Hw　Questions?

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

10.11　#1-7

In $\triangle PQR$

③

$\cos R = \frac{1}{5}$

$\cos R = (0.2)$

$\cos^{-1}$

$\angle R = 78°$

$p = 10$

$q = 12$

$\cos R = \frac{1}{5}$

$r = ?$
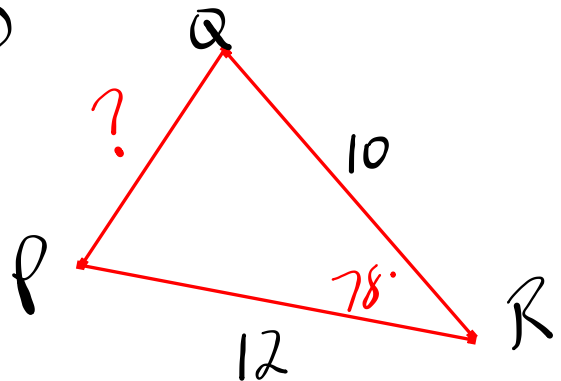
$r^2 = 12^2 + 10^2 - 2(12)(10) \cos R$

$r^2 = 12^2 + 10^2 - 2(12)(10)\left(\frac{1}{5}\right)$

$\sqrt{r^2} = \sqrt{196}$

$r = 14$

? 　10　78°　12

Q　P　R
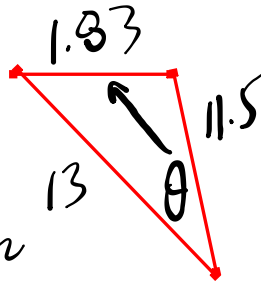
Application Questions - Law of Cosines

Ask yourself...

1. What am I given?
2. What am I trying to find?

EXAMPLE...

A hockey net is 1.83m wide. A player shoots from a point where the puck is 13m from one goal post and 11.5m from the other. Within what angle must he make his shot to score?

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

$$\cos A = \frac{13^2 + 11.5^2 - 1.83^2}{2(13)(11.5)}$$

$$\cos^{-1}\cos A = \cos^{-1}\left(\frac{297.9011}{299}\right)$$

$$\angle A = 5°$$

Example #2:

$$a^2 = b^2 + c^2 - 2bc \cos A$$
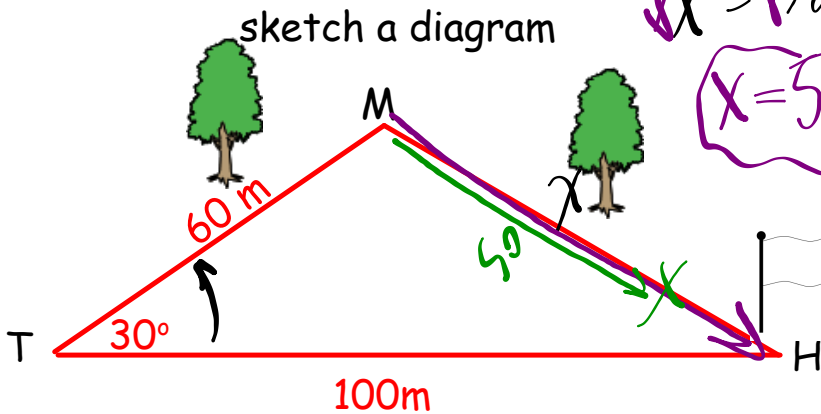
From T, a golfer aims a ball towards the hole at H which is 100m away. But the ball actually sliced in a direction 30° off course and lands at M, 60m away. If the next shot is hit 50 m towards the hole, will the ball go in the hole?

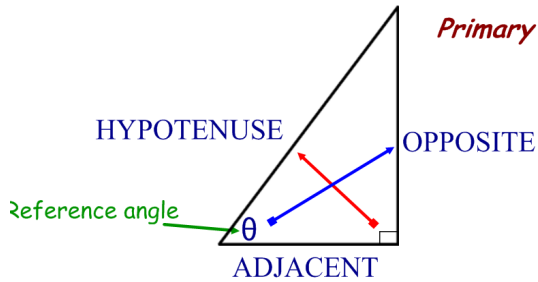No 6.6 m short

$$x^2 = 60^2 + 100^2 - 2(60)(100) \cos 30°$$

$$\sqrt{x^2} = \sqrt{3207}$$

$$\boxed{x = 56.6 \text{ m}}$$

sketch a diagram

60 m

30°

M

50°

x

x

T

100m

H

REVIEW - What formula do I use? Ask yourself...

- Is it a right triangle? If Yes, then...

Primary Trigonometric Ratios   Pythagorean Theorem
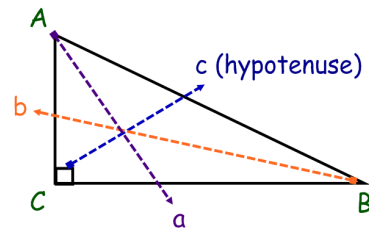
HYPOTENUSE   OPPOSITE

Reference angle θ

ADJACENT

$\sin\theta = \dfrac{opp}{hyp}$

$\cos\theta = \dfrac{adj}{hyp}$

$\tan\theta = \dfrac{opp}{adj}$

Memory Aid: "SOH CAH TOA"

A

c (hypotenuse)

b

C   B

a

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

- If you are finding a side, do you have **SAS**? If Yes, then...

Law of Cosines

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

- If you are finding an angle, do you have **SSS**? If Yes, then...

Law of Cosines (rearranged)

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

- Anything else...use your Law of Sines!

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

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

"when looking for a <u>side</u>"   "when looking for an <u>angle</u>"

Homework...

Worksheet - Law of Cosines.doc

10.12 → #1 Perimeter (add all sides)

#2~6

Attachments

Worksheet - Law of Cosines.doc