

Dilation Worksheet Answer Key PDF

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Part 1: Building a Foundation

What is the definition of dilation in geometry?

- undefined. A) A transformation that changes the shape of a figure
undefined. B) A transformation that changes the size of a figure ✓
undefined. C) A transformation that changes the position of a figure
undefined. D) A transformation that changes the orientation of a figure

Dilation is a transformation that changes the size of a figure.

Which of the following are properties of dilation? (Select all that apply)

- undefined. A) Proportionality ✓**
undefined. B) Change in angle measures
undefined. C) Preservation of orientation ✓
undefined. D) Change in shape

Properties of dilation include proportionality and preservation of orientation.

Explain what is meant by the "center of dilation" and its role in the transformation process.

The center of dilation is the fixed point from which the figure is enlarged or reduced.

List the effects of dilation on the following geometric properties:

1. Lines

Lines remain straight and parallel.

2. Angles

Angles remain unchanged.

3. Circles

Circles increase or decrease in radius.

Dilation affects lines, angles, and circles in specific ways.

Part 2: Understanding and Interpretation

If a scale factor is greater than 1, what type of dilation occurs?

undefined. A) Reduction

undefined. **B) Enlargement ✓**

undefined. C) Translation

undefined. D) Reflection

A scale factor greater than 1 results in an enlargement.

Which statements about scale factors are true? (Select all that apply)

undefined. **A) A scale factor of 1 means no change in size. ✓**

undefined. B) A scale factor less than 1 results in an enlargement.

undefined. C) A scale factor greater than 1 results in a reduction.

undefined. **D) A scale factor of 0.5 results in a reduction. ✓**

True statements include that a scale factor of 1 means no change and a scale factor of 0.5 results in a reduction.

Describe how dilation affects the coordinates of a point when the center of dilation is the origin.

When the center of dilation is the origin, the coordinates are multiplied by the scale factor.

Part 3: Application and Analysis

A triangle with vertices at (2, 3), (4, 5), and (6, 7) is dilated with a scale factor of 2 from the origin. What are the coordinates of the new vertices?

undefined. **A) (4, 6), (8, 10), (12, 14) ✓**

undefined. B) (1, 1.5), (2, 2.5), (3, 3.5)

undefined. C) (3, 4), (5, 6), (7, 8)

undefined. D) (0, 0), (0, 0), (0, 0)

The new vertices after dilation are (4, 6), (8, 10), and (12, 14).

Which of the following transformations can be considered a dilation? (Select all that apply)

undefined. A) Enlargening a photograph ✓

undefined. B) Rotating a figure 90 degrees

undefined. C) Shrinking a map ✓

undefined. D) Reflecting a shape over the x-axis

Enlargement and shrinking are examples of dilation.

Given a rectangle with vertices at (1, 2), (1, 6), (5, 6), and (5, 2), apply a dilation with a scale factor of 0.5 centered at the origin. Provide the new coordinates.

The new coordinates after dilation are (0.5, 1), (0.5, 3), (2.5, 3), and (2.5, 1).

Which of the following statements is true about the relationship between original figures and their dilated images?

undefined. A) The dilated image is always smaller than the original.

undefined. B) The dilated image is always larger than the original.

undefined. C) The dilated image is similar to the original. ✓

undefined. D) The dilated image is congruent to the original.

The dilated image is similar to the original figure.

Analyze the effects of dilation on a line segment. Which of the following are true? (Select all that apply)

undefined. A) The line segment remains parallel to its original position. ✓

undefined. B) The length of the line segment changes proportionally. ✓

undefined. C) The orientation of the line segment changes.

undefined. D) The endpoints of the line segment remain fixed.

Dilation affects the length and orientation of line segments.

Discuss how dilation can be used to demonstrate similarity between two geometric figures.

Dilation shows that two figures are similar by maintaining proportionality in their corresponding sides.

Part 4: Evaluation and Creation

Which scenario best illustrates the use of dilation in real-world applications?

undefined. A) Calculating the area of a triangle

undefined. B) Designing a scale model of a building ✓

undefined. C) Measuring the angles of a polygon

undefined. D) Reflecting a shape over the y-axis

Designs for scale models often utilize dilation to represent larger structures accurately.

Evaluate the following scenarios and identify which involve dilation. (Select all that apply)

undefined. A) Enlarging a blueprint for construction ✓

undefined. B) Rotating a wheel

undefined. C) Shrinking a digital image for web use ✓

undefined. D) Translating a point along a vector

Enlargement of blueprints and shrinking of images are examples of dilation.

Create a real-world problem that involves dilation and provide a step-by-step solution to solve it.

A real-world problem could involve resizing a map for navigation.