Name:_____

U2:L4 The Ambiguous Case

Because two sides and an angle opposite one of the sides is known, there are either…

- two possible situations
- one solution
- no solutions

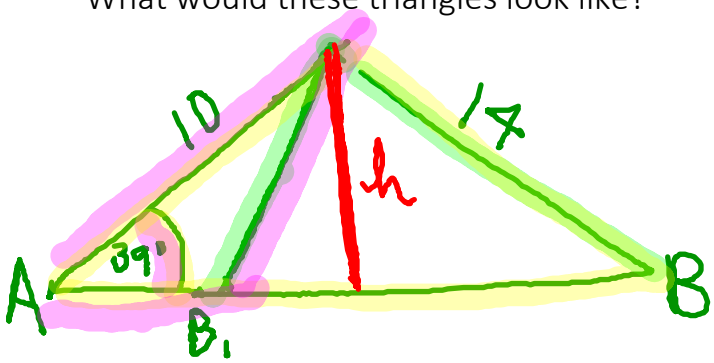
$h = \sin A \cdot b$

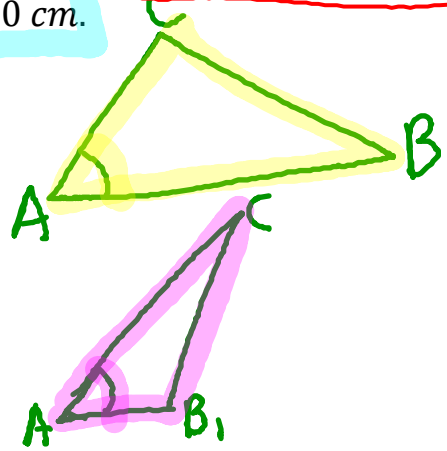
$h = \sin 39° \cdot 10$

$h = 6.291$

Suppose ΔABC where $< A = 39°$, $a = 14cm$, and $b = 10\ cm$.

What would these triangles look like?





Here are the rules for your possibilities…

When <A is an acute angle (<90)	
$a \geq b$	1 solution
$a = b$	1 solution
$a < h$	No solutions
$h < a < b$	2 solutions ☆
When <A is an obtuse angle (>90)	
$a \geq b$	No solution
$a > h$	1 solution

We can find height through…

$\sin A = \frac{h}{b}$

$\sin A \cdot b = h$

Suppose ΔLMN where $< M = 40°$, $l = 30cm$, and $m = 24\ cm$.

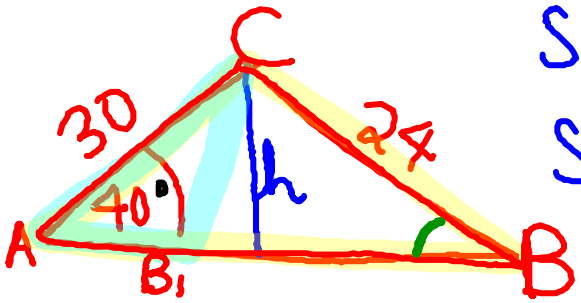
Solve for all possibilities of $< L$...

$< A = 40°$

$a = 24$

$b = 30$

$< B =$ _____

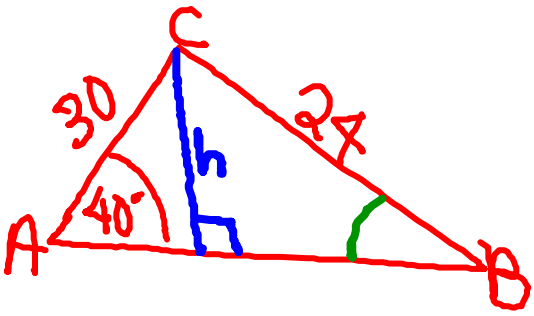


$\sin A \cdot b = h$

$\sin 40° (30) = h$

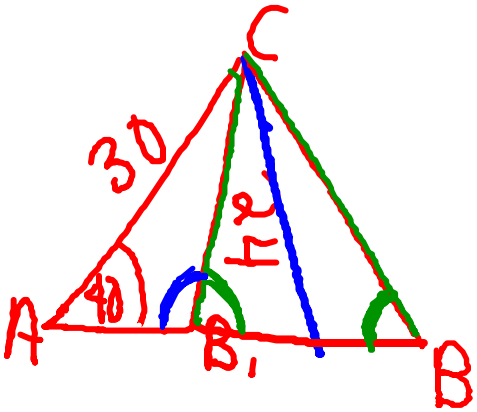
$19.28 = h$

2 solutions



$\sin B = \frac{19.28}{24}$

$B \approx 53°$



$180° - 53° = B_1$

$127° = B_1$

PRACTICE: Pages 108-113 Qs 6, 10, 18