LESSON MAKER PRO

Shape Match Detectives

Use side lengths and angle measures to compare polygons.

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."

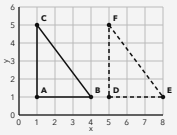
NAME _____ DATE _____

THE BIG IDEA

Congruent polygons have matching side lengths and matching angle measures. A polygon may be slid, turned, or flipped and still be congruent if its size and shape stay the same.

WORKED EXAMPLE

Are triangle ABC and triangle DEF congruent?



1. AB = DE = 3 units.
2. AC = DF = 4 units, and BC = EF = 5 units.
3. All matching side lengths are equal.

Answer: Yes, triangle ABC is congruent to triangle DEF.

PRACTICE 4 problems

1 Triangle JKL has side lengths 6 cm, 8 cm, and 9 cm. Triangle MNP has side lengths 6 cm, 8 cm, and 10 cm. Are they congruent?

ANSWER _____

2 One rectangle measures 11 cm by 12 cm. Another rectangle measures 12 cm by 11 cm. Are they congruent?

ANSWER _____

3 Triangle RST has side lengths 13 mm, 14 mm, and 15 mm. Triangle VWX has side lengths 13 mm, 14 mm, and 16 mm. Are they congruent?

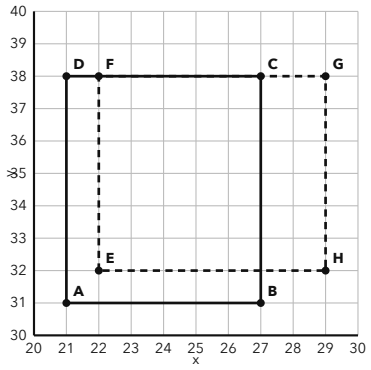
ANSWER _____

4 Two regular pentagons each have side length 17 mm. Are they congruent?

ANSWER _____

APPLY IT Show your work

1 A skate club plans two rectangular sticker designs shown on the coordinate grid. Are the designs congruent?



ANSWER _____

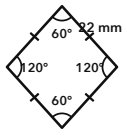
2 A game designer makes two four-sided player badges. Badge P is a rectangle with side lengths 18 mm and 19 mm. Badge Q is a parallelogram with side lengths 18 mm and 19 mm, but its angles are 80° and 100°. Are the badges congruent?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Badge A is shown. Badge B has four sides that are 22 mm long and angles of 60°, 120°, 60°, and 120° in the same order. Are the badges congruent? Explain using sides and angles.



WORK SPACE AND ANSWER

ANSWER KEY

Shape Match Detectives

GRADE 6 · 6.MG.4.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Triangle JKL has side lengths 6 cm, 8 cm, and 9 cm. Triangle MNP has side lengths 6 cm, 8 cm, and 10 cm. Are they congruent?	**No, they are noncongruent.**
2	One rectangle measures 11 cm by 12 cm. Another rectangle measures 12 cm by 11 cm. Are they congruent?	**Yes, they are congruent.**
3	Triangle RST has side lengths 13 mm, 14 mm, and 15 mm. Triangle VWX has side lengths 13 mm, 14 mm, and 16 mm. Are they congruent?	**No, they are noncongruent.**
4	Two regular pentagons each have side length 17 mm. Are they congruent?	**Yes, they are congruent.**

PART 2 · APPLY IT

1. **Yes, the sticker designs are congruent.** The first rectangle has side lengths 6 units and 7 units. The second rectangle has the same side lengths, turned in a different direction.
2. **No, the badges are noncongruent.** The badges have matching side lengths, but Badge P has four 90° angles. Badge Q has different angle measures.

CHALLENGE

Yes. Both badges have four 22 mm sides and matching 60° and 120° angles in order.

Accept congruence statements that recognize a turn, slide, or flip does not change size or shape. For written explanations, require matching side lengths and matching corresponding angles.