P. 76-77 Solving Right Triangles 14.3

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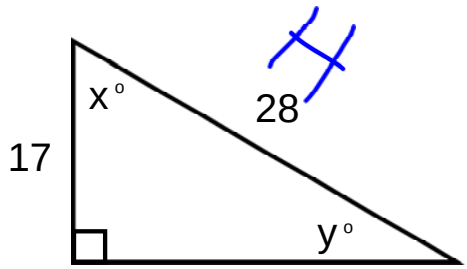
Warm Up

Find x and y.



$\cos X = \frac{17}{28}$

$X = \cos^{-1}\left(\frac{17}{28}\right)$

$X = 52.6°$

$y = 90 - 52.6$

$y = 37.4°$

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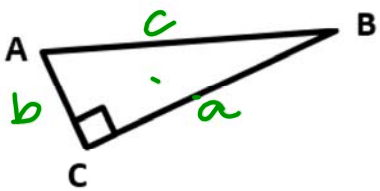
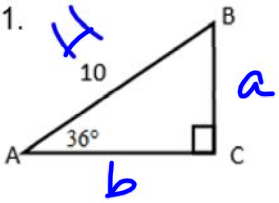
To "Solve" a right triangle means to find all missing sides and angles.

We will use the skills from the chapter, and recall that the acute angles of a right triangle add up to 90.

In general, sides are named by using the vertex that is opposite to it. Label sides a, b, and c below



Examples: Solve the right triangles by finding all the missing angles and side lengths.

1. 

$\sin 36 = \frac{a}{10}$

$a = 10 \cdot \sin 36$

$\cos 36 = \frac{b}{10}$

$b = 10 \cdot \cos 36$

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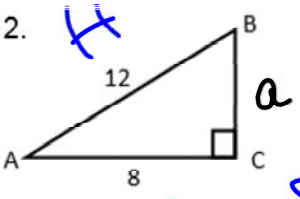
$a =$ 5.9

$b =$ 8.1

$c =$ 10

$m\angle A =$ 36° $\quad m\angle B =$ 54°

Examples: Solve the right triangles by finding all the missing angles and side lengths.

2. 

$a^2 + b^2 = c^2$

$a^2 + 8^2 = 12^2$

$a^2 = 80$

$\cos A = \frac{8}{12}$

$A = \cos^{-1}\left(\frac{8}{12}\right)$

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$a =$ 8.9

$b =$ 8

$c =$ 12

$m\angle A =$ 48.2° $\quad m\angle B =$ 41.8°

Examples: Solve the right triangles by finding all the missing angles and side lengths

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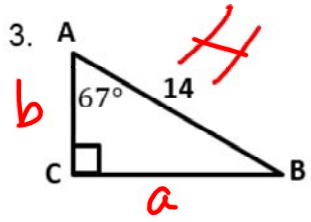
3. 

$\sin 67 = \frac{a}{14}$

$a = 14 \cdot \sin 67$

$\cos 67 = \frac{b}{14}$

$b = 14 \cdot \cos 67$

$a =$ 12.9

$b =$ 5.5

$c =$ 14

$m\angle A =$ 67° $\quad m\angle B =$ 23°

Examples: Solve the right triangles by finding all the missing angles and side lengths

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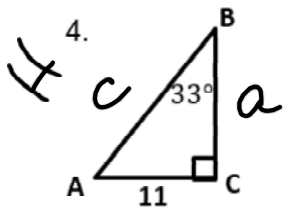
4. 

$\tan 33 = \frac{11}{a}$

$a = \frac{11}{\tan 33}$

$\sin 33 = \frac{11}{c}$

$c = \frac{11}{\sin 33}$

$a =$ 16.9

$b =$ 11

$c =$ 20.2

$m\angle A =$ 57° $\quad m\angle B =$ 33°

Assignment

Solving Right Triangles Homework

Remember Bring Textbook Tomorrow!