What's Your Angle?

Name: _____

We have been using sine, cosine and tangent ratios to find the missing side lengths of a right triangle. But what if we want to find a missing angle? Today we will investigate how to find an angle from side lengths in a right triangle.

1. Yesterday we explored the properties of similar triangles. What relationships are true about the sides and angles in similar triangles?

2. Find each of the following missing parts of the triangle. Show your work or explain how you found the answer. Round to the nearest tenth.
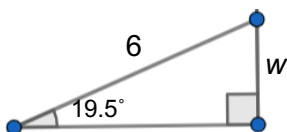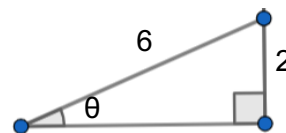
a. What is the length of side a? Show work.

9

a

19.5°

b. What is the measure of angle θ? Explain.

9

3

θ
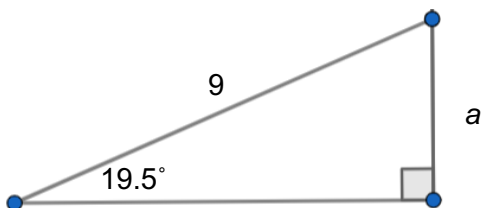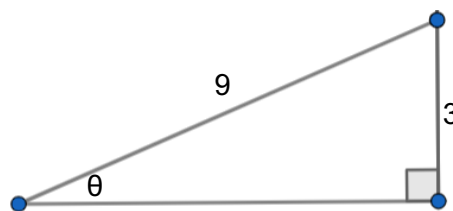
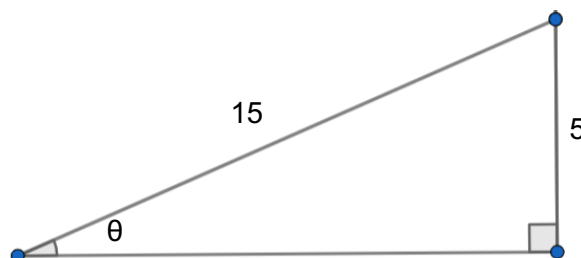c. What is the length of side w? Show work.

6

w

19.5°

d. What is the measure of angle θ? Explain.

6

2

θ

3. Use the triangle on the right to answer the following questions.

a. What is the sine ratio for θ? Write an equation showing it.

b. What is the measure of angle θ? How do you know?

15

5

θ

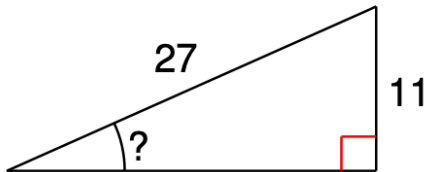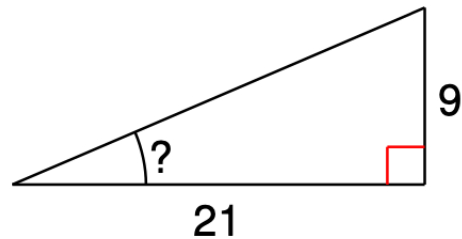**CALC MEDIC**

Important Ideas:

Check Your Understanding!

1. Find the measure of the missing angle.

2. Find the measure of the missing angle.

3. A hiker is walking up a mountain on a straight trail. After walking 8 miles, she has gained 3 miles in elevation. What is the angle of inclination of the trail?

4. In a right triangle, the hypotenuse is 2.5 times bigger than the side adjacent to angle *A*. Find the measure of angle *A*.

5. Find an angle *x* where $\sin x = \cos x$.

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