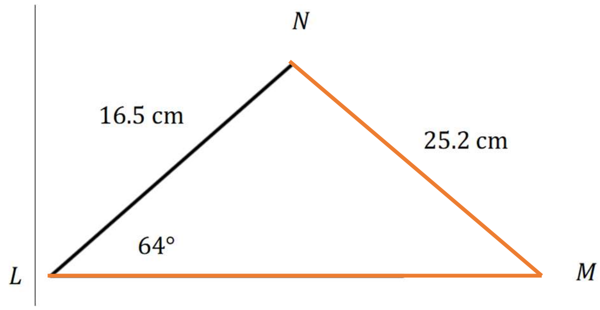
Name: ________________________________ Date: ______________________

Learning Goal 2.3	Use of sine and cosine laws to solve non-right triangles, including ambiguous cases.

1. In ΔLMN $\measuredangle L = 64°, l = 25.2$ cm and $m = 16.5$ cm. Determine the measure of $\measuredangle N$ to the nearest degree.



Because $l > m$ and $\measuredangle L$ is an acute angle, there is only one possible triangle.

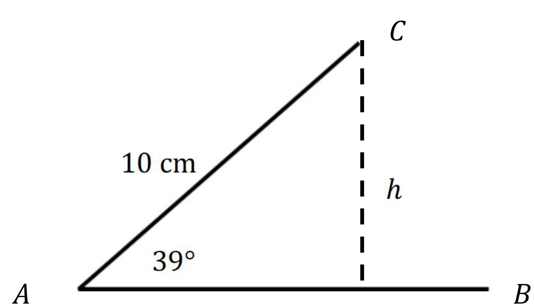
$$\frac{\sin L}{l} = \frac{\sin M}{m}$$
$$\frac{\sin 64}{25.2} = \frac{\sin M}{16.5}$$
$$16.5 \times \frac{\sin 64}{25.2} = \sin M$$
$$\measuredangle M = \sin^{-1}\left(16.5 \times \frac{\sin 64}{25.2}\right)$$
$$\measuredangle M = 37°$$

$$\measuredangle N = 180° - 64° - 37°$$
$$\measuredangle N = 79°$$

2. In $\Delta ABC, \measuredangle A = 39°, a = 6$ cm and $b = 10$ m. Solve the triangle, leaving all answers to the nearest unit.

Because $a < b$, we need to check the height of the triangle first to make sure that the given dimensions **can** create a triangle.

$$\sin A = \frac{h}{b}$$
$$\sin 39° = \frac{h}{10}$$
$$h = 10 \times \sin 39°$$
$$h \approx 6.3 \text{ cm}$$



So $a < h$ and therefore there are no solutions.