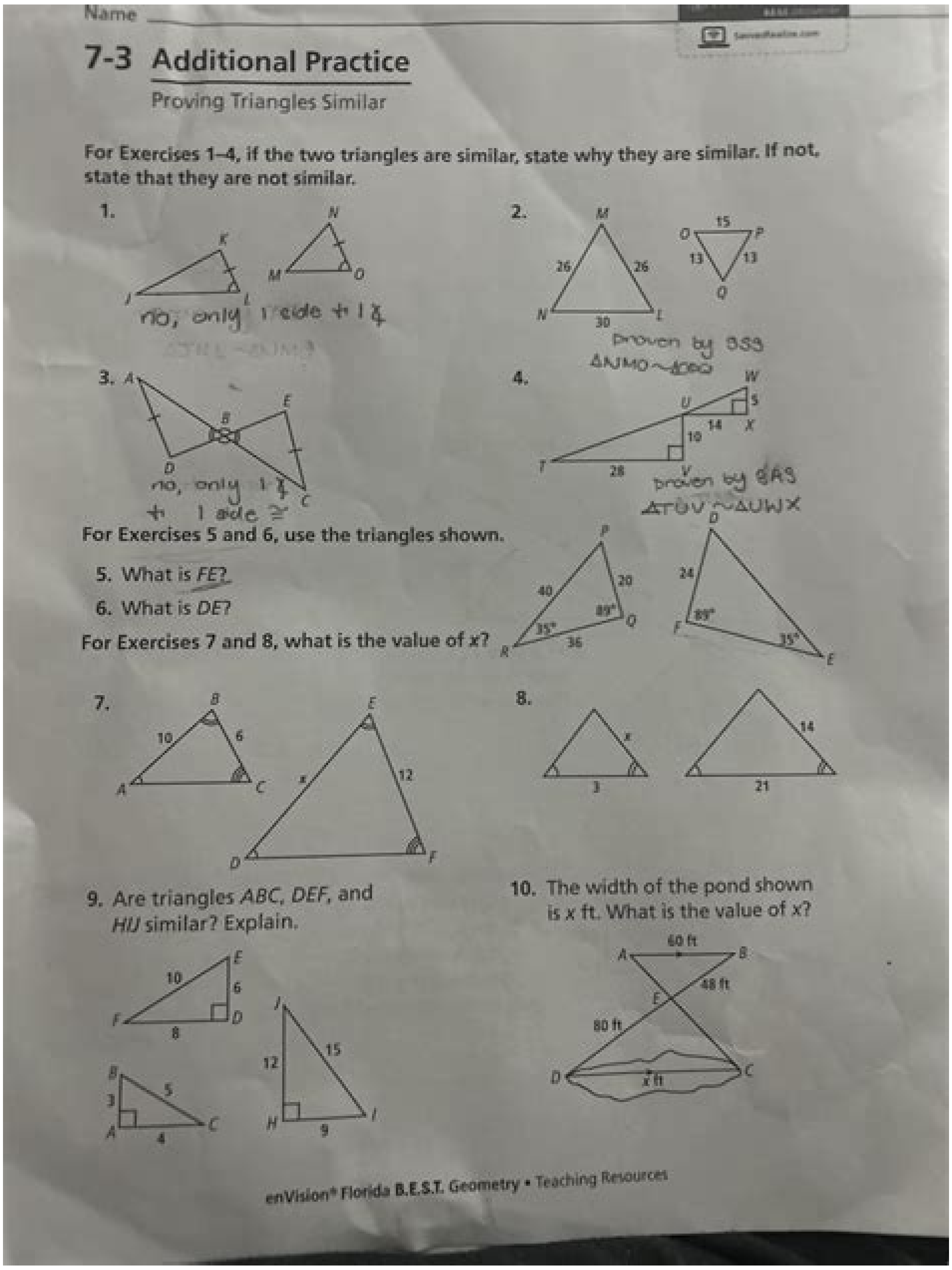
7 3 Practice Similar Triangles Answer Key


Name

7-3 Additional Practice

Proving Triangles Similar

For Exercises 1–4, if the two triangles are similar, state why they are similar. If not, state that they are not similar.

1. no, only 1 side + 1 ∠

2. proven by SSS ΔNMO~ΔOPQ

3. no, only 1 ∠ + 1 side ≅

4. proven by SAS ΔTUV~ΔUWX

For Exercises 5 and 6, use the triangles shown.

5. What is *FE*?

6. What is *DE*?

For Exercises 7 and 8, what is the value of *x*?

7\.

8\.

9. Are triangles *ABC*, *DEF*, and *HIJ* similar? Explain.

10. The width of the pond shown is *x* ft. What is the value of *x*?

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7 3 practice similar triangles answer key is a crucial topic for students learning geometry. Similar triangles are fundamental concepts that help students understand proportional relationships and the properties of triangles. In this article, we will explore the concept of similar triangles, how to determine whether triangles are similar, and provide a comprehensive answer key for the 7 3 practice problems related to similar triangles.

Understanding Similar Triangles

Similar triangles are defined as triangles that have the same shape but not necessarily the same size. This means that their corresponding angles are equal and their corresponding sides are in proportion. The study of similar triangles is essential for solving various geometric problems and is often applied in real-world scenarios, including architecture, engineering, and various fields of science.

Key Properties of Similar Triangles

1. Angle-Angle (AA) Criterion: If two angles of one triangle are equal to two angles of another triangle, the triangles are similar.

2. Side-Side-Side (SSS) Similarity Criterion: If the sides of two triangles are in proportion, then the triangles are similar.

3. Side-Angle-Side (SAS) Similarity Criterion: If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are in proportion, the triangles are similar.

Understanding these properties is vital for solving problems involving similar triangles, including those found in the 7 3 practice problems.

How to Determine Triangle Similarity

Determining whether two triangles are similar involves the application of the above criteria. Here’s a step-by-step approach:

1. Identify Corresponding Angles: Check if two angles in one triangle are equal to two angles in another triangle.

2. Calculate Side Ratios: Measure or find the lengths of the sides of both triangles and determine their ratios.

3. Use Proportional Relationships: If the corresponding sides are proportional and the angles are equal, conclude that the triangles are similar.

7 3 Practice Problems on Similar Triangles

The 7 3 practice problems typically involve various scenarios where students must apply their knowledge of similar triangles. Below, we've outlined some common types of problems and included solutions based on typical answers that might be expected in an answer key.

Example Problems

1. Problem 1: Triangle ABC is similar to triangle DEF. If AB = 6 cm, AC = 8 cm, and DE = 9 cm, find EF.

Solution:

- Since triangles are similar, we can set up a proportion:

$$
\frac{AB}{DE} = \frac{AC}{EF}
$$

$$
\frac{6}{9} = \frac{8}{EF}
$$

Cross-multiplying gives:

$$
6 \cdot EF = 8 \cdot 9 \implies EF = \frac{72}{6} = 12 \text{ cm}
$$

2. Problem 2: If the two triangles have sides of lengths 5, 12, and 13 and 10, 24, and 26, determine if they are similar.

Solution:

- Check the ratios:

$$
\frac{5}{10} = \frac{12}{24} = \frac{13}{26} = \frac{1}{2}
$$

- All corresponding sides have the same ratio, so the triangles are similar.

3. Problem 3: In triangle GHI, angle G = 30°, angle H = 70°, and side GH = 10 cm. Find the length of side IJ in triangle JKL, where angle J = 30° and angle K = 70°.

Solution:

- Since the angles are equal, the triangles are similar.
- If GK = 15 cm (another side in triangle JKL), we can set up a proportion:

$$
\frac{GH}{GK} = \frac{IJ}{15}
$$

$$
\frac{10}{15} = \frac{IJ}{15}
$$

Cross-multiplying gives:

$$
10 \cdot 15 = 15 \cdot IJ \implies IJ = 10 \text{ cm}
$$

7 3 Practice Similar Triangles Answer Key

Here is a compiled answer key for the 7 3 practice problems regarding similar triangles. Students can refer to this key to verify their solutions.

- Problem 1: EF = 12 cm
- Problem 2: Triangles are similar

- Problem 3: IJ = 10 cm
- Problem 4: (Example) In triangle STU, if SU = 8 cm and TV = 12 cm, find TW. Answer: TW = 18 cm
- Problem 5: (Example) Triangle ABC is similar to triangle DEF. If angle A = angle D, angle B = angle E, then are they similar? Answer: Yes
- Problem 6: (Example) Triangle XYZ has sides 3, 4, and 5. Triangle PQR has sides 6, 8, and 10. Are they similar? Answer: Yes
- Problem 7: (Example) If triangle JKL has a perimeter of 30 cm and is similar to triangle MNO with a perimeter of 45 cm, find the ratio. Answer: 2:3

Conclusion

Understanding the concept of similar triangles is foundational in geometry. The **7 3 practice similar triangles answer key** provides students with a valuable resource to check their understanding of triangle similarity and proportional reasoning. By mastering these concepts, students will be better prepared for more advanced topics in geometry and mathematics as a whole.

Frequently Asked Questions

What are similar triangles?

Similar triangles are triangles that have the same shape but may differ in size. Their corresponding angles are equal, and the lengths of their corresponding sides are proportional.

How can I determine if two triangles are similar?

You can determine if two triangles are similar by using the Angle-Angle (AA) criterion, which states that if two angles of one triangle are equal to two angles of another triangle, the triangles are similar.

What is the significance of the '7 3 practice similar triangles answer key'?

The '7 3 practice similar triangles answer key' provides solutions and explanations for a set of practice problems focused on identifying and applying the properties of similar triangles, helping students verify their understanding.

What types of problems might be included in the '7 3 practice

similar triangles' section?

The '7 3 practice similar triangles' section typically includes problems that require identifying similar triangles, calculating side lengths using proportions, and applying the properties of similar triangles in various geometric contexts.

How can I use proportions to solve problems involving similar triangles?

To use proportions for solving problems with similar triangles, set up a ratio of corresponding sides from the two triangles and use cross-multiplication to find unknown lengths.

Where can I find additional resources for understanding similar triangles?

Additional resources for understanding similar triangles can be found in math textbooks, educational websites, online tutorials, and video lectures that focus on geometry concepts.

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