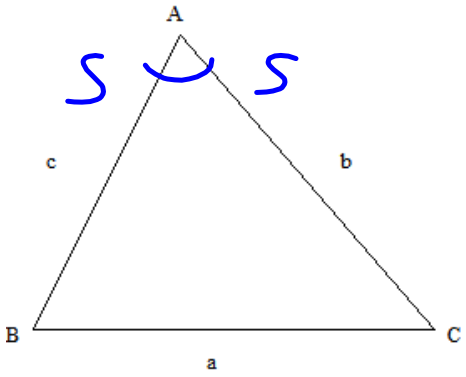
Warm-up

Let's look at the cosine law:



Can you write it from memory?

to find a missing side:

$$a^2 = b^2 + c^2 - 2bc\cos A$$

to find a missing angle:

$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

Before we begin, are there any questions from last day's work?

pp. 418-419 #1ac, 2ac, 3a, 5a, 6a, 9, 11

Today's Learning Goal(s):

By the end of the class, I will be able to:

a) choose the best method to solve any triangle.

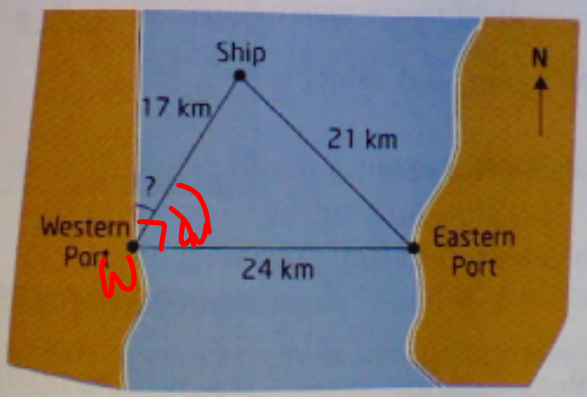
Be prepared for tomorrow's quiz on the Sine Law and the Cosine Law.

p. 418 #6a

$\angle N$	$\angle B$	$\angle G$
$\cos N = \frac{12^2+14^2-15^2}{2(12)(14)}$	$\frac{\sin B}{14} \doteq \frac{\sin 70^\circ}{15}$	$G \doteq 180^\circ - 61.3^\circ - 70.0^\circ$
$N = \cos^{-1}\left(\frac{12^2+14^2-15^2}{2(12)(14)}\right)$	$B \doteq \sin^{-1}\left(14 \times \frac{\sin 70^\circ}{15}\right)$	$\doteq 48.7^\circ$
$\doteq 69.98$	$\doteq 61.28$	
$\doteq 70.0^\circ$	$\doteq 61.3$	

p. 419 #9

9. A distress signal is received from a ship that is 21 km from one port and 17 km from another port. The eastern port is 24 km directly east of the western port. At what angle to the western shoreline should the ship head, in order to dock at the western port? Round to the nearest degree.



$? = 90° - W$

$\cos W = \frac{17^2 + 24^2 - 21^2}{2(17)(24)}$

$W = \cos^{-1}\left(\frac{(17^2 + 24^2 - 21^2)}{(2(17)(24))}\right)$

$\doteq 58.6$

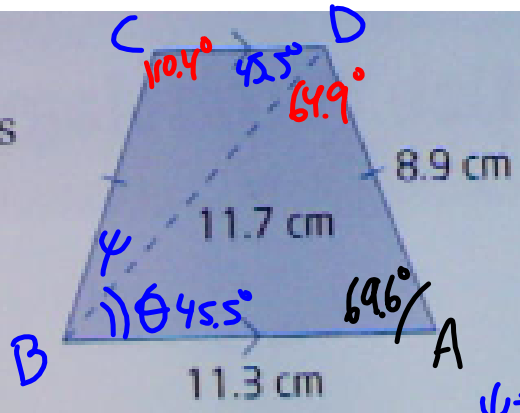
$\doteq 59°$

$\therefore ? = 90° - 59°$

$\doteq 31°$

p. 419 #11

11. Find the interior angles of the isosceles trapezoid, to the nearest tenth of a degree.



$\psi \doteq 69.6° - 45.5°$

$\doteq 24.1°$

$A = \cos^{-1}\left(\frac{11.3^2 + 8.9^2 - 11.7^2}{2(11.3)(8.9)}\right)$

$\doteq 69.63$

$\doteq 69.6°$

$\angle ABD$

$\frac{\sin\theta}{8.9} \doteq \frac{\sin 69.6°}{11.7}$

$\sin\theta \doteq 8.9 \times \left(\frac{\sin 69.6°}{11.7}\right)$

$\theta \doteq \sin^{-1}\left(8.9 \times \frac{\sin 69.6°}{11.7}\right)$

$\doteq 45.47$

$\doteq 45.5°$

MPM 2DI

8.4 Solve Problems Using Trigonometry

Date: Jan. 9/17

1. Is it a right triangle?
   If yes, use SOH CAH TOA.

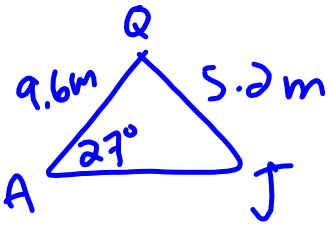
2. If not a right triangle,
   Are you given an angle AND the side length across?
   If yes, use the Sine LAW.

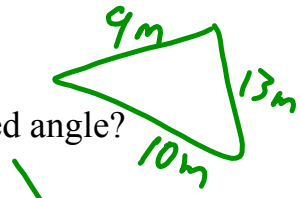
   Are you given 2 known angles?
   If yes, find the 3rd angle, then use the Sine LAW.

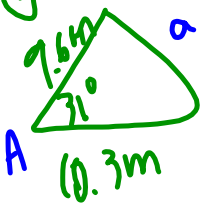
3. If not a right triangle,
   Are you given all 3 side lengths?
   If yes, use the Cosine LAW.

   Are you given 2 sides and the contained angle?
   If yes, use the Cosine LAW.

Discuss Ex. 1 and 2, beginning on p.424







Review the learning goals. Were we successful today?

By the end of the class, I will be able to:

a) choose the best method to solve any triangle.

Today's practice: p. 428 #6, 7, 8, 10

***Enrichment*:** p. 429 #11, 14, 15, 16

Be prepared for tomorrow's quiz on the Sine Law and the Cosine Law.