

Shape Match

Compare side and angle measures to test congruence.

GRADE 6 • 6.MG.4.d

6.MG.4.d "Determine whether polygons are congruent or noncongruent according to the measures of their sides and angles."

NAME _____

DATE _____

SAME SIZE, SAME SHAPE

Congruent polygons have the same size and shape. Their matching sides and matching angles must be equal, even if one polygon is turned or flipped.

WORKED EXAMPLE

Rectangle ABCD is 5 cm by 8 cm.
Rectangle WXYZ is 8 cm by 5 cm.
Are they congruent?

1. Match the 5 cm sides and the 8 cm sides.
2. Each rectangle has four 90 degree angles.
3. Turning one rectangle can line up all matching parts.

Answer: Yes, the rectangles are congruent.

PRACTICE 5 problems

- 1** Triangle ABC has side lengths 3 cm, 4 cm, and 6 cm. Triangle DEF has side lengths 6 cm, 3 cm, and 4 cm. Are they congruent?

ANSWER _____

- 2** One rectangle is 2 cm by 7 cm. Another rectangle is 2 cm by 9 cm. Are they congruent?

ANSWER _____

- 3** Two squares each have side length 11 cm. Are they congruent?

ANSWER _____

- 4** Two triangles have matching angles. Their side lengths are 10 cm, 12 cm, 14 cm and 15 cm, 18 cm, 21 cm. Are they congruent?

ANSWER _____

- 5** A regular hexagon has side length 16 cm. Another regular hexagon has side length 17 cm. Are they congruent?

ANSWER _____

APPLY IT Show your work

- 1** Two gaming club scoreboard cards are rectangles. Card A is 21 cm by 13 cm. Card B is 13 cm by 21 cm. Are the cards congruent?

WORK SPACE

ANSWER _____

- 2** Two rectangular posters are being compared. One is 22 cm by 24 cm. The other is 22 cm by 26 cm. Are the posters congruent?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A student says, "Two polygons are congruent because they have the same side lengths and the same angle measures." Is that always enough? Explain.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Triangle ABC has side lengths 3 cm, 4 cm, and 6 cm. Triangle DEF has side lengths 6 cm, 3 cm, and 4 cm. Are they congruent?	Congruent.
2	One rectangle is 2 cm by 7 cm. Another rectangle is 2 cm by 9 cm. Are they congruent?	Noncongruent.
3	Two squares each have side length 11 cm. Are they congruent?	Congruent.
4	Two triangles have matching angles. Their side lengths are 10 cm, 12 cm, 14 cm and 15 cm, 18 cm, 21 cm. Are they congruent?	Noncongruent.
5	A regular hexagon has side length 16 cm. Another regular hexagon has side length 17 cm. Are they congruent?	Noncongruent.

PART 2 • APPLY IT

1. **Congruent.** The side lengths match, and both cards have four right angles. One card can be turned to match the other.
2. **Noncongruent.** One pair of matching side lengths is different, 24 cm and 26 cm. The posters cannot be the same size.

CHALLENGE

No. The equal sides and equal angles must be matching parts in the same order around both polygons, allowing a flip or turn.

Accept answers that use “not congruent” for noncongruent. For the challenge, accept explanations that say corresponding sides and angles must match in order.