

Shape Scale Check

Use matching side ratios to test for similarity.

GRADE 7 • 7.MG.2.e

7.MG.2.e "Recognize and justify if two quadrilaterals or triangles are similar using the ratios of corresponding side lengths."

NAME _____

DATE _____

MATCH EVERY RATIO

Triangles are similar when all corresponding side lengths have the same ratio. For quadrilaterals, first make sure corresponding angles are congruent, then check that all corresponding side-length ratios match. Pair matching sides in the order given.

WORKED EXAMPLE

Triangle A has side lengths 4, 6, and 8. Triangle B has corresponding side lengths 10, 15, and 20. Are the triangles similar?

1. Compare each side in Triangle B to its matching side in Triangle A.
2. $10/4 = 5/2$, $15/6 = 5/2$, and $20/8 = 5/2$.
3. All three corresponding side ratios are equal.

Answer: Yes. The triangles are similar, with a scale factor of $5/2$ from Triangle A to Triangle B.

PRACTICE 6 problems

- 1** Triangle A has side lengths 3, 7, and 9. Triangle B has corresponding side lengths 12, 28, and 36. Are the triangles similar?

ANSWER _____

- 2** Quadrilaterals P and Q have congruent corresponding angles. Their corresponding side lengths are 3, 7, 11, 13 for P and 9, 21, 31, 39 for Q. Are they similar?

ANSWER _____

- 3** Triangle R has side lengths 11, 13, and 17. Triangle S has corresponding side lengths 22, 26, and 34. Are the triangles similar?

ANSWER _____

- 4** Triangle M has side lengths 12, 14, and 18. Triangle N has corresponding side lengths 18, 21, and 28. Are the triangles similar?

ANSWER _____

- 5** Quadrilaterals C and D have congruent corresponding angles. Their corresponding side lengths are 16, 18, 24, 30 for C and 8, 9, 12, 15 for D. Are they similar?

ANSWER _____

- 6** Triangle E has side lengths 21, 27, and 33. A similar triangle has corresponding side lengths 14, 18, and x . Find x .

ANSWER _____

APPLY IT Show your work

- 1** An esports club makes two triangular pennants. The first pennant has side lengths 12 cm, 18 cm, and 24 cm. The second has corresponding side lengths 14 cm, 21 cm, and 28 cm. Are the pennants similar? Justify your answer with ratios.

WORK SPACE

ANSWER _____

- 2** A game app shows two four-sided map zones with congruent corresponding angles. Zone A has side lengths 23, 29, 31, and 37 grid units. Zone B has corresponding side lengths 46, 58, 60, and 74 grid units. Are the zones similar?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Triangle A has side lengths 18, 24, and 30. Triangle B has side lengths 15, 20, and 25. A student says the triangles are similar. Is the student right? Explain using ratios.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Triangle A has side lengths 3, 7, and 9. Triangle B has corresponding side lengths 12, 28, and 36. Are the triangles similar?	Yes. $12/3 = 28/7 = 36/9 = 4$.
2	Quadrilaterals P and Q have congruent corresponding angles. Their corresponding side lengths are 3, 7, 11, 13 for P and 9, 21, 31, 39 for Q. Are they similar?	No. $9/3 = 21/7 = 39/13 = 3$, but $31/11$ is not 3.
3	Triangle R has side lengths 11, 13, and 17. Triangle S has corresponding side lengths 22, 26, and 34. Are the triangles similar?	Yes. $22/11 = 26/13 = 34/17 = 2$.
4	Triangle M has side lengths 12, 14, and 18. Triangle N has corresponding side lengths 18, 21, and 28. Are the triangles similar?	No. $18/12 = 21/14 = 3/2$, but $28/18 = 14/9$.
5	Quadrilaterals C and D have congruent corresponding angles. Their corresponding side lengths are 16, 18, 24, 30 for C and 8, 9, 12, 15 for D. Are they similar?	Yes. $8/16 = 9/18 = 12/24 = 15/30 = 1/2$.
6	Triangle E has side lengths 21, 27, and 33. A similar triangle has corresponding side lengths 14, 18, and x. Find x.	x = 22

PART 2 • APPLY IT

- Yes. The pennants are similar because $14/12 = 21/18 = 28/24 = 7/6$.** Compare each second-pennant side to its matching first-pennant side. Each ratio simplifies to $7/6$.
- No. $46/23 = 58/29 = 74/37 = 2$, but $60/31$ is not 2.** Three side ratios are 2, but the ratio for 60 and 31 does not match. Since not all corresponding side ratios are equal, the zones are not similar.

CHALLENGE

Yes. $15/18 = 20/24 = 25/30 = 5/6$, so all corresponding side lengths have the same ratio.

Accept equivalent ratio forms, such as $2/1$ instead of 2. For quadrilaterals, similarity conclusions depend on the stated condition that corresponding angles are congruent.