1.4 Primary Trig Ratios - Solving for a Missing Side

1) Solve the following equations.

a) $\frac{x}{4} = 20$

$x = 20(4)$
$= 80$

b) $\frac{12}{x} = 3$

$12 = 3(x)$
$\frac{12}{3} = x$
$4 = x$

c) $0.9848 = \frac{x}{5}$

$0.9848(5) = x$
$x \doteq 4.9$

2) Evaluate each of the following trig ratios, to four decimal places.

a) $tan45 =$ 1

b) $cos44 \doteq$ 0.7193

c) $sin80 =$
$\doteq 0.9848$

3) Determine the side measure, to 1 decimal place, for the following trig ratios.

a) $\tan 52 = \frac{x}{4}$

$4(\tan 52) = x$
$x \doteq 5.1197$
$\doteq 5.1$

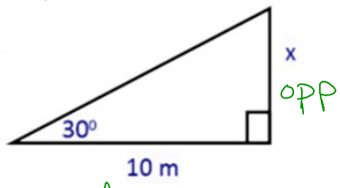
b) $\cos 78 = \frac{8}{x}$

$x(\cos 78) = 8$
$x = \frac{8}{\cos 78°}$
$\doteq 38.5$

$\cos 78 = \frac{8}{x}$
$x = \frac{8}{\cos 78}$
$\doteq 38.5$

4) Determine the unknown side lengths.

a)



opp

adj

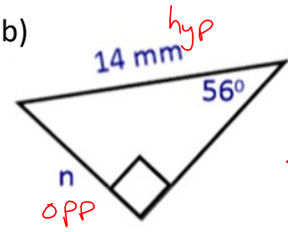
$\tan\theta = \frac{opp}{adj}$

$\tan 30^\circ = \frac{x}{10}$

$10(\tan 30^\circ) = x$

$x \doteq 5.8$

b)



hyp

opp

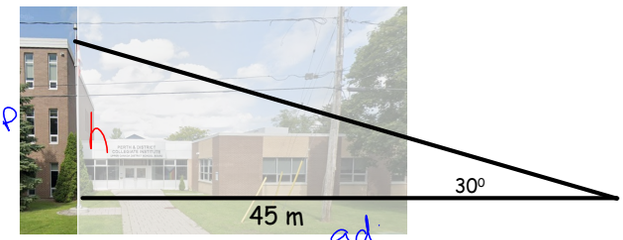
$\sin\theta = \frac{opp}{hyp}$

$\sin 56^\circ = \frac{n}{14}$

$n = 14 \cdot \sin 56^\circ$

$= 11.6$

5) From a point 45 m from the base of PDCI the <u>angle of elevation</u> to the top of the school is 30^0. What is the height of the school to the nearest metre?



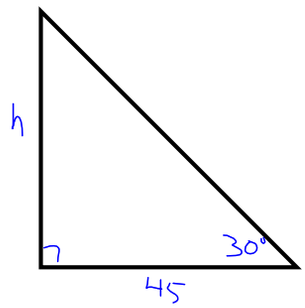
opp

adj

$\tan\theta = \frac{O}{A}$

$\tan 30^\circ = \frac{h}{45}$

$h \doteq 26$



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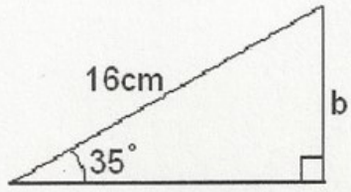

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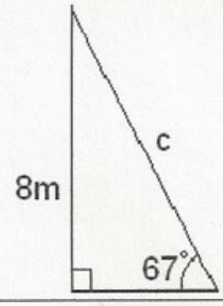

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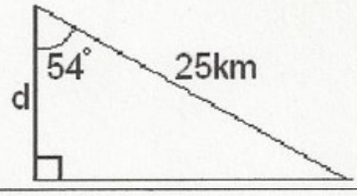

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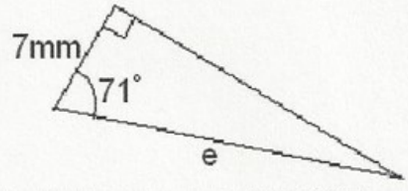

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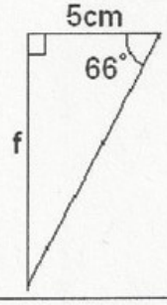

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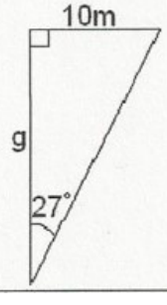

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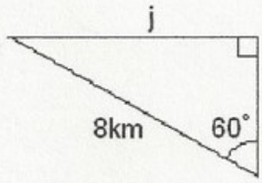

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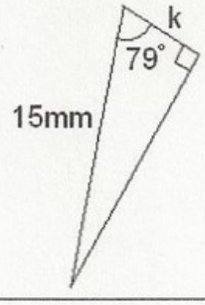

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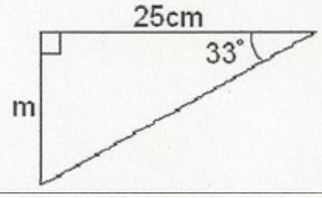

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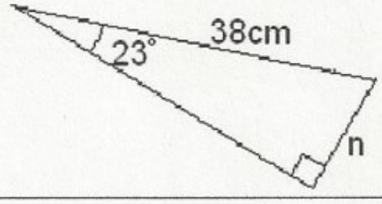

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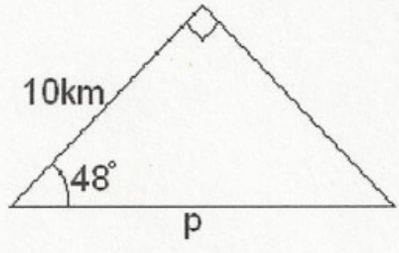

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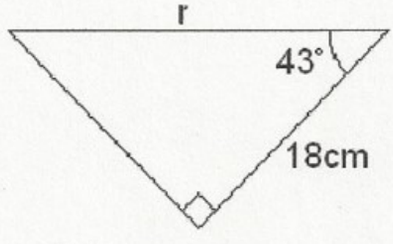
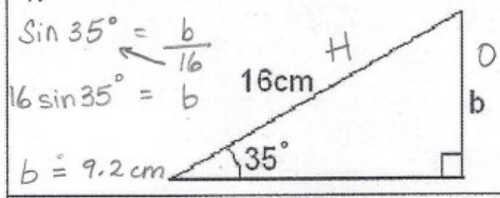


1.

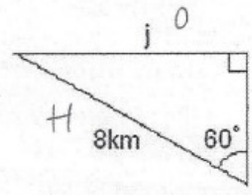


$\sin 35^\circ = \frac{b}{16}$

$16 \sin 35^\circ = b$

$b \doteq 9.2\text{ cm}$

7.

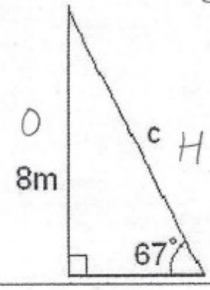


$\sin 60^\circ = \frac{j}{8}$

$8 \sin 60^\circ = j$

$j \doteq 6.9\text{km}$

*2.



$\sin 67^\circ = \frac{8}{c}$

$c = \frac{8}{\sin 67^\circ}$

$c \doteq 8.7\text{m}$

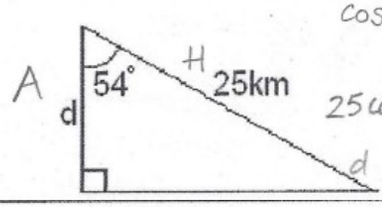
8.

$\cos 79^\circ = \frac{k}{15}$

$15 \cos 79^\circ = k$

$2.9\text{ mm} \doteq k$

3.

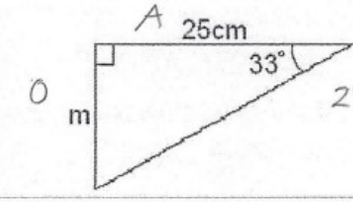


$\cos 54^\circ = \frac{d}{25}$

$25 \cos 54^\circ = d$

$d \doteq 14.7\text{km}$

9.

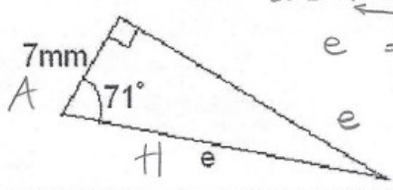


$\tan 33^\circ = \frac{m}{25}$

$25 \tan 33^\circ = m$

$m \doteq 16.2\text{ cm}$

*4.

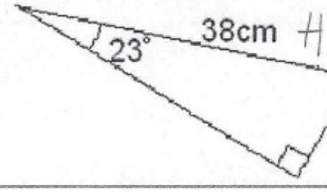


$\cos 71^\circ = \frac{7}{e}$

$e = \frac{7}{\cos 71^\circ}$

$e \doteq 21.5\text{mm}$

10.

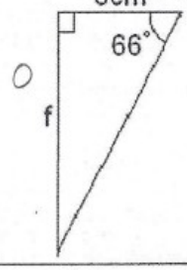


$\sin 23^\circ = \frac{n}{38}$

$38 \sin 23^\circ = n$

$14.8\text{ cm} \doteq n$

5.

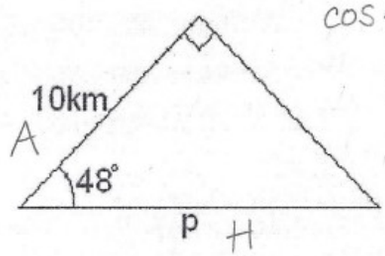


$\tan 66^\circ = \frac{f}{5}$

$5 \tan 66^\circ = f$

$f \doteq 11.2\text{cm}$

11.*

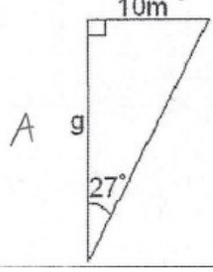


$\cos 48^\circ = \frac{10}{p}$

$p = \frac{10}{\cos 48^\circ}$

$14.9\text{ km} \doteq p$

*6.

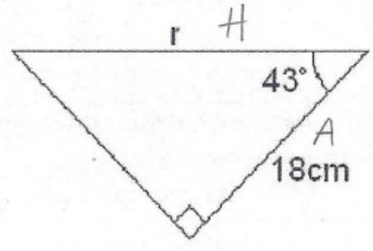


$\tan 27^\circ = \frac{10}{g}$

$g = \frac{10}{\tan 27^\circ}$

$g \doteq 19.6\text{m}$

12.*



$\cos 43^\circ = \frac{18}{r}$

$r = \frac{18}{\cos 43^\circ}$

$r \doteq 24.6\text{cm}$

Homework

Set 1: p. 362 #3ce,7cd,13

p. 372 #3fg, 4fg,6e,7k,10ab,11cf,15

Set 2: p. 362#3c,7c,13,16

p. 372 #3f,4f,6e,7k,10ab,11cf,21