

## Similar Triangles Worksheet

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### Part 1: Building a Foundation

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**Which of the following statements are true about similar triangles?**

*Hint: Consider the properties of similar triangles.*

- A) They have equal corresponding angles.
- B) Their corresponding sides are proportional.
- C) They have the same area.
- D) They have the same perimeter.

**Which of the following statements are true about similar triangles?**

*Hint: Consider the properties of similar triangles.*

- A) They have equal corresponding angles.
- B) Their corresponding sides are proportional.
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**Explain what it means for two triangles to be similar. Include a description of their properties.**

*Hint: Think about angles and side lengths.*

**Explain what it means for two triangles to be similar. Include a description of their properties.**

Hint: Think about angles and side lengths.

**List the three criteria used to determine if two triangles are similar.**

Hint: Consider the different combinations of angles and sides.

1. Criterion 1

2. Criterion 2

3. Criterion 3

## Part 2: Understanding and Interpretation

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**If two triangles are similar and the ratio of their corresponding sides is 3:4, what is the ratio of their perimeters?**

Hint: Consider how the ratios of sides relate to the perimeter.

- A) 3:4
- B) 4:3
- C) 9:16
- D) 16:9

**If two triangles are similar and the ratio of their corresponding sides is 3:4, what is the ratio of their perimeters?**

Hint: Consider how perimeter relates to side lengths.

- A) 3:4

- B) 4:3
- C) 9:16
- D) 16:9

**Which of the following transformations can result in similar triangles?**

*Hint: Think about how triangles can be manipulated.*

- A) Translation
- B) Rotation
- C) Dilation
- D) Reflection

**Which of the following transformations can result in similar triangles?**

*Hint: Think about geometric transformations.*

- A) Translation
- B) Rotation
- C) Dilation
- D) Reflection

**Describe how the AA criterion can be used to prove that two triangles are similar.**

*Hint: Consider the implications of having two equal angles.*

**Describe how the AA criterion can be used to prove that two triangles are similar.**

*Hint: Consider the implications of equal angles.*

### Part 3: Application and Analysis

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**A triangle has sides of lengths 6 cm, 8 cm, and 10 cm. A similar triangle has a shortest side of 3 cm. What is the length of its longest side?**

*Hint: Use the ratio of the sides to find the missing length.*

- A) 4 cm
- B) 5 cm
- C) 7.5 cm
- D) 10 cm

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- D) 10 cm

**In a map, a 1 cm line represents 5 km. If two cities are 20 km apart, how far apart are they on the map?**

*Hint: Convert the distance using the scale provided.*

- A) 2 cm
- B) 3 cm
- C) 4 cm
- D) 5 cm

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- A) 2 cm
- B) 3 cm
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**Given two similar triangles, where one has sides of 9 cm, 12 cm, and 15 cm, and the other has a side of 6 cm corresponding to the 9 cm side, find the lengths of the other two sides of the second triangle.**

*Hint: Use the ratio of the sides to find the missing lengths.*

**Given two similar triangles, where one has sides of 9 cm, 12 cm, and 15 cm, and the other has a side of 6 cm corresponding to the 9 cm side, find the lengths of the other two sides of the second triangle.**

*Hint: Use the ratio of the sides to find the lengths.*

**Which of the following is NOT a valid method to prove two triangles are similar?**

*Hint: Consider the different criteria for triangle similarity.*

- A) Showing all corresponding angles are equal.
- B) Showing all corresponding sides are proportional.
- C) Showing one pair of corresponding angles is equal and the sides around them are proportional.
- D) Showing one pair of corresponding sides is equal and the angles around them are equal.

## Part 4: Evaluation and Creation

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**If two triangles are similar and one has an area of 25 square units while the other has an area of 100 square units, what is the ratio of their corresponding side lengths?**

*Hint: Consider how the area relates to the side lengths.*

- A) 1:2
- B) 1:4
- C) 2:1
- D) 4:1

**If two triangles are similar and one has an area of 25 square units while the other has an area of 100 square units, what is the ratio of their corresponding side lengths?**

*Hint: Consider the relationship between area and side lengths.*

- A) 1:2
- B) 1:4
- C) 2:1
- D) 4:1

**Evaluate the following scenarios and determine which involve the use of similar triangles:**

*Hint: Think about practical applications of similar triangles.*

- A) Calculating the height of a tree using a mirror on the ground.
- B) Measuring the distance across a river using a rope.
- C) Designing a scale model of a building.
- D) Calculating the area of a triangle using Heron's formula.

**Evaluate the following scenarios and determine which involve the use of similar triangles:**

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- C) Designing a scale model of a building.
- D) Calculating the area of a triangle using Heron's formula.

**Create a real-world problem that involves similar triangles and provide a step-by-step solution to the problem.**

*Hint: Think about how similar triangles can be applied in real life.*

**Create a real-world problem that involves similar triangles and provide a step-by-step solution to the problem.**

*Hint: Think about a scenario where you can apply triangle similarity.*