Problem Solving

Learning Goals
- Review formulas and criteria for using them
- Use the information to solve word problems

When do I use...

Pythagorean Theorem

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

- right angle △
- 2 sides given
- looking for 1 side

Trig Ratios

SOH CAH TOA

- right angled △

Given
- 2 sides → find θ
- 1 side, 1 angle → find side

Sine Law

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

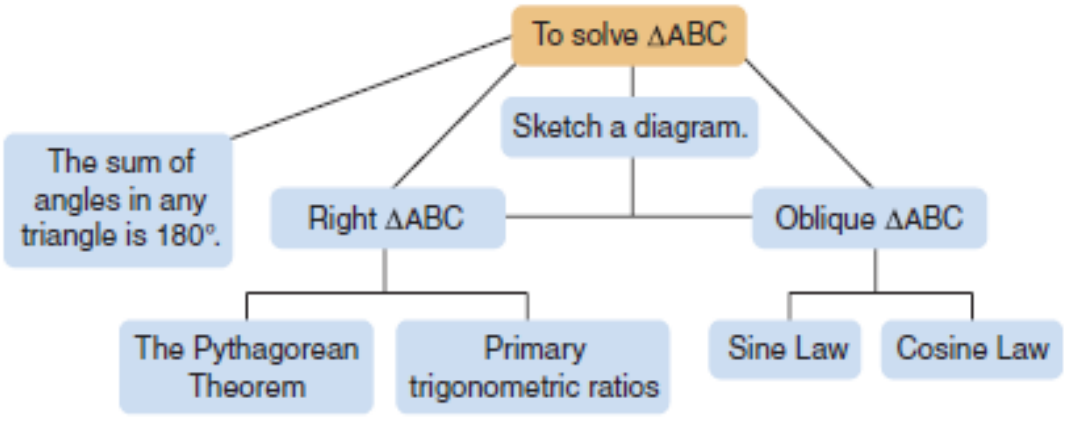
- non-right angled △
- angle - side pairs

Cosine Law

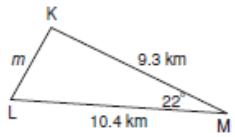
$$c^2 = a^2 + b^2 - 2ab\cos C$$

- non-right angled △
- 2 sides + 1 angle
  ↳ find side
- 3 sides → find θ

Sometimes you may need more than one step to solve a problem

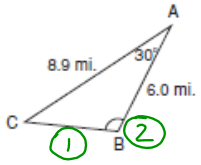


Find the indicated length or angle.



cosine law

$m = 3.9$

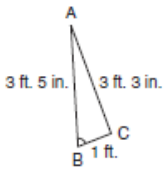


① cosine law $CB = 4.7$

② $B = 70°$

↳ obtuse

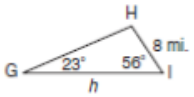
$\therefore 180° - 70° = 110°$



Change everything to inches

cosine law

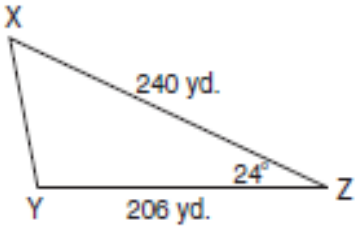
$B = 72°$



Sine law

$h = 20$

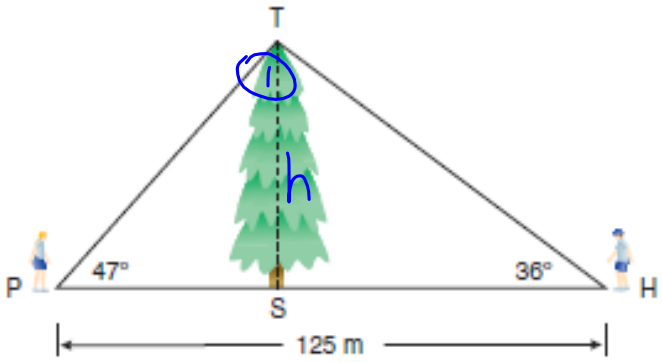
Carrie says she can use the Cosine Law to solve $\triangle XYZ$. Do you agree? Justify your answer.



yes

$XY = 98.5$

Phoebe and Holden are on opposite sides of a tall tree, 125 m apart. The angles of elevation from each to the top of the tree are 47° and 36°. What is the height of the tree?



① Find angle

② Find PT or HT using sine law

③ Use SOH CAH TOA to find h.

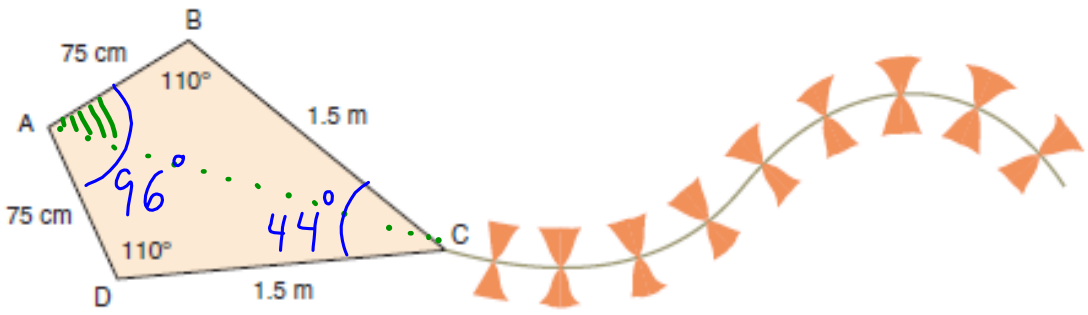
h = 54 m

A hobby craft designer is designing this two-dimensional kite.

a) What is the angle measure between the longer sides?

b) What is the angle measure between the shorter sides?

Explain your strategies.



① Cut into △s

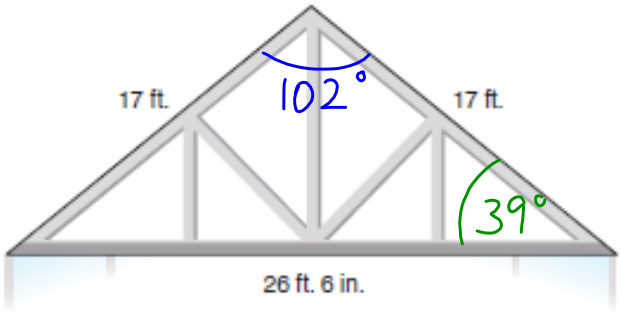
② Cosine law to find AC

③ Sine law to find A

. Use this diagram of the rafters in a greenhouse.

a) What angle do the rafters form at the peak of the greenhouse?

b) What angle do they form with the sides of the greenhouse? Solve this problem two ways: using the Cosine Law and using primary trigonometric ratios.



a.) cosine law

b.) cosine law

Good Job!

Thank you for making an effort.