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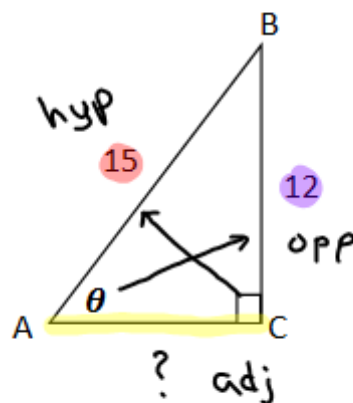
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WARM UP

4/28/14

Find the values of the six trigonometric functions for angle θ .



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

$$a^2 + 12^2 = 15^2$$

$$a^2 + 144 = 225$$

$$-144 \quad -144$$

$$\sqrt{a^2} = \sqrt{81}$$

$$a = 9$$

Six Trig Fn's

$$\textcircled{1} \sin \theta = \frac{o}{h} = \frac{12}{15} = \frac{4}{5} \checkmark$$

$$\textcircled{2} \cos \theta = \frac{a}{h} = \frac{9}{15} = \frac{3}{5} \checkmark$$

$$\textcircled{3} \tan \theta = \frac{o}{a} = \frac{12}{9} = \frac{4}{3} \checkmark$$

$$\textcircled{4} \csc \theta = \frac{h}{o} = \frac{5}{4} \checkmark$$

$$\textcircled{5} \sec \theta = \frac{h}{a} = \frac{5}{3} \checkmark$$

$$\textcircled{6} \cot \theta = \frac{a}{o} = \frac{3}{4} \checkmark$$

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13.1. Advanced Algebra

Right Δ Trigonometry (Part 2)

DATE: 4/28

Target 9A. Solve right triangles and extend knowledge of sine, cosine, and tangent ratios to their respective reciprocals.



sine of $\theta = \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$	cosecant of $\theta = \csc \theta = \frac{\text{hypotenuse}}{\text{opposite}}$
cosine of $\theta = \cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$	secant of $\theta = \sec \theta = \frac{\text{hypotenuse}}{\text{adjacent}}$
tangent of $\theta = \tan \theta = \frac{\text{opposite}}{\text{adjacent}}$	cotangent of $\theta = \cot \theta = \frac{\text{adjacent}}{\text{opposite}}$

Calculating Trigonometric Functions

A calculator can be used to find the trigonometric functions for any

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$$\text{tangent of } \theta = \tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\text{cotangent of } \theta = \cot \theta = \frac{\text{adjacent}}{\text{opposite}}$$

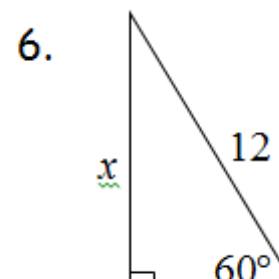
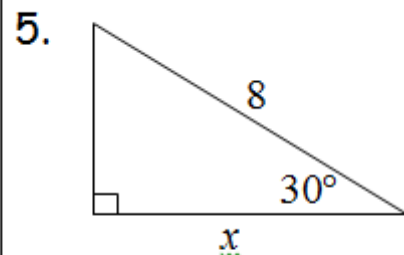
Calculating Trigonometric Functions

A calculator can be used to find the trigonometric functions for any angle. Make sure your calculator is set to degrees. Round your answers to the nearest tenth.

1. $\cos 46^\circ$ 0.7 2. $\cot 20^\circ$ 2.8 3. $\sin 60^\circ$ 0.9 4. $\sec 45^\circ$ 1.4

Find a Missing Side Length of a Right Triangle

Write an equation involving sin, cos, or tan that can be used to find the value of x . Then solve the equation. Round to the nearest tenth.



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TEXAS INSTRUMENTS

1.1 1.2 *Unsaved

$\cos(46^\circ)$	0.695
$\cot(20^\circ)$	2.75
$\sin(60^\circ)$	0.866
$\sec(45^\circ)$	1.41

4/99

Document1 x

1.1 Settings Document View: Zoom: 200% Boldness: 100%

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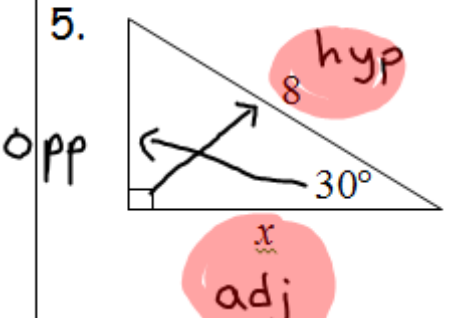
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Find a Missing Side Length of a Right Triangle

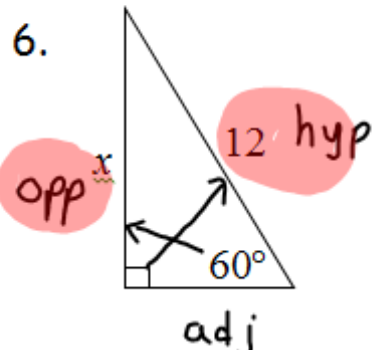
Write an equation involving sin, cos, or tan that can be used to find the value of x. Then solve the equation. Round to the nearest tenth.

5.  Use cos:

$$\cos 30^\circ = \frac{x}{8}$$

$$x = 8 \cdot \cos 30^\circ$$

$$x = 6.9$$

6.  Use sin:

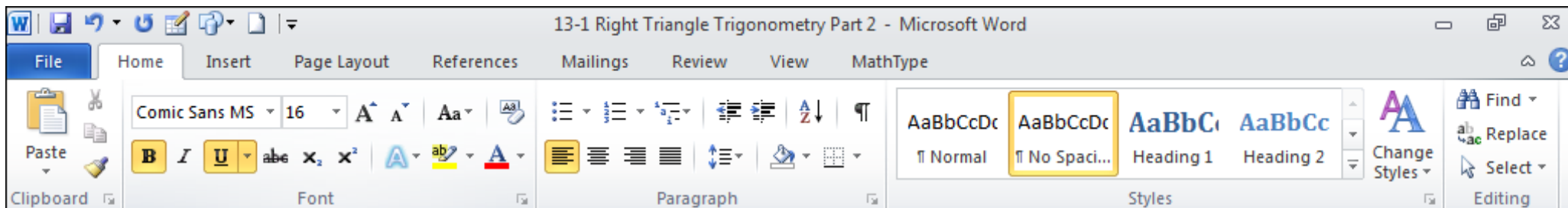
$$\sin 60^\circ = \frac{x}{12}$$

$$x = 12 \cdot \sin 60^\circ$$

$$x = 10.4$$

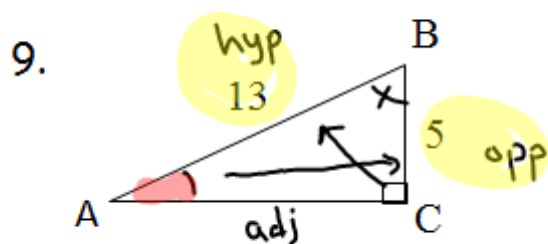
Solve a Right Triangle

Solve $\triangle XYZ$. Round the measures of sides to the nearest tenth and measures of angles to the nearest degree.



Find Missing Angle measure of Right Triangles

Find the missing angle measures for $\triangle ABC$. Round the measures of angles to the nearest degree.



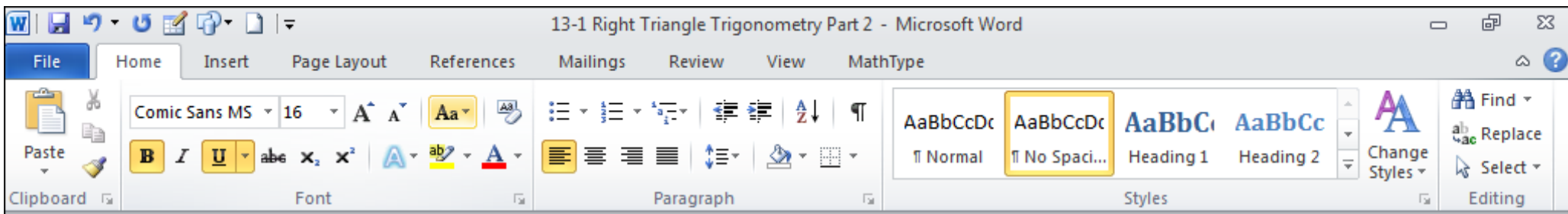
Find $\angle A$ 1st!

$$\sin \angle A = \frac{5}{13}. \text{ So now use } \sin^{-1}.$$

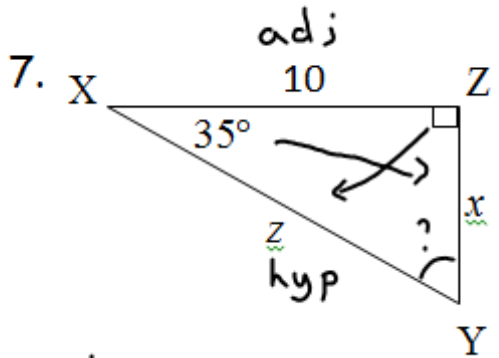
$$\cancel{\sin} \angle A = \sin^{-1} \left(\frac{5}{13} \right)$$

$$\angle A = \sin^{-1} \left(\frac{5}{13} \right)$$

Note: ONLY use \sin^{-1} , \cos^{-1} , or \tan^{-1} when finding missing \angle measures $\approx 22.6 \approx 23^\circ \rightarrow$ to nearest deg.



Solve a Right Triangle \Rightarrow means to find all missing sides & \angle s.
Solve $\triangle XYZ$. Round the measures of sides to the nearest tenth and measures of angles to the nearest degree.

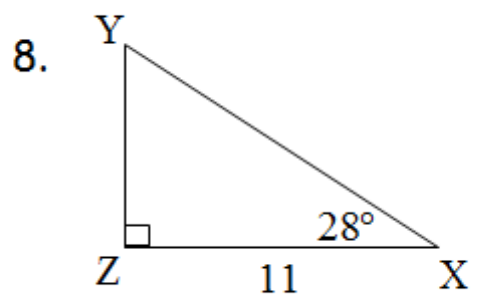


1st find z:

$$\cos 35^\circ = \frac{10}{z}$$

$$\frac{10}{\cos 35^\circ} = z$$

$$\underline{12.2 = z}$$



2nd find x:

$$\tan 35^\circ = \frac{x}{10}$$

$$x = \underline{7.0}$$

You try it!

$\angle Y = ?$ Recall
 All \angle s in any $\triangle = 180^\circ$
 $\angle Y = 180 - 90 - 35 = 55^\circ$