Solve for all unknown sides and angles in the right angle triangles.
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Determine the side length $x$.

Determine the angle $\theta$. 

**Cosine Law**

\[ c^2 = a^2 + b^2 - 2ab \cos C \]

Usually used when you know 2 sides and an angle and need to find third side.

**Sine Law**

\[ \frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c} \]

Used when you have side/angle pairs.

- $A$ is the angle opposite of side $a$.
- It doesn't matter what side you label $a, b, c$ (i.e., there is no hypotenuse).
Determine the side length $x$.

$C^2 = a^2 + b^2 - 2ab \cos C$

$x^2 = (5)^2 + (10)^2 - 2(5)(10)\cos 50^\circ$

$x^2 = 60.721$

$x = \sqrt{60.721} = 7.71$

Determine the angle $\theta$.

$\frac{\sin A}{a} = \frac{\sin B}{b}$

$\frac{\sin B}{50} = \frac{\sin 110^\circ}{90}$

$\sin \theta = \frac{50 \sin 110^\circ}{90}$

$\theta = \sin^{-1} \left( \frac{50 \sin 110^\circ}{90} \right) = 31.5^\circ$