueprint represents 100 cm in reality, and 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.

The new side lengths are 6 cm, 8 cm, and 10 cm.

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

undefined. A) It remains the same

undefined. B) It changes by the square of the scale factor ✓

undefined. C) It changes by the cube of the scale factor

undefined. D) It doubles

The area changes by the square of the scale factor.

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

undefined. A) Perimeter ✓

undefined. B) Volume ✓

undefined. C) Area ✓

undefined. D) Weight

Perimeter, volume, and area are all affected by a scale factor.

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

Changing the scale factor affects the dimensions linearly and the area quadratically, as the area is proportional to the square of the side length.

Part 3: Evaluation and Creation

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

undefined. A) 2

undefined. B) 1.26 ✓

undefined. C) 1.5

undefined. D) 1.1

To double the volume of a cube, you would choose a scale factor of approximately 1.26.

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

undefined. **A) A map with a scale factor of 1:50,000 is used to measure a distance of 5 km as 10 cm** ✓

undefined. 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

undefined. C) A painting is enlarged by a scale factor of 3, and its area increases by a factor of 9

undefined. **D) A blueprint uses a scale factor of 1:100, and a 3-meter wall is represented as 3 cm** ✓

The scenarios involving incorrect applications of scale factors include the map measuring and the blueprint representation.

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.

The response should include a description of the shape, the chosen scale factor, and how it affects the dimensions.