

## Dilations Worksheet Questions and Answers PDF

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### Part 1: Building a Foundation

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**What is the center of dilation in a geometric transformation?**

*Hint: Think about the point around which the figure changes size.*

- The point where the figure is rotated
- The fixed point around which the figure is enlarged or reduced ✓**
- The midpoint of the figure
- The point where the figure is reflected

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

**Which of the following statements are true about dilations? (Select all that apply)**

*Hint: Consider the properties of dilations and their effects on figures.*

- Dilations change the shape of a figure.
- Dilations can enlarge or reduce a figure. ✓**
- Dilations preserve the angles of a figure. ✓**
- Dilations always have a scale factor greater than 1.

■ Dilations can enlarge or reduce a figure, preserve angles, but do not change the shape.

**Explain what a scale factor is and how it affects a dilation.**

*Hint: Consider how the scale factor changes the size of the figure.*

**A scale factor is a number that scales, or multiplies, the dimensions of a figure, affecting its size in dilation.**

**List the properties of dilations that remain unchanged after the transformation.**

*Hint: Think about the characteristics of the figure that do not change.*

1. What properties remain unchanged?

**Angles and the shape's similarity.**

The properties that remain unchanged include the angles and the shape's similarity.

## Part 2: Understanding and Interpretation

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**If a triangle is dilated with a scale factor of 0.5, what happens to the size of the triangle?**

*Hint: Consider how the scale factor affects the dimensions of the triangle.*

- It doubles in size.
- It remains the same size.
- It reduces to half its original size. ✓**
- It becomes four times larger.

The triangle reduces to half its original size.

**Which of the following are effects of a dilation with a scale factor less than 1? (Select all that apply)**

*Hint: Think about how a smaller scale factor affects the figure.*

- The figure is enlarged.
- The figure is reduced. ✓**
- The angles of the figure change.
- The orientation of the figure is preserved. ✓**

■ A scale factor less than 1 reduces the figure and preserves angles.

**Describe how the center of dilation influences the resulting image of a figure.**

*Hint: Consider the position of the center relative to the figure.*

■ **The center of dilation affects the position and size of the resulting image based on its location relative to the figure.**

### Part 3: Application and Analysis

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**A rectangle is dilated by a scale factor of 3 with the center of dilation at one of its vertices. What is the effect on the rectangle?**

*Hint: Think about how the scale factor and center of dilation interact.*

- The rectangle is reduced to one-third its size.
- The rectangle is unchanged.
- The rectangle is enlarged three times its original size. ✓**
- The rectangle is rotated.

■ The rectangle is enlarged three times its original size.

**Which real-world scenarios can involve the use of dilations? (Select all that apply)**

*Hint: Consider practical applications of dilations in everyday life.*

- Resizing a photograph ✓**

- Constructing a scale model of a building** ✓
- Rotating a wheel
- Mapping a city layout** ✓

▮ Dilations can be used in resizing images, creating models, and mapping layouts.

**Provide an example of how dilations are used in creating maps and explain the importance of scale factor in this context.**

*Hint: Think about how maps represent real-world distances.*

▮ **Maps use dilations to represent large areas on a smaller scale, with the scale factor determining the ratio of real distance to map distance.**

## Part 4: Evaluation and Creation

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**When a figure is dilated with a scale factor of 2 from a center point outside the figure, what happens to the distances between points on the figure?**

*Hint: Consider how dilation affects distances in relation to the center.*

- Distances are halved.
- Distances remain the same.
- Distances are doubled.** ✓
- Distances are quadrupled.

▮ Distances are doubled when a figure is dilated with a scale factor of 2.

**Analyzing a dilation, which of the following statements are correct? (Select all that apply)**

*Hint: Think about the properties of the image and pre-image.*

- The image and pre-image are congruent.
- The image is similar to the pre-image.** ✓

- The scale factor determines the degree of enlargement or reduction. ✓**
- The dilation changes the orientation of the figure.

The image is similar to the pre-image, and the scale factor determines the degree of enlargement or reduction.

### Analyze how changing the center of dilation affects the resulting image of a geometric figure.

*Hint: Consider the implications of the center's position.*

**Changing the center of dilation alters the position and size of the resulting image, affecting how the figure is transformed.**

### Which scenario best demonstrates the concept of dilation in art?

*Hint: Think about artistic techniques that involve scaling.*

- Drawing a portrait
- Creating a perspective drawing with vanishing points ✓**
- Sketchin a landscape
- Painting a mural

Creating a perspective drawing with vanishing points demonstrates the concept of dilation in art.

### Evaluate the following statements about dilations and select those that reflect their significance in mathematics. (Select all that apply)

*Hint: Consider the role of dilations in mathematical concepts.*

- Dilations are crucial for understanding similarity. ✓**
- Dilations have no practical applications.
- Dilations help in resizing objects proportionally. ✓**
- Dilations distort the original figure.

Dilations are crucial for understanding similarity and help in resizing objects proportionally.

**Design a real-world problem where dilation is used to solve a practical issue. Explain the problem and how dilation provides a solution.**

*Hint: Think about scenarios where scaling is necessary.*

**Dilation can be used in various real-world problems, such as resizing blueprints for construction, ensuring accurate proportions.**