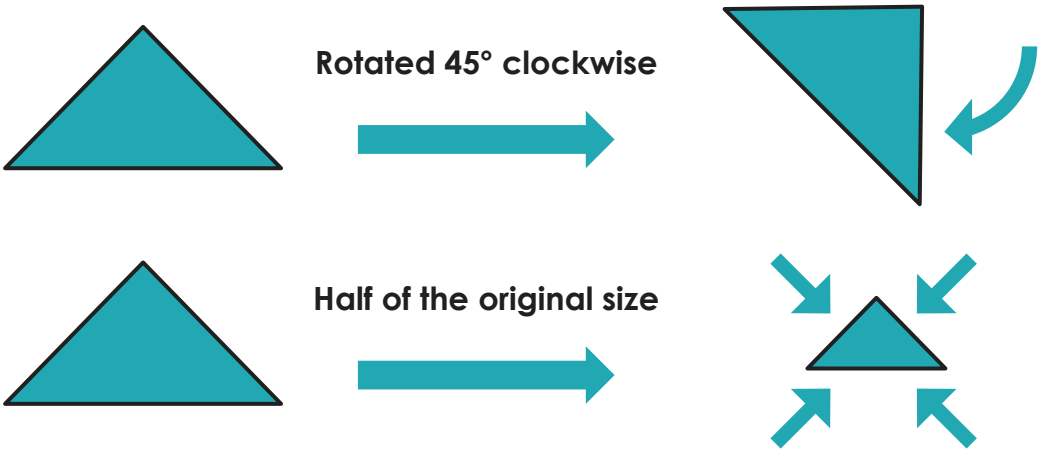
Two **triangles** are **similar** **(~)** if they have the same shape.

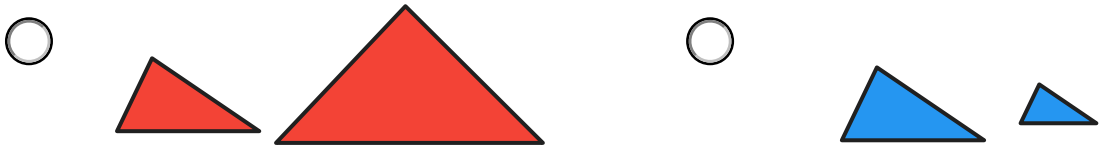
Similar triangles have different **sizes** and **rotations**.



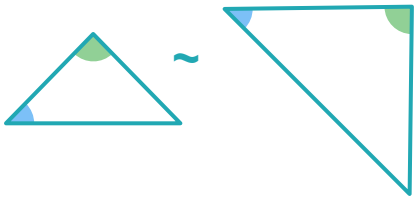
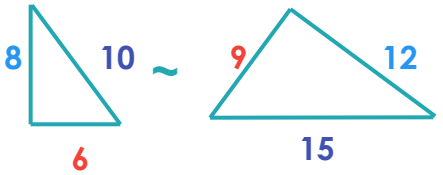
CFU

Which set of triangles appear to be similar? Explain.

Which set of triangles appear to be similar? Explain.



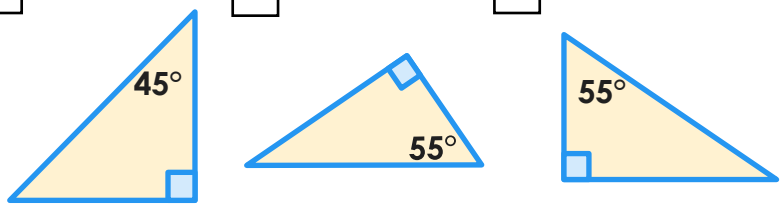
Two **triangles** are **similar (~)** if they have the same shape.

Similar Triangle Theorems	Examples
Angle-Angle (AA) Similarity Theorem The triangles are **similar (~)** ⟷ The triangles share two equal angles.	
Side-Side-Side (SSS) Similarity Theorem The triangles are **similar (~)** ⟷ All corresponding side ratios are equal.	 $\frac{10}{15} = \frac{8}{12} = \frac{6}{9}$

CFU

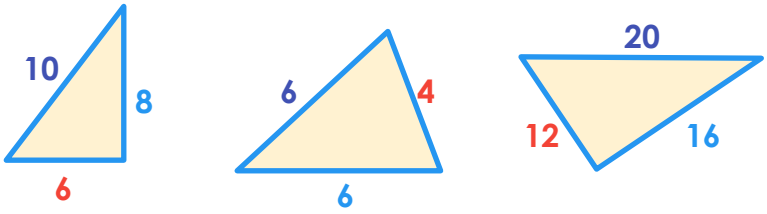
Which pair of triangles appear to be similar? Explain.

☐ ☐ ☐

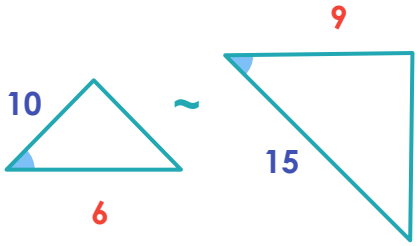


Which pair of triangles appear to be similar? Explain.

☐ ☐ ☐



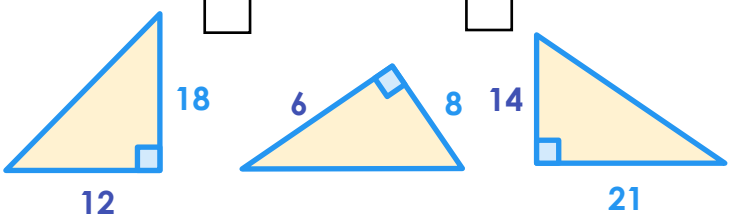
Two **triangles** are **similar** **(~)** if they have the same shape.

Similar Triangle Theorems	Examples
Side-Angle-Side (SAS) Similarity Theorem The triangles are **similar** **(~)** ↕ The corresponding side ratios and angles between the sides are equal.	 $\frac{10}{15} = \frac{6}{9}$

CFU

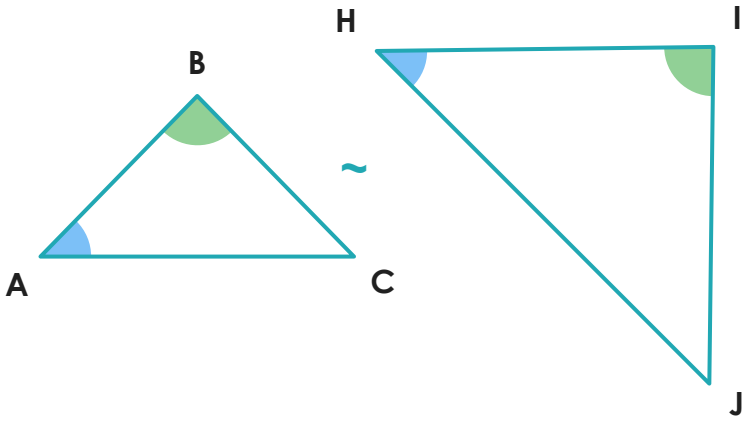
Which pair of triangles appear to be similar? Explain.

☐ ☐ ☐



Two **triangles** are **similar** **(~)** if they have the same shape.

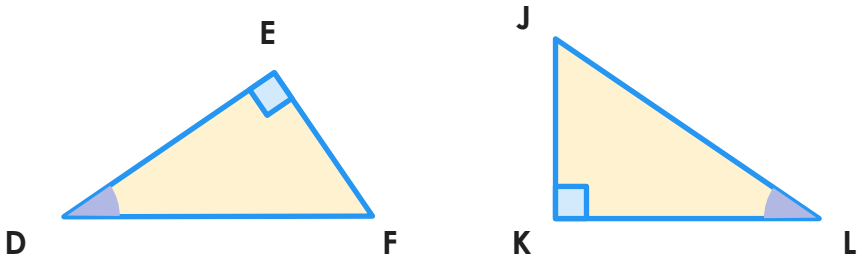
The notation for **similar triangles** shows the correspondence between the points of each triangle.



$\Delta ABC \sim \Delta HIJ$
$A \leftrightarrow H$
$B \leftrightarrow I$
$C \leftrightarrow J$

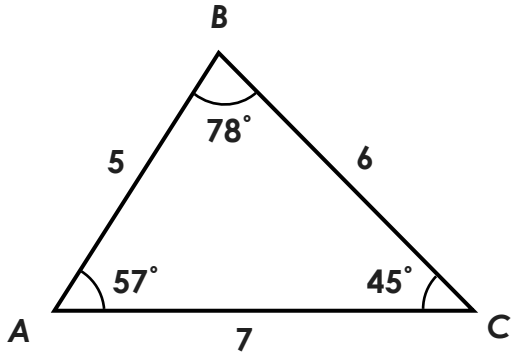
CFU

Which is the geometric notation for these similar triangles? Explain.



- ◯ $\Delta FED \sim \Delta JLK$
- ◯ $\Delta EDF \sim \Delta KLJ$
- ◯ $\Delta DEF \sim \Delta JKL$

1 Identify which similar triangle theorem to use.
2 Determine whether the triangles are similar.
3 Use geometry notation to write the similarity statement.



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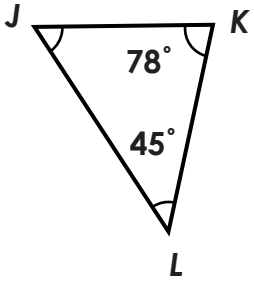

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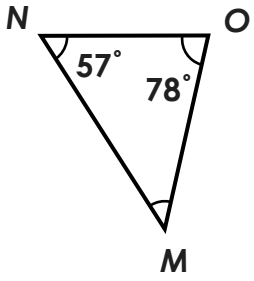

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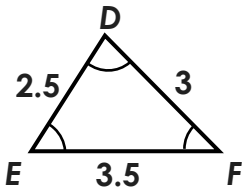

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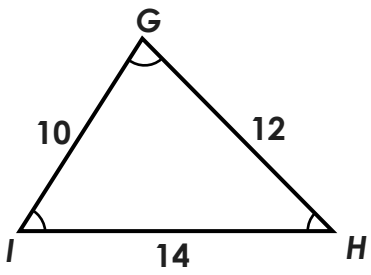
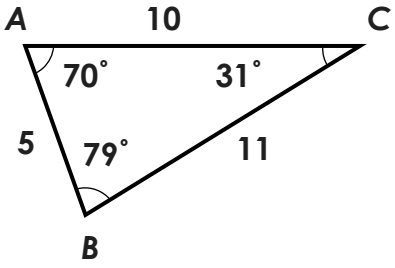
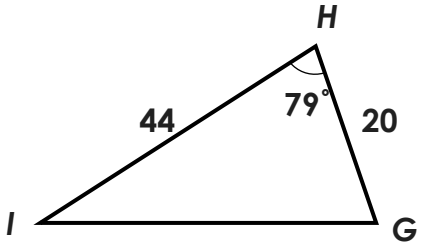


1 Identify which similar triangle theorem to use.
2 Determine whether the triangles are similar.
3 Use geometry notation to write the similarity statement.



1.



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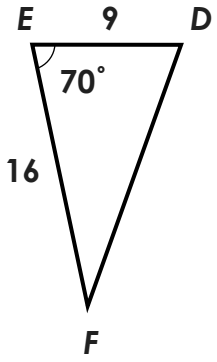

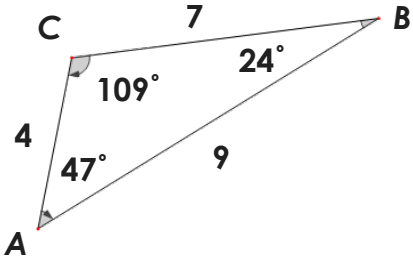

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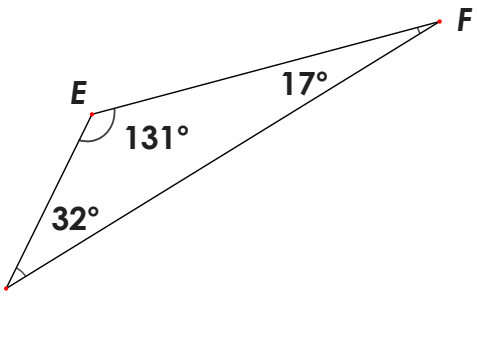

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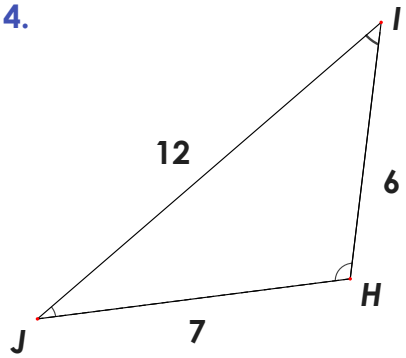
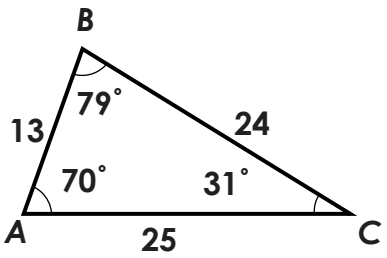
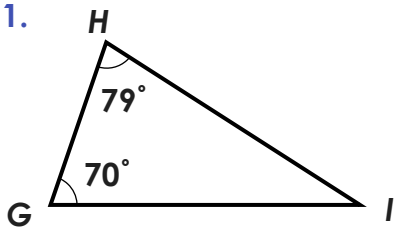


Skill Closure

1 Identify which similar triangle theorem to use.
2 Determine whether the triangles are similar.
3 Use geometry notation to write the similarity statement.



1.



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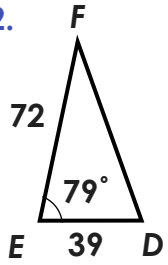
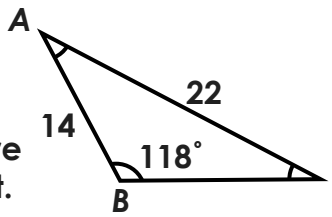
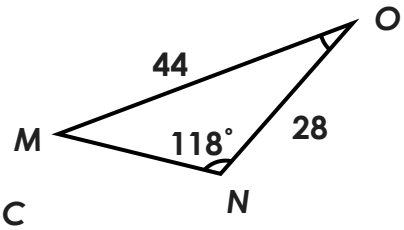


Concept Closure

Writing

Emma thinks that the triangles are similar because the two side ratios and angles are equal. Explain why her answer is incorrect.





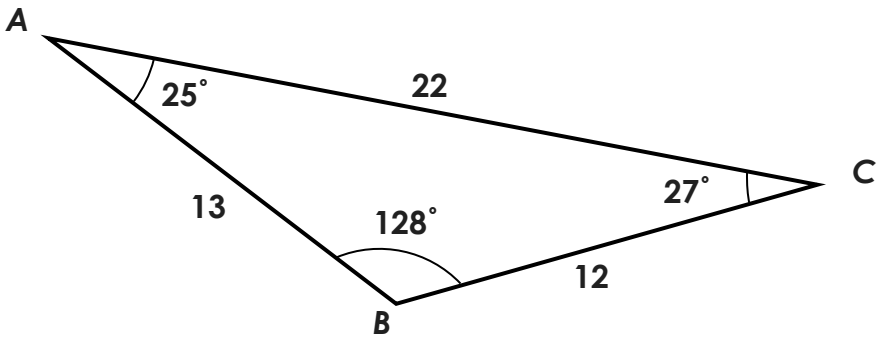
Summary Closure

What did you learn today about determining similar triangles?

Word Bank

similar
triangle
theorem
angle
side ratio
equal
angle-angle
side-side-side
side-angle-side

1 Identify which similar triangle theorem to use.
2 Determine whether the triangles are similar.
3 Use geometry notation to write the similarity statement.



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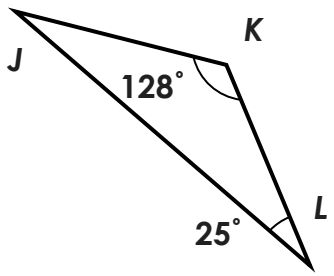

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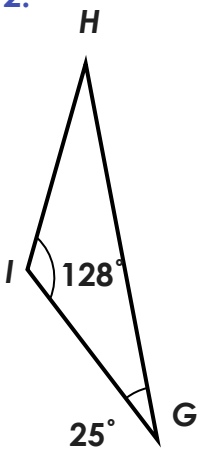

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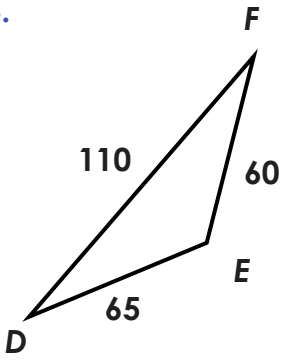

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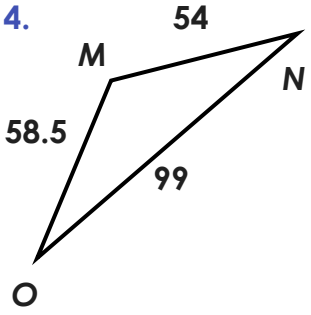

1 Identify which similar triangle theorem to use.
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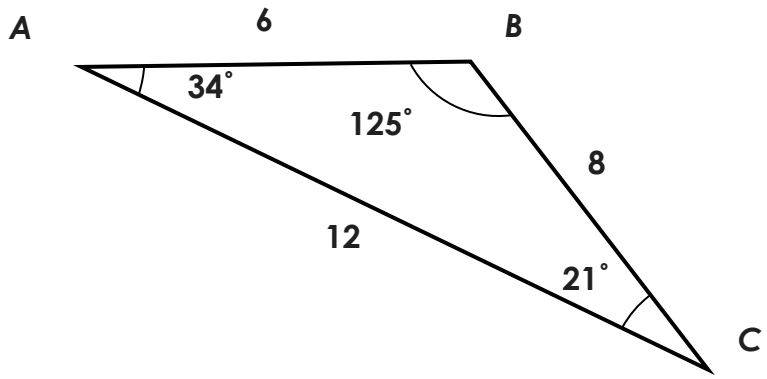

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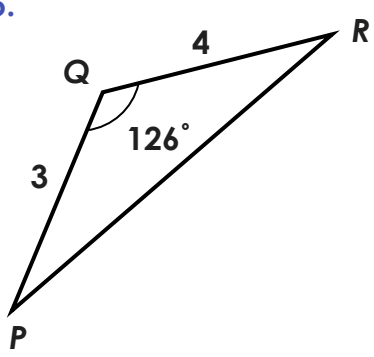

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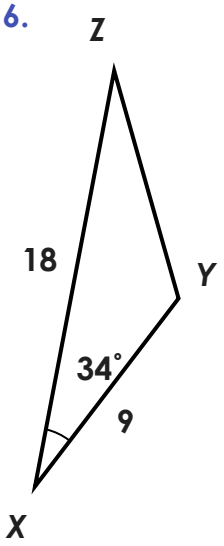

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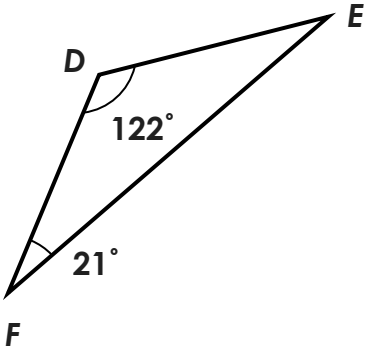

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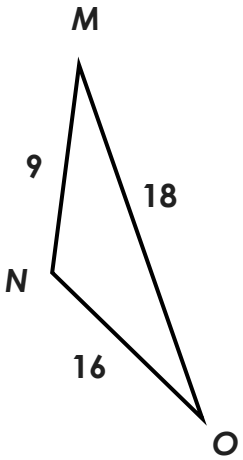
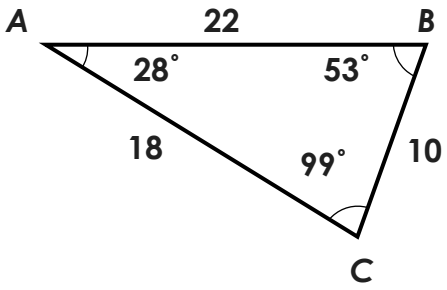
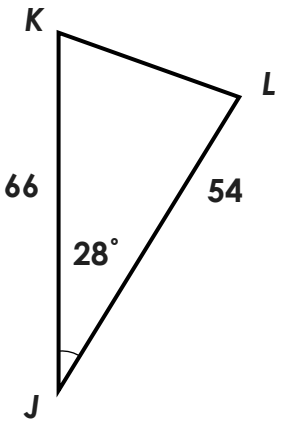


Determine if the given triangle is similar to ∆ABC.



1.



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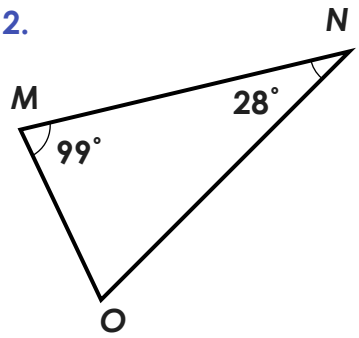
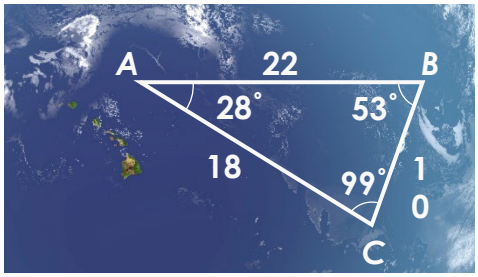


Read and solve the problem. Then, answer the question.

A ship's navigation team is charting out two triangular zones in the ocean for safe travel. The first triangular zone ABC is shown on the diagram to the right. Which triangular design should the team select to create a second zone with the same shape?



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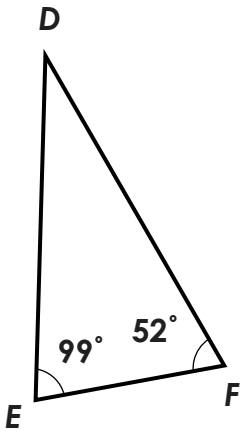

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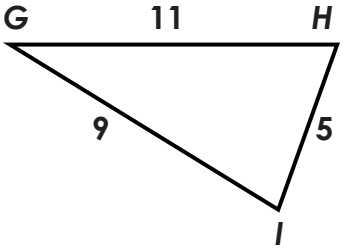
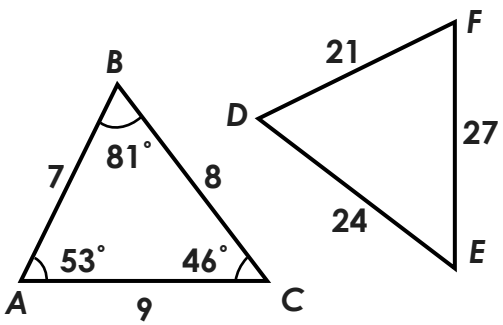


5. Joey thinks he solved this problem correctly. Explain why his answer is incorrect.



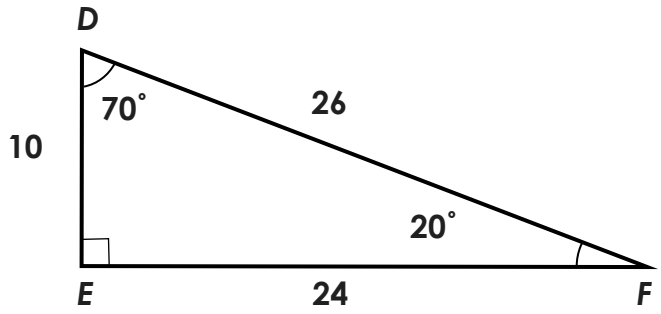
Side-Side-Side

$\frac{21}{7} = \frac{24}{8} = \frac{27}{9}$

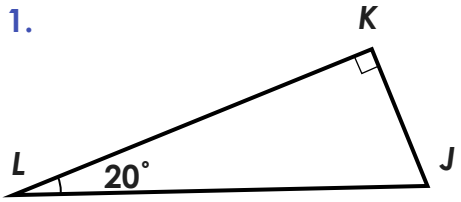
3 = 3 = 3

△ABC ~ △DEF, because all side ratios are equal.

Determine if the given triangle is similar to ΔDEF.



1.



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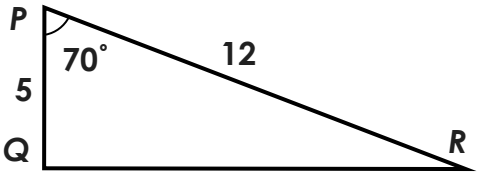
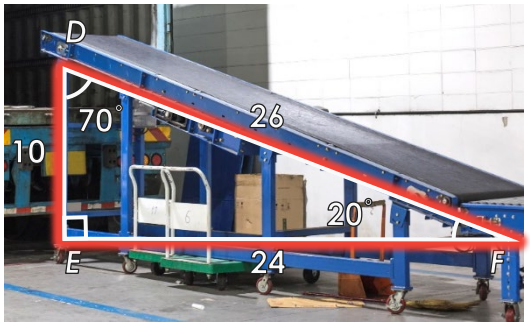


Read and solve the problem. Then, answer the question.

A construction engineer is designing ramps for a warehouse to meet safety standards for transporting goods. The first ramp is represented by ΔDEF on the right. Can this engineer use the designs below for a second ramp that must be similar in structure to the first ramp for safety reasons?



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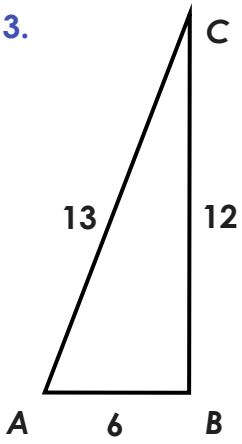

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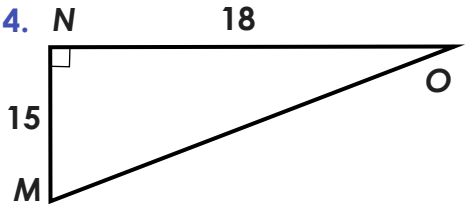
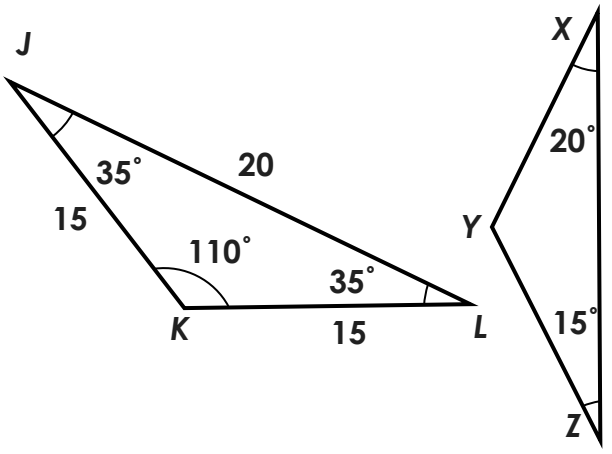


5. Aleyna thinks she solved this problem correctly. Explain why her answer is incorrect.



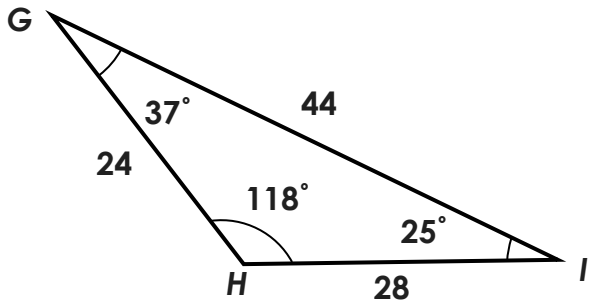
Angle-Angle

m∠J = m∠X = 20°

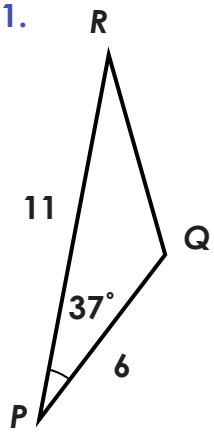
m∠L = m∠Z = 15°

ΔJKL ~ ΔXYZ, because the triangles share two equal angles.

Determine if the given triangle is similar to ΔGHI.



1.



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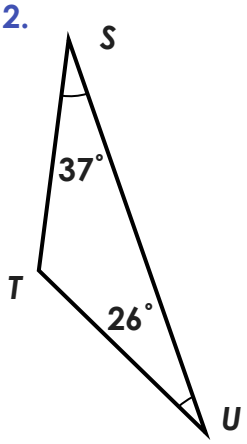
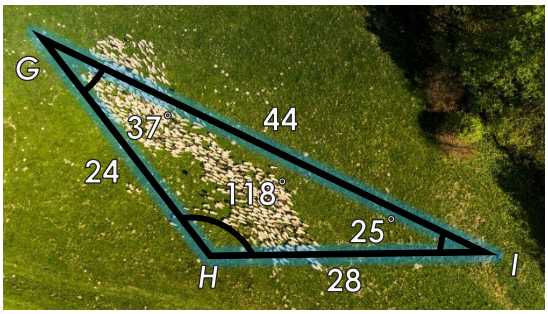
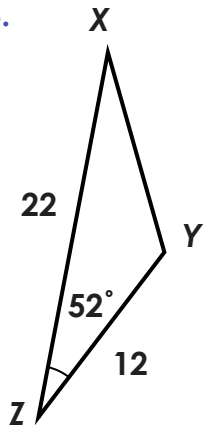


Read and solve the problem. Then, answer the question.

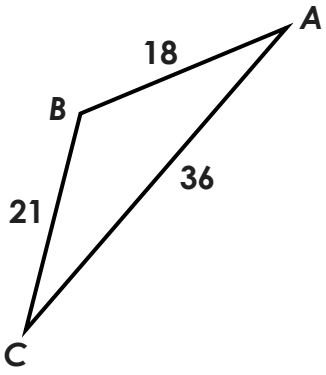
A farmer is creating two triangular grazing zones for her sheep. The first triangular zone, ΔGHI, is shown on the right. She wants the second grazing zone to be proportional to the first. Which of the triangles should she use for the second zone?



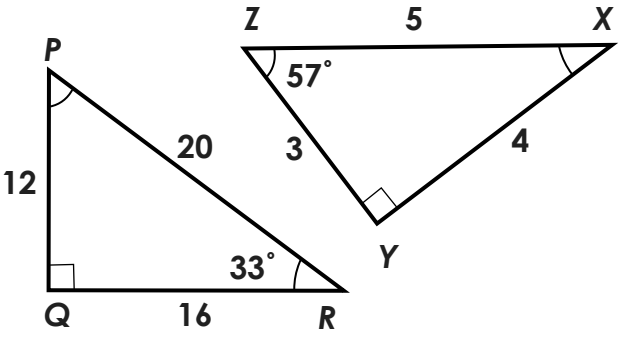
3.



4.



5. Eugene thinks he solved this problem correctly. Explain why his answer is incorrect.



Side-Angle-Side

$m\angle R = 33^\circ \neq m\angle Z = 57^\circ$

$\frac{3}{16} = \frac{5}{20}$ $\frac{3}{16} \neq \frac{1}{4}$

ΔPQR ~ ΔXYZ, because the corresponding side ratios and angles between the sides are NOT equal.