

Teacher Guide for the Lesson on **similar right triangle**

Standard:
8.4(A)

Content Objective:

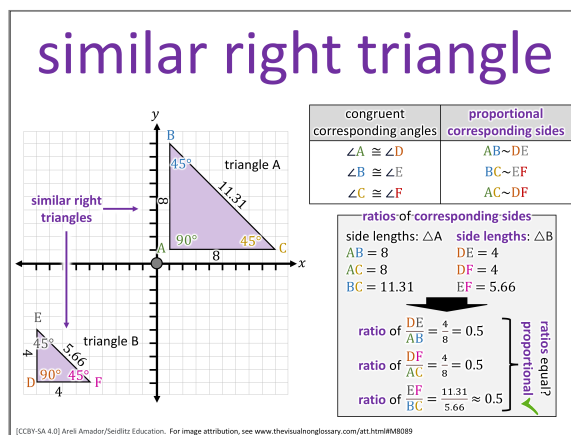
We can use **congruent** angles and ratios of **corresponding sides** to identify **similar right triangles** and explain why their **ratios** stay constant.

Language Objective: Answer the following question in complete sentences using the sentence stem and the key vocabulary of the lesson:

Why do you think it is important that the angles in **similar right triangles** are the same, even if the **corresponding side lengths** are different?

*I think it is important that the angles in **similar right triangles** are the same, even if the **corresponding side lengths** are different because...*

Other key vocabularies: [congruence](#), [similar right triangles](#), [corresponding side lengths](#)



By studying this visual, students might:

Notice	Wonder
<ul style="list-style-type: none"> The triangles have the same angle measures 	<ul style="list-style-type: none"> How do we know the triangles are proportional
<ul style="list-style-type: none"> The triangles are different sizes but the same shape 	<ul style="list-style-type: none"> Why do the ratios stay the same
<ul style="list-style-type: none"> The side length values follow a pattern 	<ul style="list-style-type: none"> How do corresponding sides match

<ul style="list-style-type: none"> • The ratios between the side length values are the same 	<ul style="list-style-type: none"> • Do all triangles with the same angles have the same ratios
<ul style="list-style-type: none"> • The triangles have the same shape, but different sizes. 	<ul style="list-style-type: none"> • Why angles matter for similarity

EXTENDING THE DISCUSSION

- After randomly calling on students, if there is anything from this list that was not mentioned, then ask the class, "Did anyone notice...?"
- After students have shared what they notice, ask the class, "Did anyone wonder...?" using the suggestions above or anything else you might think is interesting or relevant to the lesson.

Structured Conversation Prompts

OBSERVATIONAL	RELATIONAL	INFERENTIAL
<p>What is a similar right triangle?</p> <p>A similar right triangle is...</p>	<p>How is a similar right triangle related to congruence?</p> <p>A similar right triangle is related to congruence because...</p>	<p>Why do you think it is important that the angles in similar right triangles are the same, even if the corresponding side lengths are different?</p> <p>I think it is important that the angles in similar right triangles are the same, even if the corresponding side lengths are different because...</p>

Example Student Responses to the Observational Question

Low-Level	High-Level
A similar right triangle has the same shape but different side length values.	A similar right triangle has congruent angles and proportional corresponding sides with equal ratios , even if the side length values are different.

RESPONDING TO RESPONSES

Emphasize and celebrate each student's use of the key vocabulary to support a culture of "no wrong answers."

STRUCTURING STUDENT CONVERSATIONS

Have students list observations from the visual as a warm-up, then use the Q-SSS-A process to guide small-group conversations. In the slide decks, brackets can be moved to prepare the structured conversation. In the example to the right, students will be instructed: [Q-SSS-A](#).

- To put a thumb up, then lower their hand when they are ready to answer the question
- To share with their elbow/shoulder partner, and that the student with the darkest shoe will share first
- That they will be randomly called on after the conversation



[Here is an example](#) of structuring a conversation with Q-SSS-A.

Note: the inferential question is the same as the language objective. It is recommended that students answer the inferential question in a small-group discussion before answering it individually as the closure or exit ticket of the lesson.

Structured Reading

READING PURPOSE	PAT LIST	POST-READING DISCUSSION
<p>The purpose for reading is to understand how angles and ratios are used to determine if triangles form a similar right triangle.</p>	<ul style="list-style-type: none"> • Angles in each triangle • How corresponding sides match • The ratio between side length values • When ratios stay the same • When triangles are proportional 	<p>How can you use angles and ratios to determine if the new ramps form a similar right triangle?</p> <p><i>I can use the angles and ratios to determine if the ramps form a similar right triangle because...</i></p>

STRUCTURING THE READING

Communicate the purpose of reading to the students and instruct them to make a note every time they see something on the PAT ("Pay Attention To") list. How you have students note items on the PAT list is up to you. This could include:




- Putting an asterisk in the margin
- Underlining text that supports the PAT list
- Putting a comment in the margin

Follow the reading with the post-reading discussion. Structure this discussion using the Q-SSS-A process just like the structured conversations in this lesson.

Note: you might find the relational question is better discussed before or after the reading. This depends on whether the relational question is directly related to the reading or might make connections across units.

DIFFERENTIATING THE READING

You will notice that three different reading passages are provided with this lesson. Look at the shapes in the top-left of each passage to determine the grade level.

BELOW GRADE LEVEL	ON GRADE LEVEL	ABOVE GRADE LEVEL
 <p><i>Triangle is bottom-left</i></p>	 <p><i>Square is bottom-left</i></p>	 <p><i>Circle is bottom-left</i></p>

In a class with students at diverse reading level proficiencies, you can give the appropriate reading passage to different students, while having all students follow the same PAT list and post-reading

discussion.