LESSON MAKER PRO

Triangle Matchups

Use matching sides to find missing lengths.

HIGH SCHOOL · GDA.GM.J.34

GDA.GM.J.34 "Use congruence and similarity criteria for triangles to solve problems in real-world contexts."

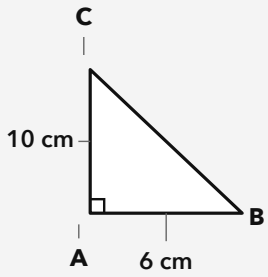
NAME _____ DATE _____

MATCH, THEN SCALE

Similar triangles have equal matching angles and one scale factor for all matching sides. Two right triangles with the same acute angle are similar by AA. Use a pair of matching sides to find the scale factor.

WORKED EXAMPLE

This triangle and a second triangle are similar. The side matching AB is 18 cm in the second triangle. Find the side matching AC.



1. Scale factor: 18/6 = 3.
2. Side matching AC: 10 × 3 = 30 cm.

Answer: 30 cm

PRACTICE 4 problems

1 Triangle ABC is similar to triangle DEF. AB matches DE, and AC matches DF. If AB=5 cm, AC=8 cm, and DE=15 cm, find DF.

ANSWER _____

2 Triangle ABC is similar to triangle DEF. AB matches DE, and BC matches EF. If AB=11 m, BC=13 m, and DE=22 m, find EF.

ANSWER _____

3 Triangles ABC and DEF are congruent. AC matches DF. If AC=2x+1 cm and DF=19 cm, find x.

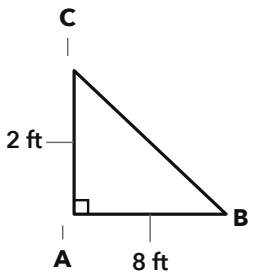
ANSWER _____

4 Triangle ABC is similar to triangle DEF. AB matches DE, and BC matches EF. If AB=16 in, DE=32 in, and EF=34 in, find BC.

ANSWER _____

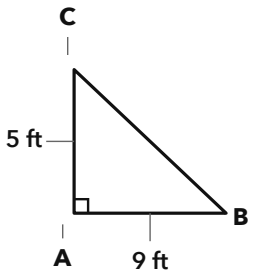
APPLY IT Show your work

1 A skate park builds a ramp with the same incline as the ramp shown. Both ramps rise from level ground. The new ramp has a ground run of 20 ft. What is its rise?



ANSWER _____

2 At the same time, a student and a stadium light pole cast shadows on level ground. The figure shows the student. The pole's shadow is 81 ft. How tall is the pole?



ANSWER _____

CHALLENGE One step up

In triangles ABC and DEF, AB=8 cm, AC=11 cm, BC=13 cm, DE=24 cm, and DF=33 cm. Angle A equals angle D. Find the perimeter of DEF and name the similarity criterion.

WORK SPACE AND ANSWER

ANSWER KEY

Triangle Matchups

HIGH SCHOOL · GDA.GM.J.34

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Triangle ABC is similar to triangle DEF. AB matches DE, and AC matches DF. If AB=5 cm, AC=8 cm, and DE=15 cm, find DF.	**24 cm**
2	Triangle ABC is similar to triangle DEF. AB matches DE, and BC matches EF. If AB=11 m, BC=13 m, and DE=22 m, find EF.	**26 m**
3	Triangles ABC and DEF are congruent. AC matches DF. If AC=2x+1 cm and DF=19 cm, find x.	**9**
4	Triangle ABC is similar to triangle DEF. AB matches DE, and BC matches EF. If AB=16 in, DE=32 in, and EF=34 in, find BC.	**17 in**

PART 2 · APPLY IT

1. **5 ft** The ramps are similar by AA. The run grows by 20/8, so the rise is 2 × 20/8 = 5 ft.
2. **45 ft** The shadow triangles are similar by AA because both have a right angle and the same sun angle. The shadow scale factor is 81/9 = 9, so the pole is 5 × 9 = 45 ft tall.

CHALLENGE

96 cm; SAS similarity

For the challenge, accept SAS and a perimeter calculation of 24 + 33 + 39 = 96 cm.