

Triangle Match Lab

Practice, apply, and challenge similarity skills.

HIGH SCHOOL • HSG-SRT.B.5

CCSS.Math.Content.HSG-SRT.B.5 "Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures."

NAME _____

DATE _____

MATCH CORRESPONDING PARTS

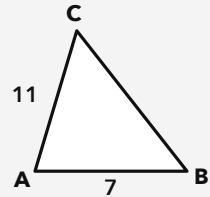
If two pairs of corresponding angles are congruent, the triangles are similar by AA. For similar triangles, corresponding sides have the same scale factor, so write matching side ratios in the same order.

WORKED EXAMPLE

Triangle ABC, shown below, is similar to triangle DEF. A corresponds to D, B to E, and C to F. The matching side DE is 14. Find DF.

1. AB corresponds to DE, so the scale factor is $14/7 = 2$.
2. AC corresponds to DF.
3. $DF = 11 \times 2 = 22$.

Answer: DF = 22



PRACTICE 5 problems

- 1** Triangle JKL is similar to triangle MNP, with J corresponding to M, K to N, and L to P. JK = 8, KL = 12, and MN = 16. Find NP.

ANSWER _____

- 2** $\angle Q = 38^\circ$, $\angle R = 71^\circ$, $\angle X = 38^\circ$, and $\angle Y = 71^\circ$. Which criterion proves $\triangle QRS \sim \triangle XYZ$?

ANSWER _____

- 3** $\triangle ABC$ has side lengths 4, 6, and 9. $\triangle DEF$ has side lengths 12, 18, and 27. Are the triangles similar? State the criterion.

ANSWER _____

- 4** Triangles RST and UVW are similar, with R corresponding to U, S to V, and T to W. RS = 10, RT = 15, and UV = 6. Find UW.

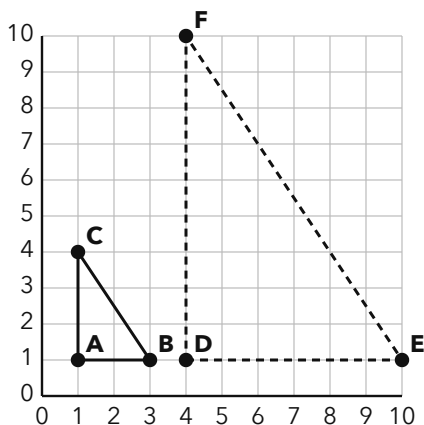
ANSWER _____

- 5** Triangle ABC has $AB = 5$ cm, $BC = 7$ cm, and $AC = 8$ cm. Triangle DEF has $DE = 5$ cm, $EF = 7$ cm, and $DF = 8$ cm. Are the triangles congruent? State the criterion and the matching vertices.

ANSWER _____

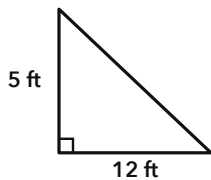
APPLY IT Show your work

- 1** A game designer uses the solid triangle as a flag icon and the dashed triangle as an enlarged similar icon. What is the scale factor from the solid icon to the dashed icon? If the solid icon is 4 cm tall, how tall is the dashed icon?



ANSWER _____

- 2** The model ramp side is shown. A similar full-size ramp has a 36-ft base. Find its height.



ANSWER _____

CHALLENGE

One step up

In $\triangle ABC$, D lies on AB and E lies on AC. DE is parallel to BC. $AB = 18$, $AD = 12$, $AE = x$, and $EC = 5$. Find x . Then explain why $\triangle ADE$ is similar to $\triangle ABC$.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Triangle JKL is similar to triangle MNP, with J corresponding to M, K to N, and L to P. $JK = 8$, $KL = 12$, and $MN = 16$. Find NP.	NP = 24
2	$\angle Q = 38^\circ$, $\angle R = 71^\circ$, $\angle X = 38^\circ$, and $\angle Y = 71^\circ$. Which criterion proves $\triangle QRS \sim \triangle XYZ$?	AA similarity
3	$\triangle ABC$ has side lengths 4, 6, and 9. $\triangle DEF$ has side lengths 12, 18, and 27. Are the triangles similar? State the criterion.	Yes; SSS similarity
4	Triangles RST and UVW are similar, with R corresponding to U, S to V, and T to W. $RS = 10$, $RT = 15$, and $UV = 6$. Find UW.	UW = 9
5	Triangle ABC has $AB = 5$ cm, $BC = 7$ cm, and $AC = 8$ cm. Triangle DEF has $DE = 5$ cm, $EF = 7$ cm, and $DF = 8$ cm. Are the triangles congruent? State the criterion and the matching vertices.	Yes, by SSS congruence. A matches D, B matches E, and C matches F.

PART 2 • APPLY IT

- Scale factor = 3; dashed icon height = 12 cm** Compare corresponding vertical sides: $9/3 = 3$.
Multiply 4 cm by 3.
- 15 ft** The base scale factor is $36/12 = 3$. Multiply the model height, 5 ft, by 3.

CHALLENGE

$x = 10$; $\triangle ADE \sim \triangle ABC$ by AA because DE is parallel to BC.

Accept equivalent proportional reasoning. For the challenge, accept AA with a shared angle at A and corresponding angles formed by parallel lines.