8.3 Solving Right Triangles

Solving a right triangle means to determine the measures of all six parts. You can solve a right triangle if, in addition to knowing the right angle, you know any of the following:
1. Two side lengths
2. One side length and one acute angle measure

knowing the measure of both acute angles in not enough information to determine the lengths of the sides.

Ex 1: Use the Pythagorean Theorem to solve for c.

A

c

4

C

5

B
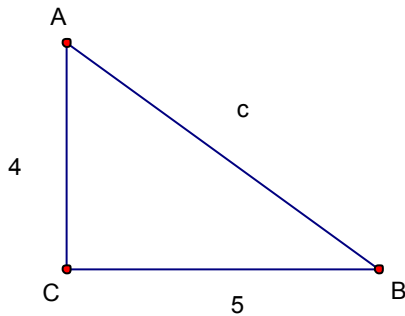
To find the measure of $\angle A$, use the trigonometric ratio:

$$\tan A = \frac{opp}{adj}$$

$$\tan A = \frac{5}{4} = 1.25$$

Once you know the tangent of A, you can use your calculator to obtain a decimal approximation of $m\angle A$.

$\tan^{-1}(1.25) \approx 51.3$ after getting the $m\angle A$ you can get the measure of angle B because you have two angles 90 and 51.3 so angle $B = 38.7$

Given the lengths of two sides of a right triangle, find the length of the other side and the measure of the acute angles. (round)
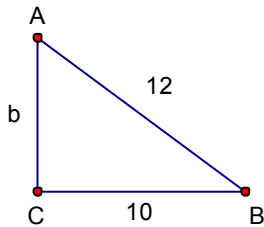
A

3

C
4
B
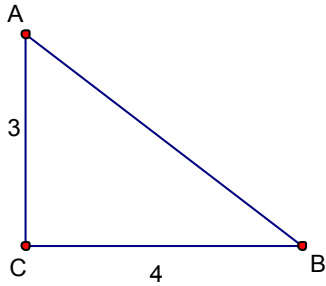
Given one side and one angle, find the other sides and the measure of the other acute angle.
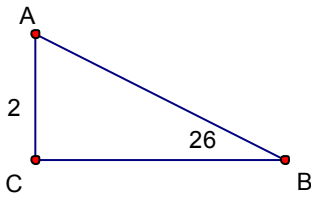
A

2

26

C
B

Solve the right triangle. Round decimals to the nearest tenth.

R
s
T

20

r

15

S

Solve the right triangle. Round decimals to the nearest tenth.

A

12

b

C
10
B
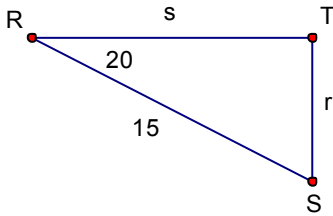
Find the missing lengths

B

36°

A   9   D   C