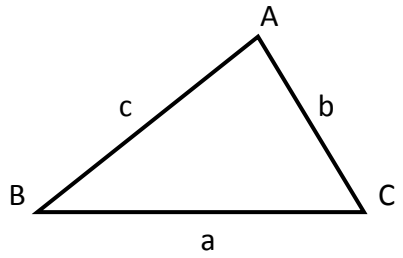
MPM 2D

SINE & COSINE LAWS for NON-RIGHT TRIANGLES

Right-Angled Triangles: $\mathbf{c^2 = a^2 + b^2}$ and **SOHCAHTOA**

NON-RIGHT TRIANGLES:

Recall the side opposite an angle is labelled with the lowercase letter of the angle.



***NOTE**: There is no hypotenuse in this triangle.*

OPTION ① If a side length and its opposite angle can be paired up with known values, then use the Sine Law. The sine law is commonly used for triangles associated with ASA or SSA.

$$\frac{sinA}{a} = \frac{sinB}{b} \qquad or \qquad \frac{a}{sinA} = \frac{b}{sinB}$$

OPTION ② If a side length and its opposite angle cannot be paired up with known values, then the Cosine Law is used. The cosine law is commonly used for triangles associated with SAS or SSS.

A) If solving for a side length, use the formula...

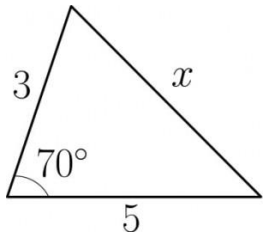
$$c^2 = a^2 + b^2 - 2abcosC$$

B) If solving for an angle, use the formula...

$$cosC = \frac{a^2+b^2-c^2}{2ab}$$

EXERCISE:

①



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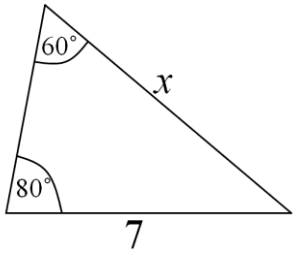

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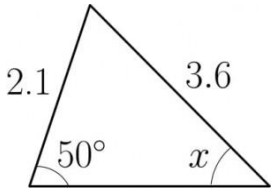

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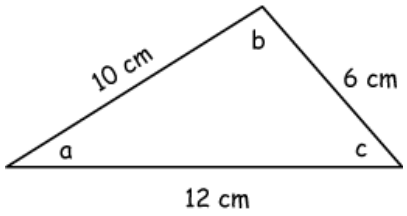

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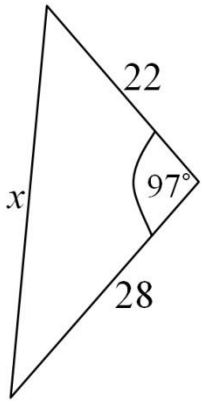

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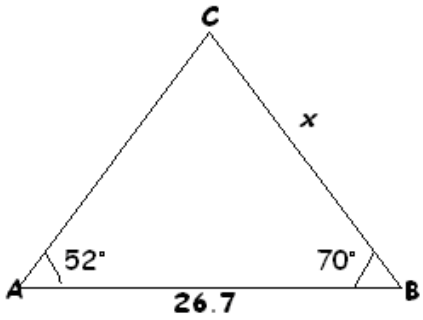

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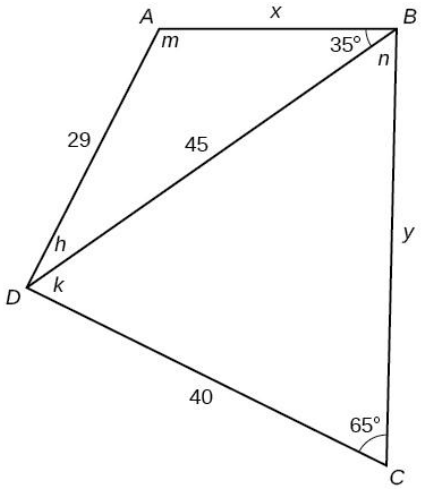

⑧ Using trigonometry, find the area of a triangle with side lengths of 23 m, 16 m and 18 m.