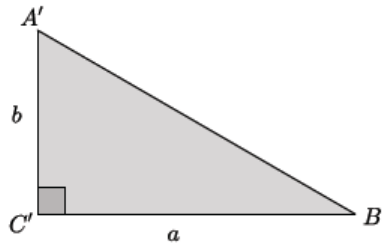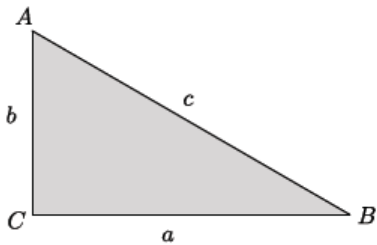# Lesson 16: Converse of the Pythagorean Theorem

Classwork

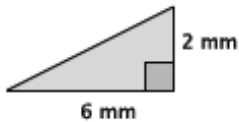**Proof of the Converse of the Pythagorean Theorem**

Exercises 1–7

1. Is the triangle with leg lengths of 3 mi., 8 mi., and hypotenuse of length $\sqrt{73}$ mi. a right triangle? Show your work, and answer in a complete sentence.

2. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.
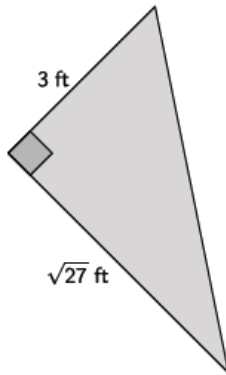

3. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.


4. Is the triangle with leg lengths of 9 in., 9 in., and hypotenuse of length $\sqrt{175}$ in. a right triangle? Show your work, and answer in a complete sentence.

5. Is the triangle with leg lengths of $\sqrt{28}$ cm, 6 cm, and hypotenuse of length 8 cm a right triangle? Show your work, and answer in a complete sentence.

6. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence.

3 ft

$\sqrt{27}$ ft

7. The triangle shown below is an isosceles right triangle. Determine the length of the legs of the triangle. Show your work, and answer in a complete sentence.
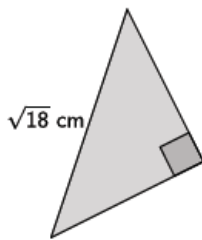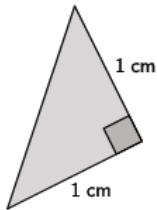
$\sqrt{18}$ cm

Problem Set

1. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.

2. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.
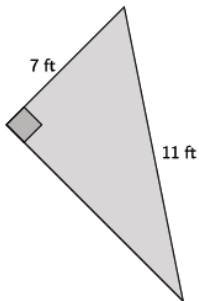
3. Is the triangle with leg lengths of $\sqrt{3}$ cm, 9 cm, and hypotenuse of length $\sqrt{84}$ cm a right triangle? Show your work, and answer in a complete sentence.

4. Is the triangle with leg lengths of $\sqrt{7}$ km, 5 km, and hypotenuse of length $\sqrt{48}$ km a right triangle? Show your work, and answer in a complete sentence.
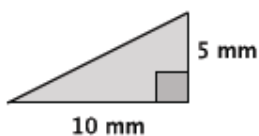
5. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.
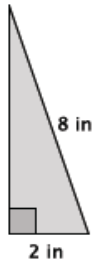
6. Is the triangle with leg lengths of 3, 6, and hypotenuse of length $\sqrt{45}$ a right triangle? Show your work, and answer in a complete sentence.

7. What is the length of the unknown side of the right triangle shown below? Show your work, and answer in a complete sentence. Provide an exact answer and an approximate answer rounded to the tenths place.

8. Is the triangle with leg lengths of 1, $\sqrt{3}$, and hypotenuse of length 2 a right triangle? Show your work, and answer in a complete sentence.

9. Corey found the hypotenuse of a right triangle with leg lengths of 2 and 3 to be $\sqrt{13}$. Corey claims that since $\sqrt{13} = 3.61$ when estimating to two decimal digits, that a triangle with leg lengths of 2, 3, and a hypotenuse of 3.61 is a right triangle. Is he correct? Explain.

10. Explain a proof of the Pythagorean Theorem.

11. Explain a proof of the converse of the Pythagorean Theorem.

COMMON CORE Lesson 16: Converse of the Pythagorean Theorem   **engage**^ny **S.82**

Date: 4/5/14