

Similar Figures

Strand:	Measurement and Geometry
Topic:	Determining whether two plane figures are similar, identifying corresponding sides
Primary SOL	7.5 The student will solve problems, including practical problems, involving the relationship between corresponding sides and corresponding angles of similar quadrilaterals and triangles.

Materials

- Figures: two congruent squares, two similar triangles, two similar trapezoids, and two similar rectangles (templates attached)
- Similar Figures activity sheet (attached)

Vocabulary

congruence congruent, quadrilateral, triangle (earlier grades)

corresponding, proportion, similar figures, similarity statement (\sim) (7.5)

Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Display two congruent squares, showing corresponding sides and angles. Review the terms *congruent* and *congruence*. Place one of the squares directly on top of the other square to demonstrate congruence. Use this demonstration to introduce similar figures.
2. Display the two similar triangles separately. Move the smaller triangle on top of the larger to show that all three angles are congruent and that the sides are not congruent.
3. Repeat the demonstration with the trapezoids and the rectangles. When displaying the rectangles, rotate one rectangle 90 degrees. Have students complete the activity sheet.
4. Distribute the Similar Figures activity sheet, and have students identify the corresponding sides and angles of the figures.
5. Give students several examples of congruent and similar figures to assist in identifying examples of each.
6. Give students additional practice.

Assessment

- **Questions**
 - What makes two figures similar?
 - How do polygons that are similar compare with polygons that are congruent?
- **Journal/Writing Prompts**
 - Explain whether a figure can be similar with only one corresponding angle congruent.
 - Give a practical example of when you would use a similar figure.
 - Give a practical example of when you would use a congruent figure.

Mathematics Instructional Plan – Grade 7

- **Other**

- Have students create two similar rectangles and write a proportion for corresponding sides.

Extensions and Connections (for all students)

- Have students find a practical application for similar triangles.

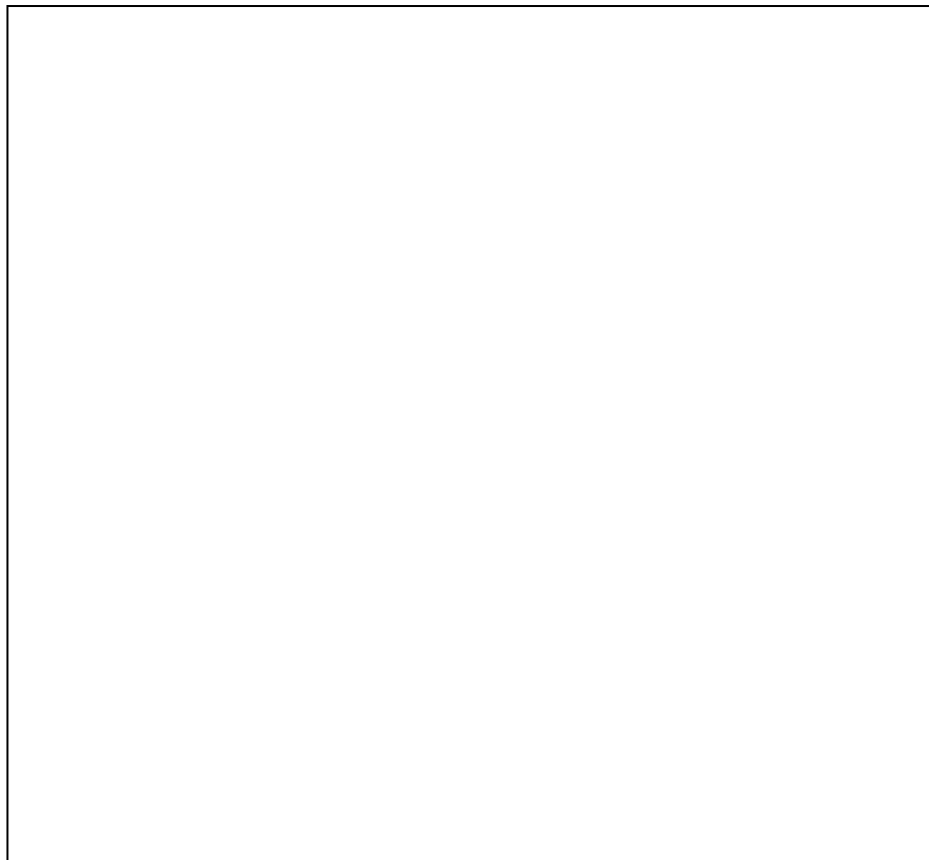
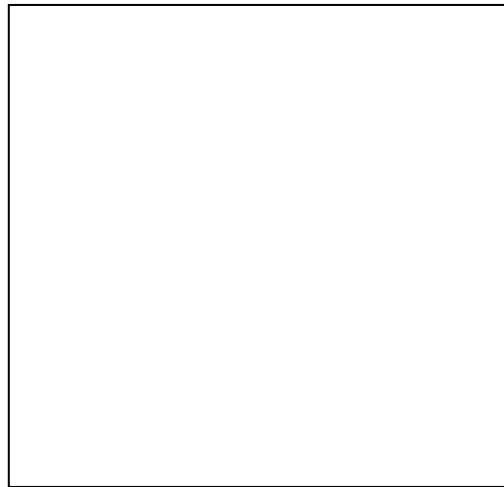
Strategies for Differentiation

- Color code corresponding sides and corresponding angles.
- Use a color-coded figure and shadow it with a similar figure of another color to assist in finding corresponding sides and angles.
- Have students work with a partner for mutual support while completing the Similar Figures activity sheet, as well as any additional practice.

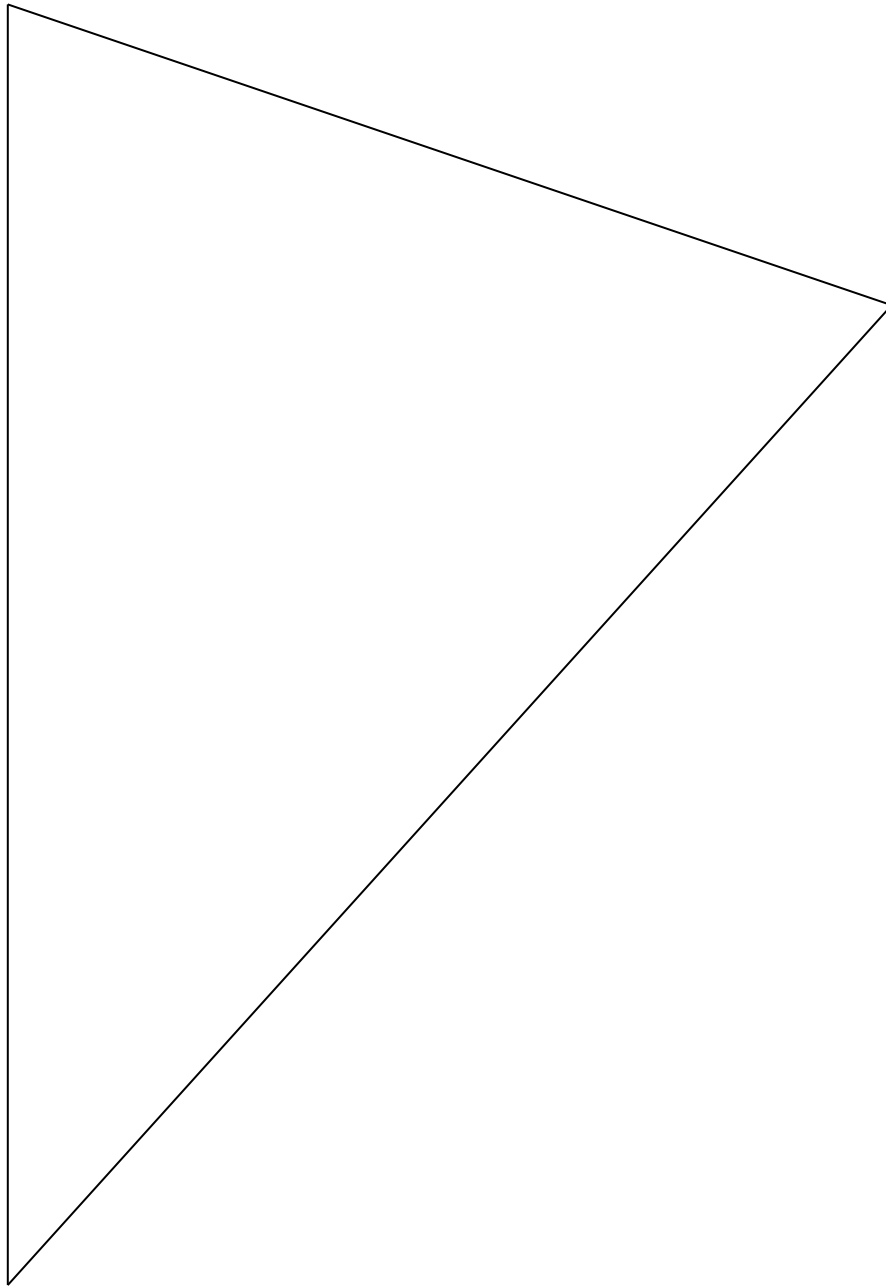
Note: The following pages are intended for classroom use for students as a visual aid to learning.

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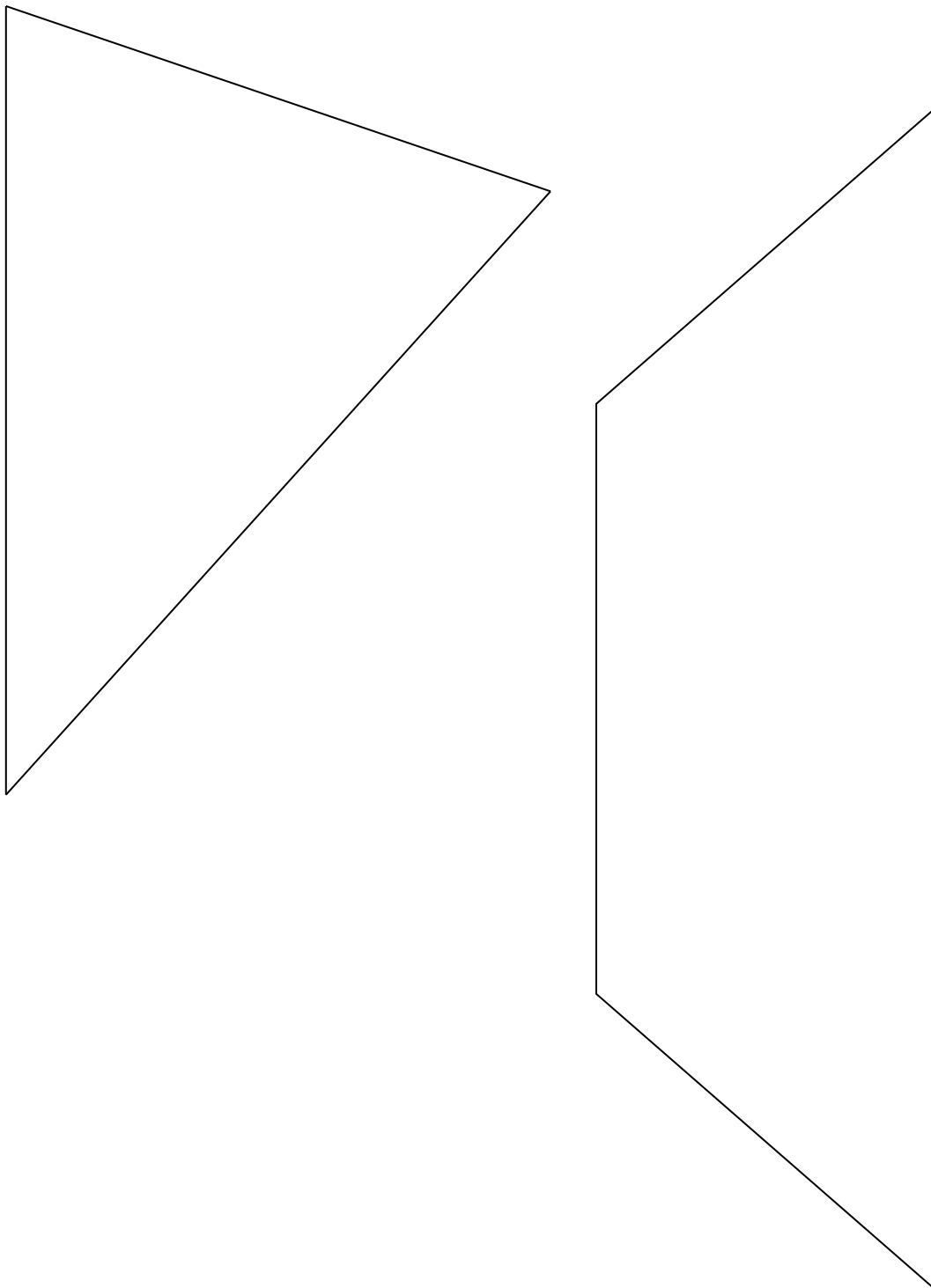
Square Template



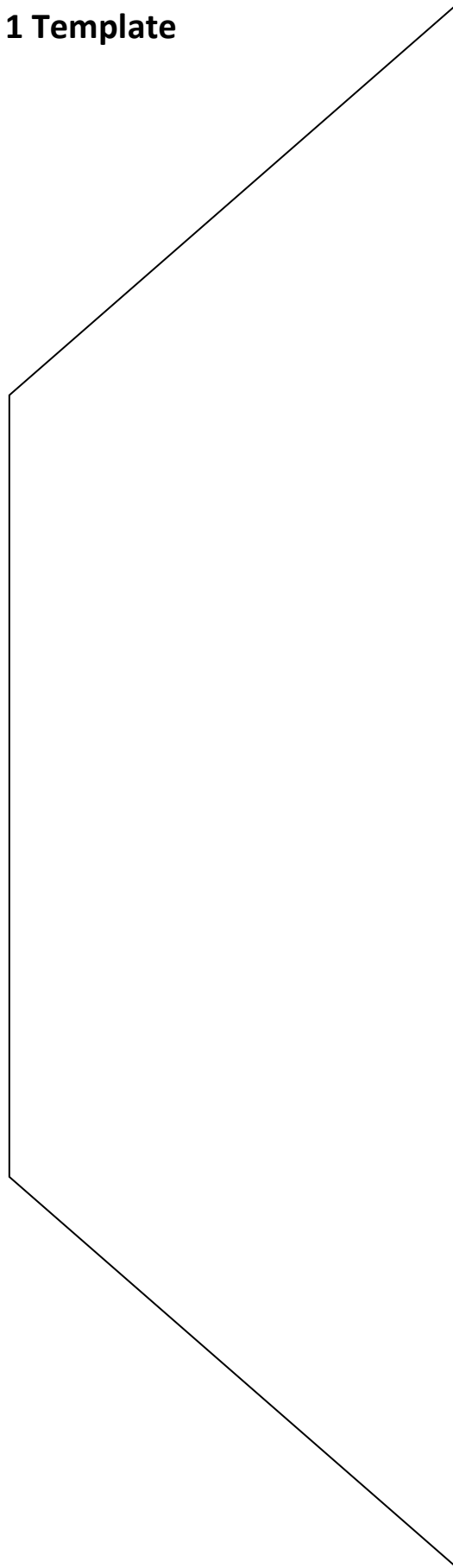
Triangle 1 Template



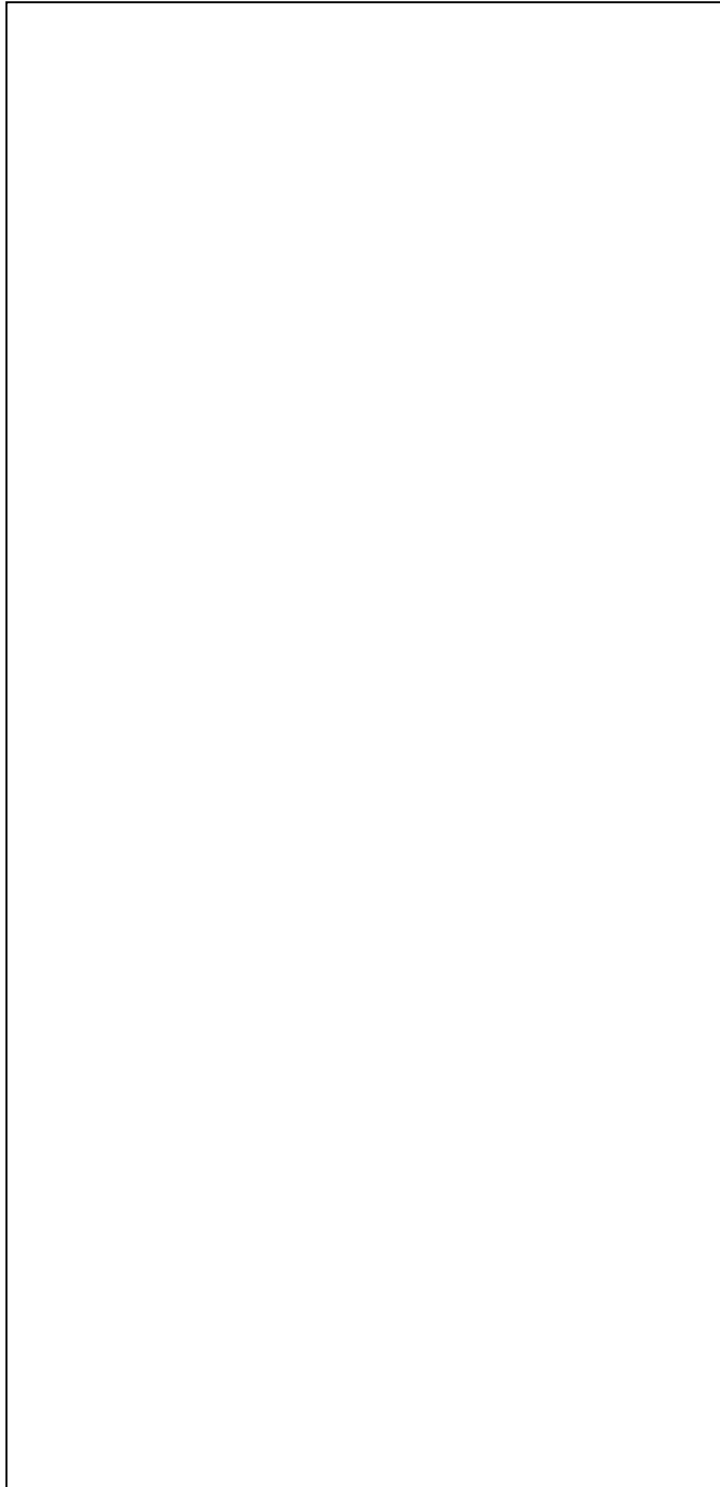
Triangle 2 / Trapezoid 2 Template



Trapezoid 1 Template



Rectangle 1 Template



Rectangle 2 Template

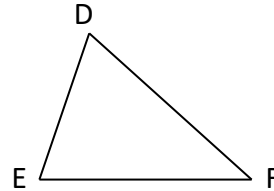
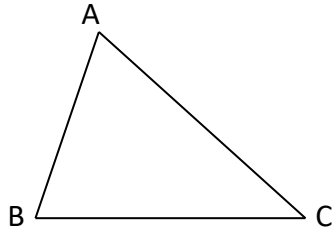


Similar Figures

Name _____ Date _____

Triangles

_____ ~ _____

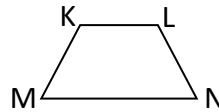
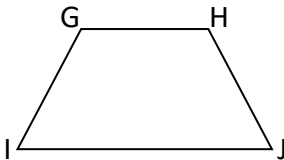


1. $\angle A$ corresponds to _____
2. $\angle B$ corresponds to _____
3. $\angle C$ corresponds to _____

4. \overline{AB} corresponds to _____
5. \overline{BC} corresponds to _____
6. \overline{AC} corresponds to _____

Trapezoids

_____ ~ _____

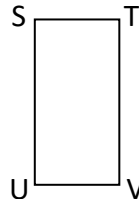
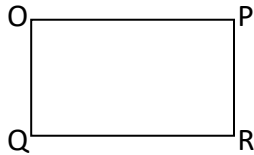


1. $\angle G$ corresponds to _____
2. $\angle H$ corresponds to _____
3. $\angle I$ corresponds to _____
4. $\angle J$ corresponds to _____

5. \overline{GH} corresponds to _____
6. \overline{GI} corresponds to _____
7. \overline{IJ} corresponds to _____
8. \overline{HI} corresponds to _____

Rectangles

_____ ~ _____



Complete each proportion.

1. $\frac{\overline{ST}}{\overline{SU}} = \frac{\overline{TR}}{\overline{TV}}$

2. $\frac{\overline{OP}}{\overline{OQ}} = \frac{\overline{TP}}{\overline{TU}}$

3. $\frac{\overline{QR}}{\overline{PR}} = \frac{\overline{TV}}{\overline{VT}}$

4. $\frac{\overline{VU}}{\overline{VT}} = \frac{\overline{SU}}{\overline{ST}}$