

PT, SRT & Trig



For 1-4, solve for the variable. Leave ALL ANSWERS in simplified, rationalized radical.

1.  $12^2 + (3\sqrt{2})^2 = m^2$   
 $144 + (9 \cdot 2) = m^2$   
 $144 + 18 = m^2$   
 $162 = m^2$   
 $\sqrt{162} = m$   
 $9 \cdot 18 = m$   
 $m = \boxed{9\sqrt{2}}$

2.  $\frac{15}{\sqrt{3}} = \frac{5\sqrt{3}}{1}$   
 $a = \boxed{5\sqrt{3}}$   
 $t = \boxed{10\sqrt{3}}$

3.  $7\sqrt{6} \cdot \sqrt{2}$   
 $7\sqrt{12}$   
 $24 \cdot 3$   
 $h = \boxed{7\sqrt{6}}$        $i = \boxed{14\sqrt{3}}$

4.  $7^2 + s^2 = 9^2$   
 $49 + s^2 = 81$   
 $\sqrt{s^2} = \sqrt{32}$   
 $s = \sqrt{32}$   
 $4 \cdot 8 = 2$   
 $s = \boxed{4\sqrt{2}}$

5. Show work to prove if a scalene triangle with sides 6, 7, 8 is acute, right, or obtuse.

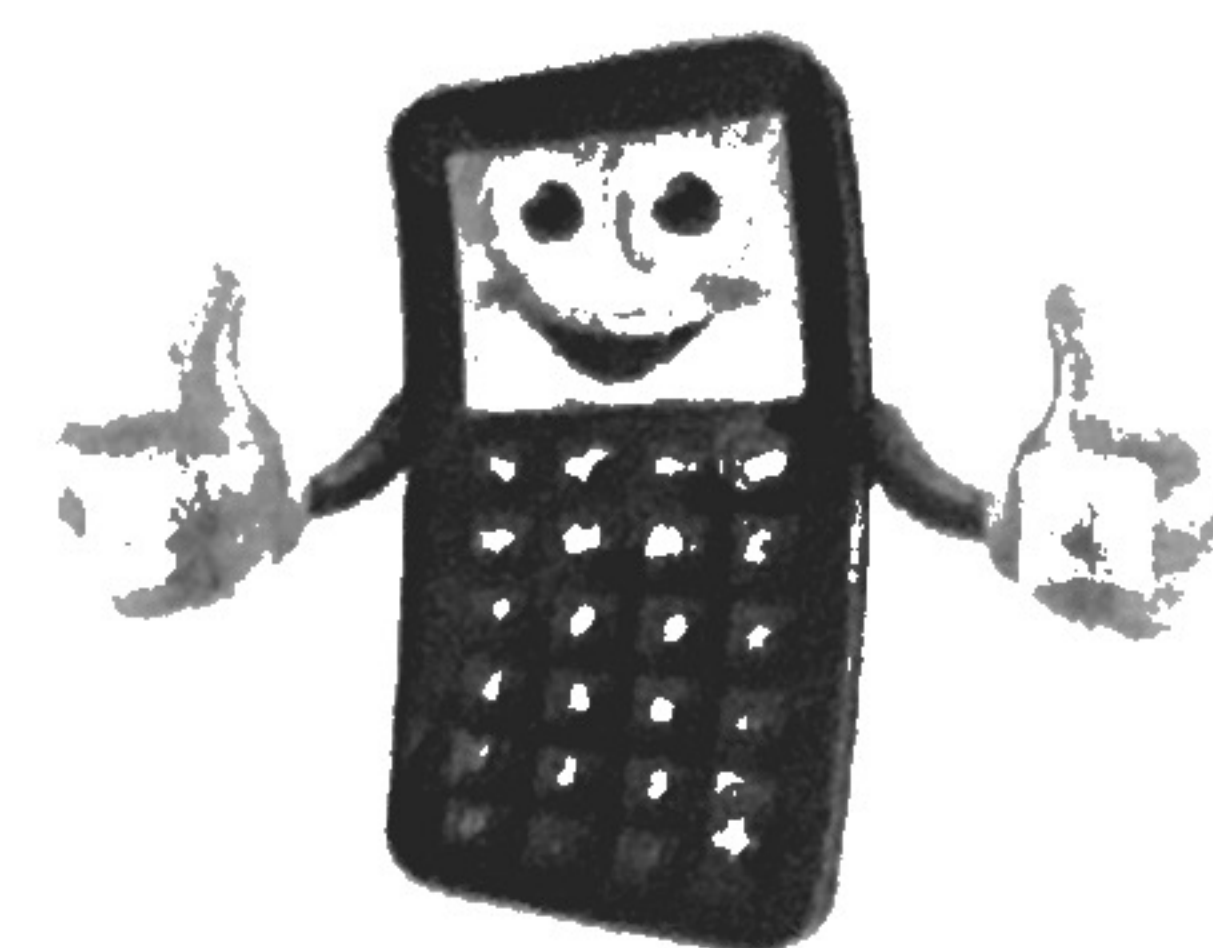
$a^2 + b^2 \stackrel{?}{=} c^2$   
 $6^2 + 7^2 \stackrel{?}{=} 8^2$   
 $36 + 49 \stackrel{?}{=} 64$   
 $85 > 64$   
 $> c^2$   
 the "hypotenuse" is smaller, so it's acute

6. YOU CHOOSE: Do either A or B. If you have extra time at the end, do both. If you get them both correct, you get +1.

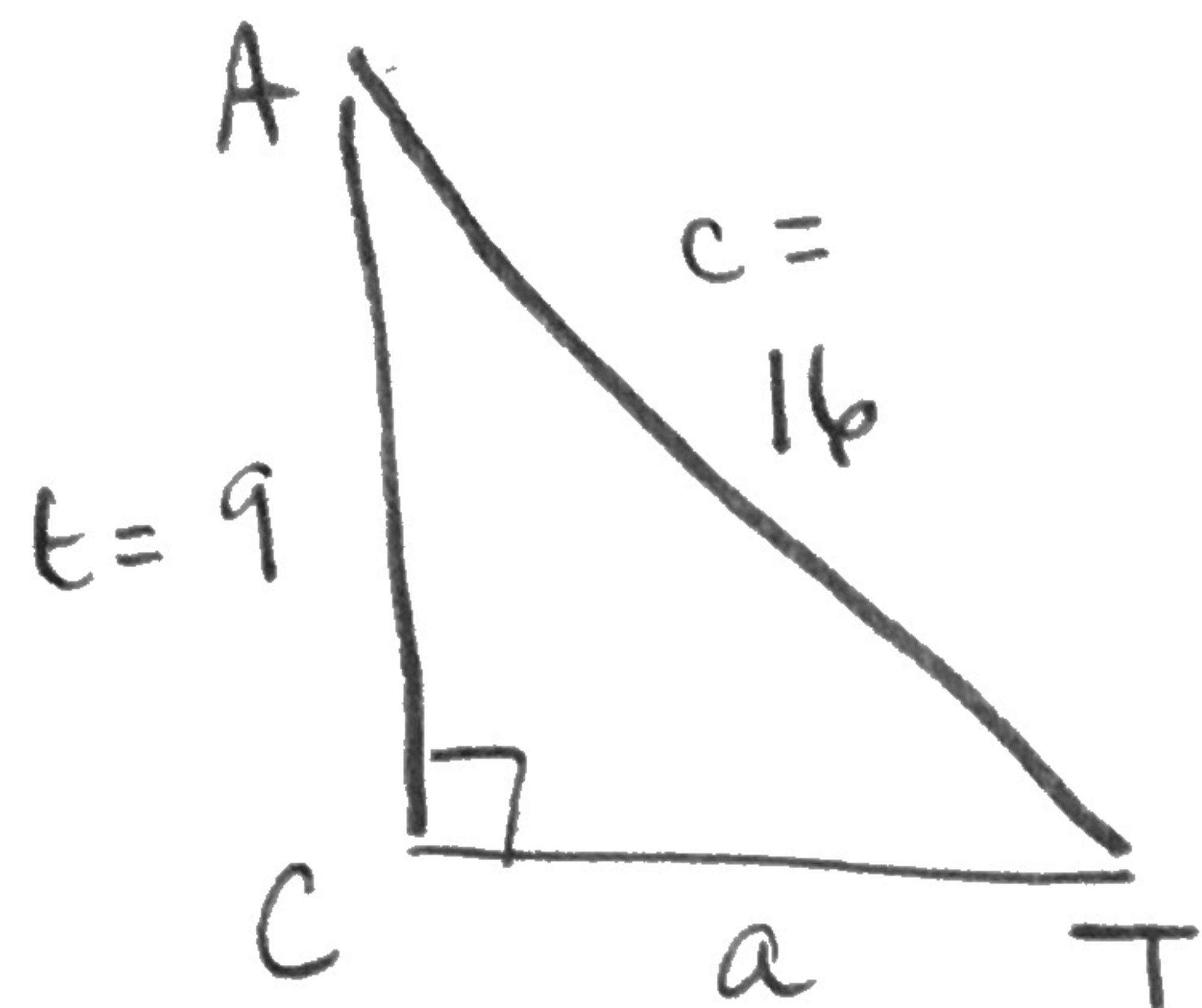
A. What is the length of a diagonal of a square with a perimeter of  $32\sqrt{2}$ ?  
 $\frac{32\sqrt{2}}{4} = 8\sqrt{2}$   
 $8\sqrt{2} \cdot 2 = \boxed{16}$

B. What is the perimeter of rectangle ABCD if  $m\angle ADB = 60^\circ$  and  $AC = 6\sqrt{3}$ ?  
 $3\sqrt{3} \cdot \sqrt{3} = 9$   
 $\frac{6\sqrt{3}}{2} = 3\sqrt{3}$   
 $9 + 9 + 3\sqrt{3} + 3\sqrt{3} = \boxed{18 + 6\sqrt{3}}$   
 Not like terms!

Draw and solve the right triangles. Round to 2 decimal places.

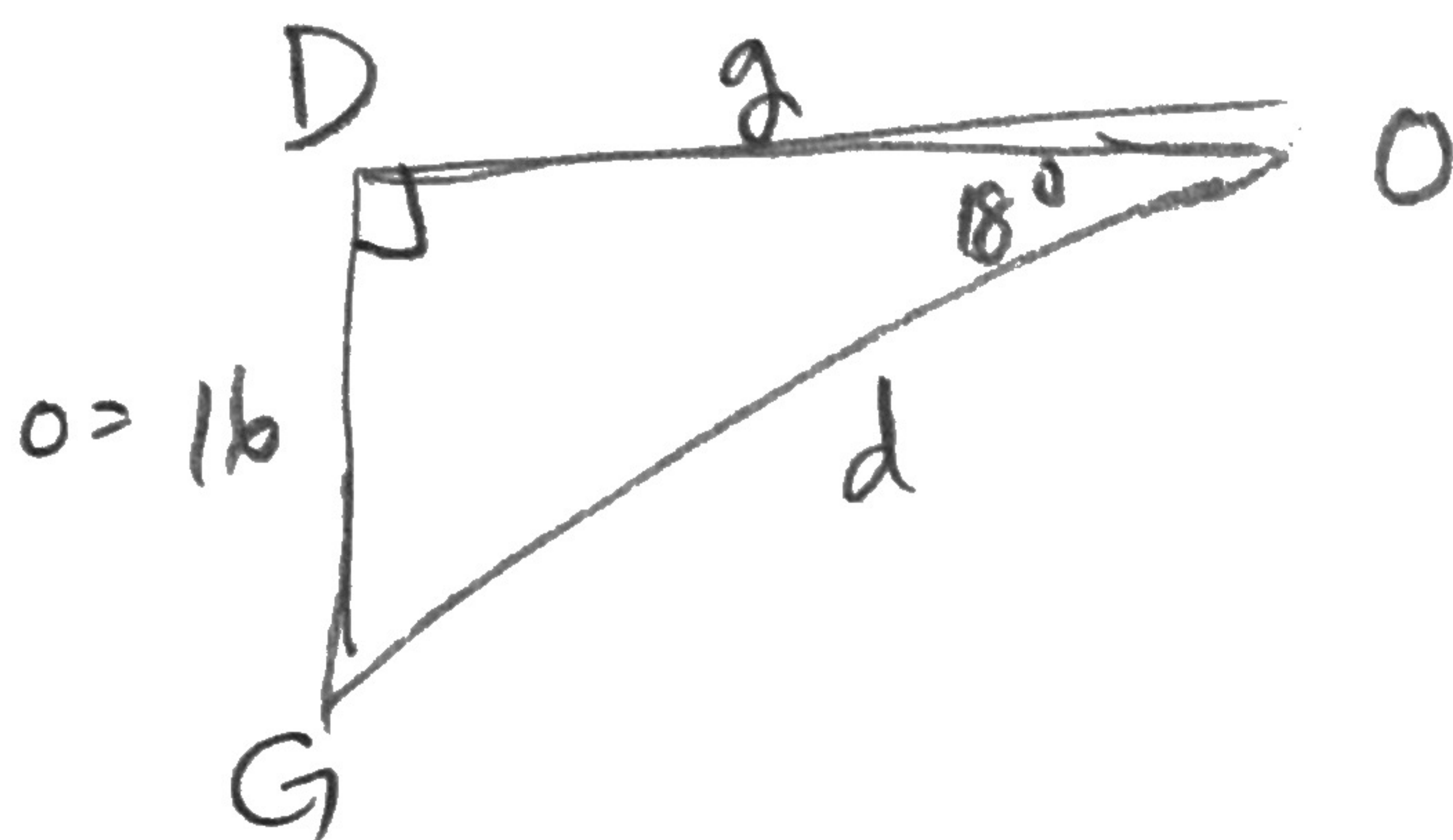


7. Right triangle CAT, with  $m\angle C = 90^\circ$ ,  $c = 16$  and  $t = 9$



$C = 90^\circ$	$c = 16$
$A = 55.77^\circ$	$a = 13.23$
$T = 34.23^\circ$	$t = 9$

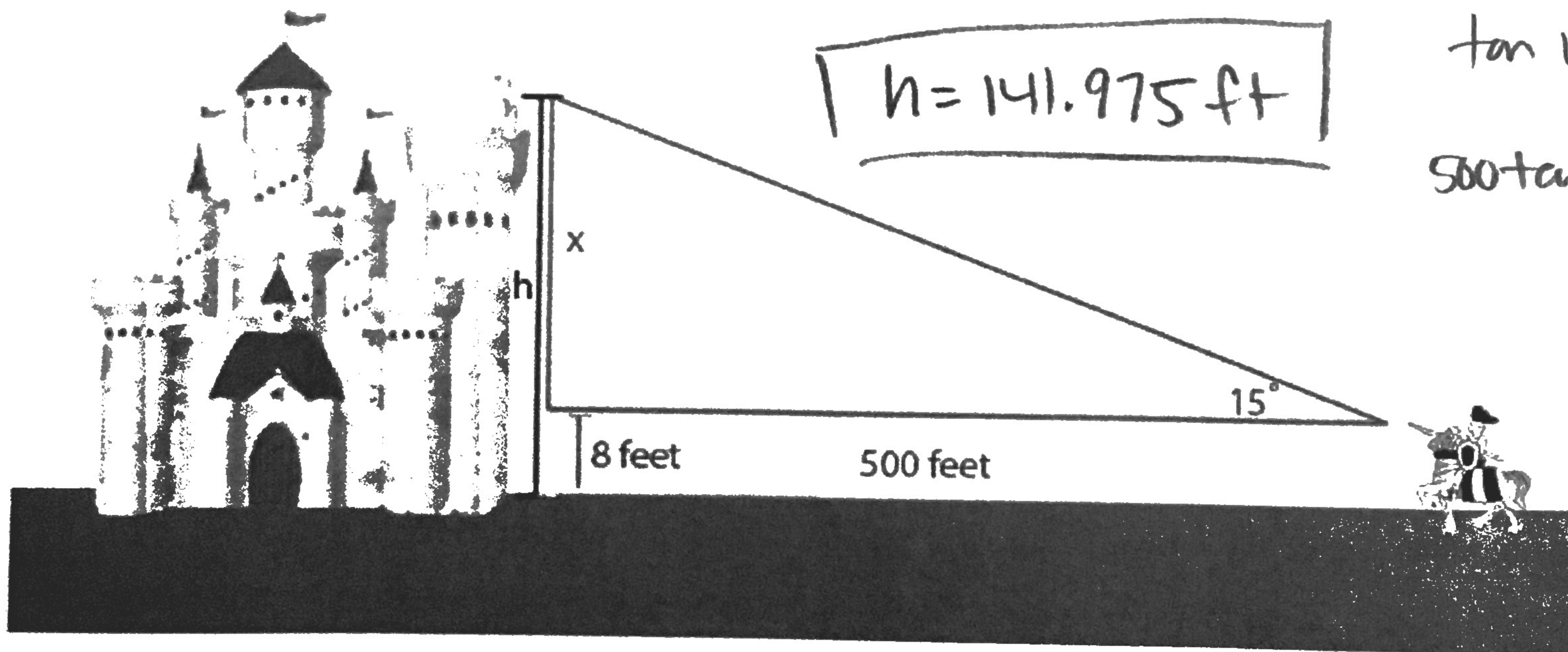
8. Right triangle DOG, with  $m\angle D = 90^\circ$ , with  $o = 16$ , and  $m\angle O = 18^\circ$



$D = 90^\circ$	$d = 51.78$
$O = 18^\circ$	$o = 16$
$G = 72^\circ$	$g = 49.24$

9. YOU CHOOSE: Do either A or B. If you have extra time at the end, do both. If you get them both correct, you get +1.

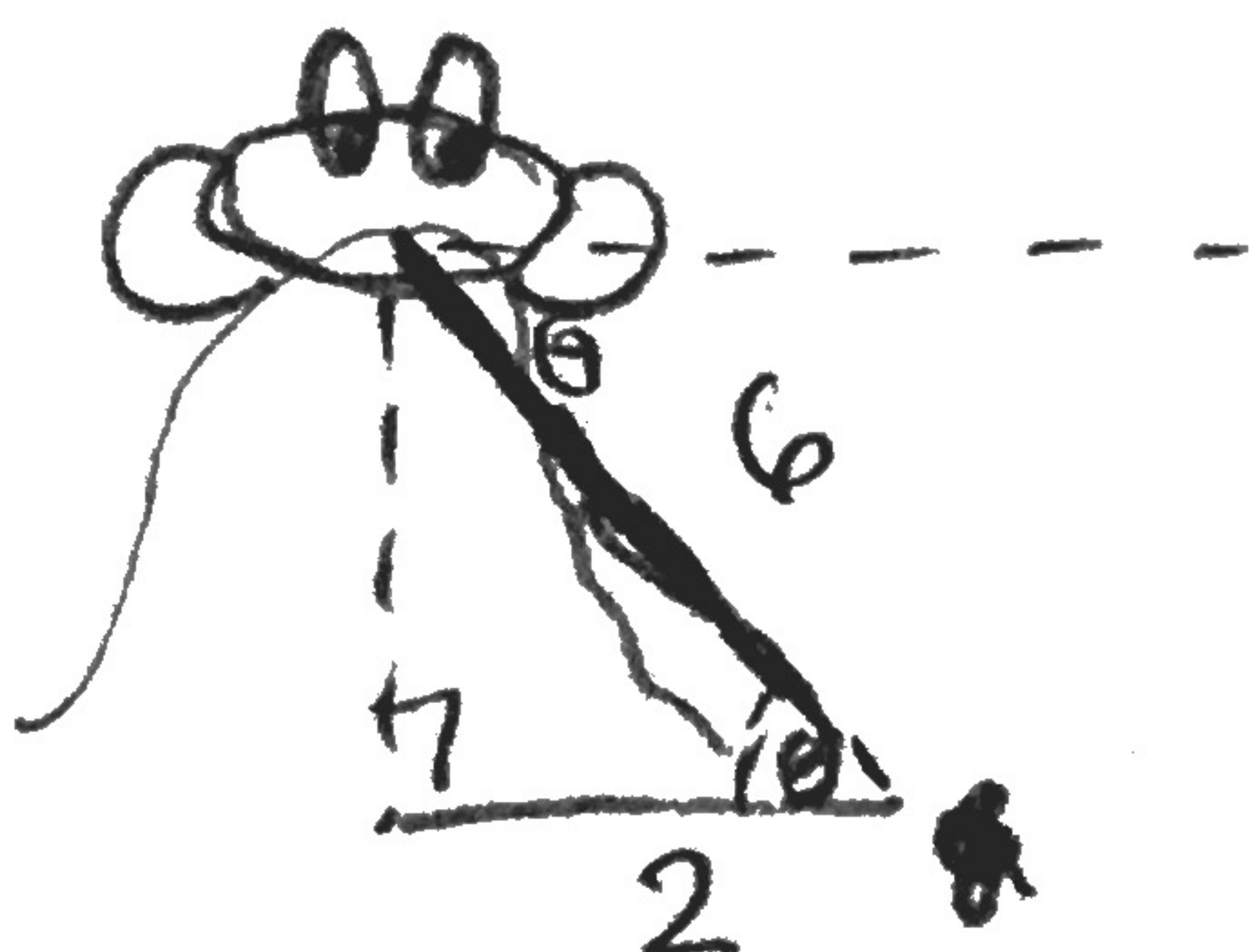
A. How high is the Fair Maiden, in the tower (h)?



$h = 141.975 \text{ ft}$

$\tan 15 = \frac{x}{500}$   
 $500 \tan 15 + 8$

B. A frog is sitting on a rock and spots a delicious bug crawling on the ground, 2 inches from base of the rock he's sitting on. He snaps out his tongue 6 inches and gets it! What was the angle of depression of his tongue?



$\cos \theta = \frac{2}{6}$   
 $\cos^{-1}(\frac{2}{6}) = \theta$

$70.528^\circ$