

## Pythagorean Triples and Angle Measures

**Materials:** transparent protractor, graph paper, notebook paper, pencil, scientific calculator

Given the following Pythagorean triples, do the following:

- A. Draw a representation on your graph paper where one length on the graph is one length on one of the legs of the right triangle.
- B. Mark the right angle and use your transparent protractor to estimate the angle measures of the other two angles.
- C. Use what you know about the definitions of sine, cosine, and tangent and their inverses arcsine, arccosine and arctangent to find the angle measures to the nearest tenth of a degree.
- D. Compare your estimate with the actual angle measure. How close did you get?

$$\sin \vartheta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \vartheta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \vartheta = \frac{\text{opposite}}{\text{adjacent}}$$

In the Pythagorean Triples below, the first two values are the lengths of the legs and the third value is the length of the hypotenuse.

1. (6, 8, 10)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

2. (5, 12, 13)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

3. (7, 24, 25)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

4. (8, 15, 17)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

5. (10, 24, 26)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

6. (9, 12, 15)

Estimate:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$

Actual:

$$\angle A = \underline{\hspace{2cm}}$$

$$\angle B = \underline{\hspace{2cm}}$$