

Simplify all answers and show your work!

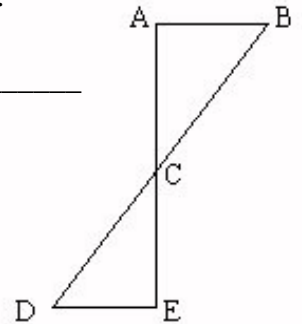
- 1) The Pythagorean Theorem can only be used with _____ triangles.
 2) There are _____ seconds in one minute. 3) There are _____ **seconds** in one degree.
 4) Using the terms “opposite”, “adjacent”, and “hypotenuse”, define the following:

a) $\cot A =$ _____ b) $\sec A =$ _____ c) $\csc A =$ _____

5) If $\triangle ABC \sim \triangle EDC$ where $m\angle A = 90^\circ$, $\overline{AB} = 5$, $\overline{DE} = 6$, $\overline{CE} = 8$, find the following.

a) the length $\overline{AC} =$ _____ b) $m\angle E =$ _____ c) the length $\overline{CD} =$ _____

d) the length $\overline{BC} =$ _____ e) $m\angle D =$ _____



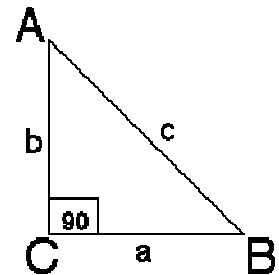
f) $m\angle B =$ _____ g) $m\angle DCE =$ _____ f) $m\angle ACB =$ _____

6) A flagpole casts a shadow 99 meters long at the same time that a pole 10 meters tall casts a shadow 18 meters long. Find the height of the flagpole.

Use the right triangle below to answer questions 9 – 14.

- 7) If $b = 13$ and $c = 17$, find $\sin B$. 8) If $a = 3$ and $b = 4$, find $\cos A$.

- 9) If $m\angle B = 41^\circ$, and $c = 15$, find a . 10) If $\sin B = 0.345$ and $c = 11.2$, find b .



- 11) If $a = 4$ and $b = 11$, find $m\angle A$. 12) If $a = 4.6$ and $c = 8.2$, find $m\angle B$.

13) Convert $113^{\circ} 15' 25''$ to decimal notation.

14) Convert 15.84° to degrees, minutes, and seconds.

Find the following.

15) $\sin 24.6^{\circ}$

16) $\tan 84.3^{\circ}$

17) $\csc 43.9^{\circ}$

18) $\cot 58^{\circ}$

Solve for x:

18) $\sin 43^{\circ} = \frac{x}{7.2}$

19) $\sec x = 2.97$

20) $\cot 24^{\circ} = \frac{5.9}{x}$

For 21 and 22, draw a picture to represent the following scenarios.

21) A 28-ft ladder leans against a building at an angle of 68° .

22) The angle of elevation of the sun is 74° , and causes a tree to cast an 18-foot shadow.

Solve the following problems using right triangle trigonometry.

23) What is the angle of elevation of the sun from the ground when a 6-ft man casts a shadow of 14 feet?

24) From a 60-foot observation tower on the coast, a Coast Guard officer sights a boat in difficulty. The angle of depression is 3 degrees. How far is the boat from the shoreline?

25) A surveyor is standing 35 feet from the base of a large tree. The surveyor measures the angle of elevation to the top of the tree as 71.5° . How tall is the tree?