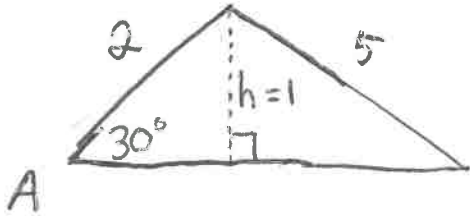


# Law of Sines (Ambiguous Case)

**Ex. 1**  $a = 5$   $b = 2$   $A = 30^\circ$

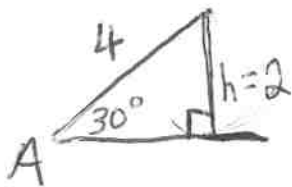


1 triangle possible

$$\sin 30 = \frac{h}{2}$$

$$h = 2 \sin 30 = 1$$

**Ex. 2**  $a = 2$   $b = 4$   $A = 30^\circ$

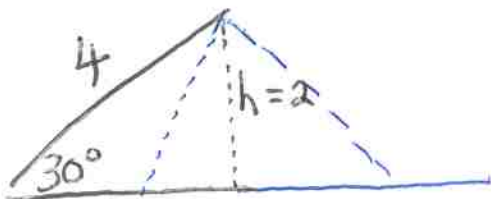


1 right triangle possible

$$\sin 30 = \frac{h}{4}$$

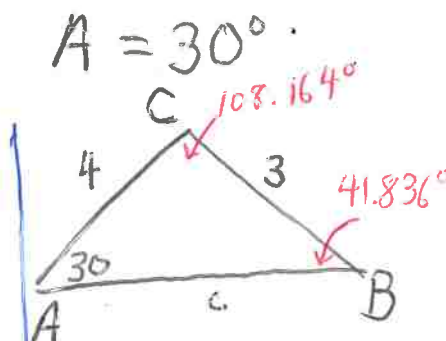
$$h = 4 \sin 30 = 2$$

**Ex. 3**  $a = 3$   $b = 4$   $A = 30^\circ$



$$\sin 30 = \frac{h}{4}$$

$$h = 4 \sin 30 = 2$$



$$\frac{3}{\sin 30} = \frac{4}{\sin B}$$

$$c = 5.701$$

$$(\sin B)(3) = 4 \sin 30$$

$$\sin B = \frac{4 \sin 30}{3}$$

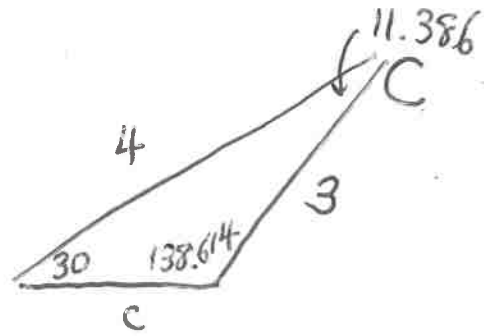
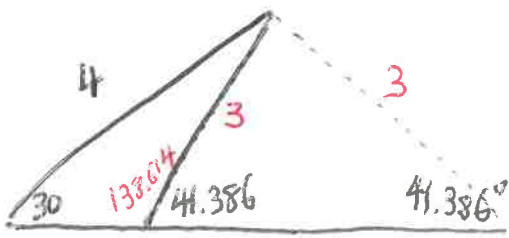
$$\sin B = 0.667$$

$$B = \sin^{-1}(0.667)$$

$$B = 41.836^\circ$$

$$\frac{c}{\sin 108.164} = \frac{3}{\sin 30}$$

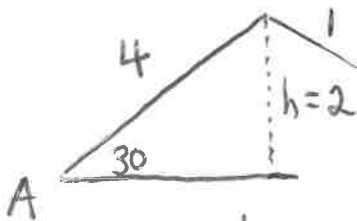
$$c = \frac{3 \sin 108.164}{\sin 30}$$



$$\frac{c}{\sin 11.386} = \frac{3}{\sin 30}$$

$$c = \frac{3 \sin 11.386}{\sin 30} = \boxed{1.184}$$

**Ex. 4**  $a = 1$   $b = 4$   $A = 30^\circ$

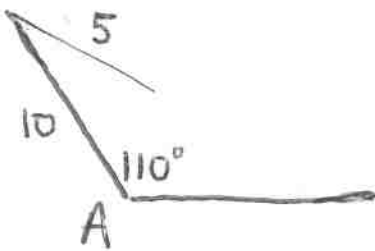


$$\sin 30 = \frac{h}{4}$$

$$h = 4 \sin 30 = 2$$

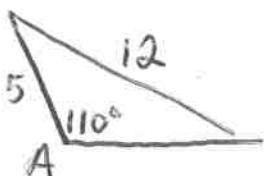
**No triangle**

**Ex. 5**  $a = 5$   $b = 10$   $A = 110^\circ$



**No triangle**

**Ex. 6**  $a = 12$   $b = 5$   $A = 110^\circ$



**1 triangle**