Application Questions - Law of Cosines

Ask yourself...

1. What am I given?
2. What am I trying to find?
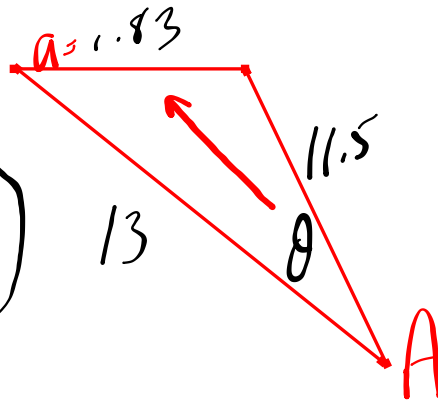
WARM-UP... Law of Cosines...(SAS) $a^2 = b^2 + c^2 - 2bc\cos A$

* side?

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?

(SSS) & angle?

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

$a = 1.83$

11.5

13

θ

A

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

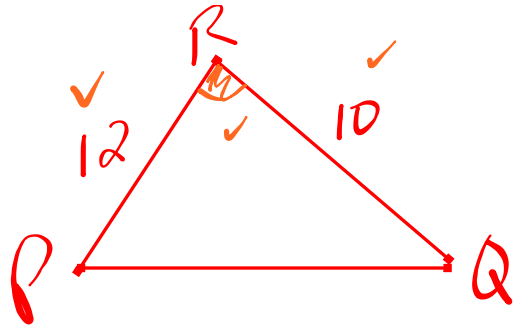$$\cos^{-1} A = \cos^{-1}\left(\frac{297.9011}{299}\right)$$

$$\angle A = 4.9$$

HW???   10.11

$\cos^{-1}$

$\cos R = \frac{1}{5}$ #3 $p = 10$

$\angle R = 78°$ $q = 12$

$\cos^{-1} \frac{1}{5}$
$\cos \frac{1}{5}$

$\cos R = \frac{1}{5}$ $\left(\frac{1}{5}\right)$

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

$r^2 =$
$r =$

```
10²+12²-2*10*12*
1/5
              196
√(Ans
               14
```

R

12   ✓   10   ✓

P   Q

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

V

10   14

U   T
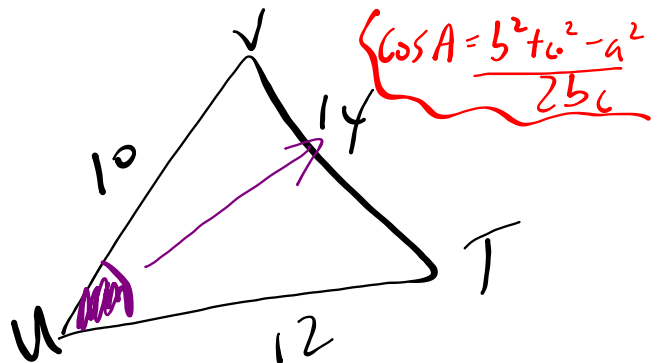
12

4) $t = 10$
     $u = 14$
     $v = 12$
     $\cos U = ?$
              0.2
              OR
              $\frac{1}{5}$

$\cos U = \frac{10^2 + 12^2 - 14^2}{2(10)(12)}$
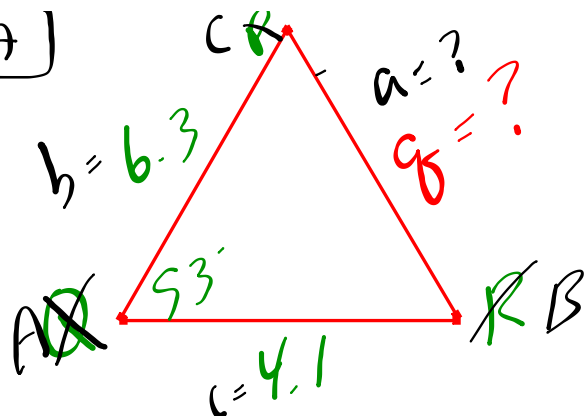
$\cos U = \frac{48}{240}$ $\Big\}$ $\frac{4}{20}$ $\boxed{\frac{1}{5}}$

$\boxed{\cos U = 0.2}$

2

6 a) $\boxed{a^2 = b^2 + c^2 - 2bc \cos A}$

$P = 4.1$

$r = 6.3$

$\angle Q = 53°$

$h = 6.3$

$a = ?$

$q = ?$

C

$53°$

A P

R B

$c = 4.1$

$q^2 = 6.3^2 + 4.1^2 - 2(6.3)(4.1)\cos(53°)$

$q^2 =$

```
6.3²+4.1²-2*6.3*
4.1cos(53)
         25.4102359
√(Ans
8 =  5.040856664
```

Example #2:

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?

later

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

x^2

```
100²+60²-2*100*6
0*cos(30)
            3207.695155
√(Ans
   x= 56.63651785
■ x=
```

$x = 56.6 \text{ m}$

sketch a diagram

M

60 m

x

56.6

50m

30°

T

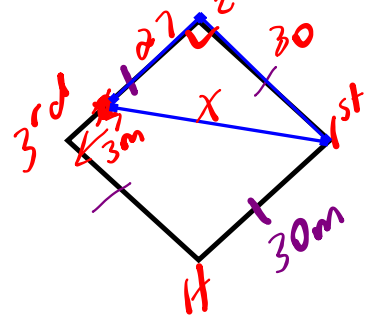100m

H

NO ... 6.6m
short

Homework...

10.12

Worksheet - Law of Cosines.doc

✗ #1. Perimeter
(distance around triangle)

#2-6

(4)

10.13: #2,4,5

Attachments

Worksheet - Law of Cosines.doc