

Practice with Examples

For use with pages 202–210

GOAL**Identify congruent figures and corresponding parts****VOCABULARY**

When two geometric figures are **congruent**, there is a correspondence between their angles and sides such that **corresponding angles** are congruent and **corresponding sides** are congruent.

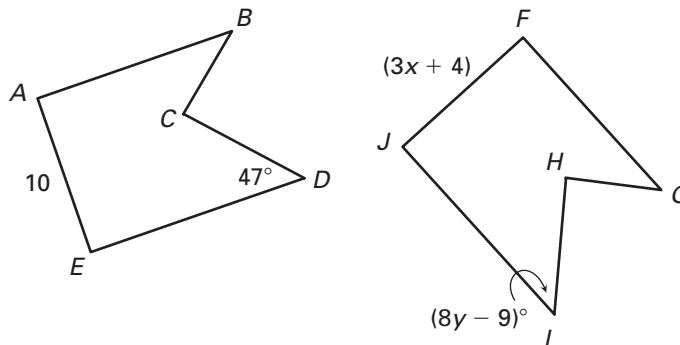
Theorem 4.3 Third Angles Theorem

If two angles of one triangle are congruent to two angles of another triangle, then the third angles are also congruent.

EXAMPLE 1**Using Properties of Congruent Figures**

In the diagram, $ABCDE \cong FGHIJ$

- Find the value of x .
- Find the value of y .

**SOLUTION**

- You know that $\overline{AE} \cong \overline{FJ}$.

So $AE = FJ$.

$$10 = 3x + 4$$

$$x = 2$$

- You know that $\angle D \cong \angle I$.

So, $m\angle D = m\angle I$.

$$47^\circ = (8y - 9)^\circ$$

$$56 = 8y$$

$$y = 7$$

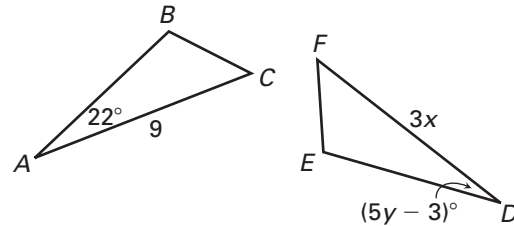
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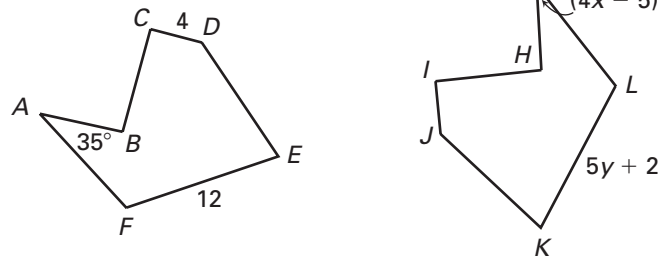
Exercises for Example 1

In Exercises 1 and 2, for each pair of figures find (a) the value of x and (b) the value of y .

1. $\triangle ABC \cong \triangle DEF$



2. $ABCDEF \cong GHIJKL$



EXAMPLE 2 Using the Third Angles Theorem

Find the value of x .



SOLUTION

In the diagram, $\angle A \cong \angle D$ and $\angle B \cong \angle E$. From the Third Angles Theorem, you know that $\angle C \cong \angle F$. So, $m\angle C = m\angle F$.

From the Triangle Sum Theorem, $m\angle C = 180^\circ - 30^\circ - 110^\circ = 40^\circ$.

$$m\angle C = m\angle F \quad \text{Third Angles Theorem}$$

$$40 = x \quad \text{Substitute.}$$

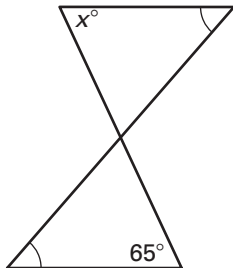
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Exercises for Example 2

Find the value of x .

3.



4.

