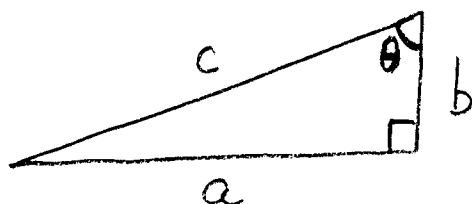


BE - PRECALC | WEDNESDAY 10-14-09

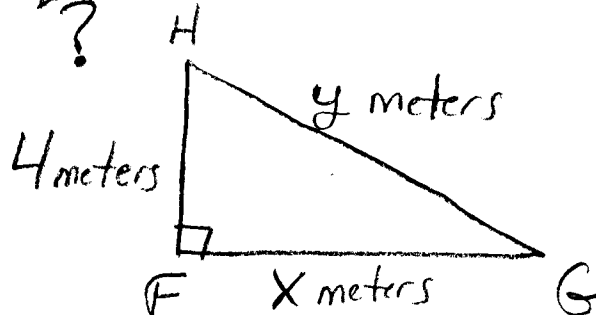
ACT
KMT

- ① The dimensions of the right triangle shown below are given in feet. What is $\sin \theta$?

- (A) $\frac{a}{b}$ (B) $\frac{a}{c}$ (C) $\frac{b}{c}$ (D) $\frac{b}{a}$ (E) $\frac{c}{a}$



- ② For $\triangle FGH$ shown below, which of the following is an expression for y in terms of x ?



- (A) $x+4$ (B) $\sqrt{x^2+4}$ (C) $\sqrt{x^2+8}$
(D) $\sqrt{x^2-16}$ (E) $\sqrt{x^2+16}$

ANS | ① $\frac{a}{c}$ ② $\sqrt{x^2+16}$

Homework review:
Pg. 288 # 10-13, 20-22.

Homework Review: Pg. 288 #10-13, 20-22

$$\textcircled{10} \quad \sin A = \frac{3}{5} \quad \cos A = \frac{4}{5} \quad \tan A = \frac{3}{4}$$

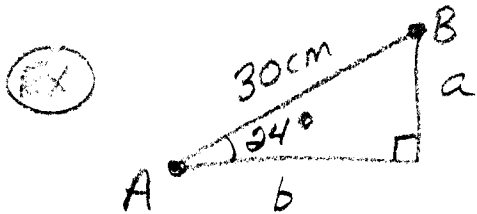
$$\textcircled{11} \quad \begin{array}{ccc} \downarrow & \downarrow & \downarrow \\ = \frac{5\sqrt{89}}{89} & = \frac{8\sqrt{89}}{89} & = \frac{5}{8} \end{array}$$

$$\textcircled{12} \quad \begin{array}{ccc} = \frac{3}{10} & = \frac{\sqrt{91}}{10} & = \frac{3\sqrt{91}}{91} \end{array}$$

$\textcircled{13}$ Tangent

	$\sin R$	$\cos R$	$\tan R$
$\textcircled{20}$	$\frac{\sqrt{527}}{24}$	$\frac{7}{24}$	$\frac{\sqrt{527}}{7}$
$\textcircled{21}$	$\frac{19}{20}$	$\frac{\sqrt{39}}{20}$	$\frac{19\sqrt{39}}{39}$
$\textcircled{22}$	$\frac{\sqrt{154}}{44}$	$\frac{9\sqrt{22}}{44}$	$\frac{\sqrt{7}}{9}$

Using the trigonometric ratios to find missing sides of triangles:



Find a and b

$$\sin 24^\circ = \frac{a}{30}$$

$$30 \sin 24^\circ = a$$

$$30(.4067) = a$$

$$\boxed{12.2010_{\text{cm}} = a}$$

$$\sin 24^\circ = .4067 \text{ (table)}$$

* CAUTION: When using your calculator, make sure it is in "degree" mode, not radians.

$$\boxed{\text{Check: } \sin 45^\circ = .7071}$$

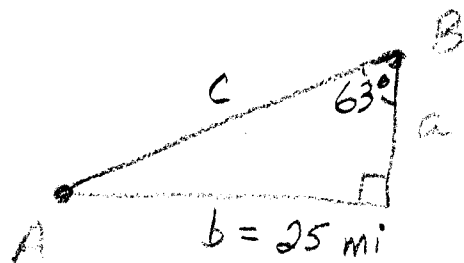
$$\cos 24^\circ = \frac{b}{30}$$

$$30 \cos 24^\circ = b$$

$$30(.9135) = b$$

$$\boxed{27.405_{\text{cm}} = b}$$

(Ex) Find c and a .



$$\sin 63^\circ = \frac{25}{c}$$

$$\frac{c \sin 63}{\sin 63} = \frac{25}{\sin 63}$$

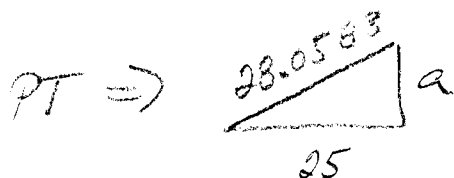
$$c = \frac{25}{\sin 63} = \frac{25}{(.8910)} = \boxed{28.0583 \text{ cm}}$$

Find "a" using trig. or the P.T.

(Pythagorean Theorem)
(Since you know 2 sides)

Trig. $\Rightarrow \tan 63 = \frac{25}{a}$

$$a = \frac{25}{\tan 63} = \frac{25}{1.9626} = \boxed{12.7382 \text{ cm}}$$



$$28.0583^2 - 25^2 = a^2$$

$$787.2682 - 625 = a^2$$

$$162.2682 = a^2$$

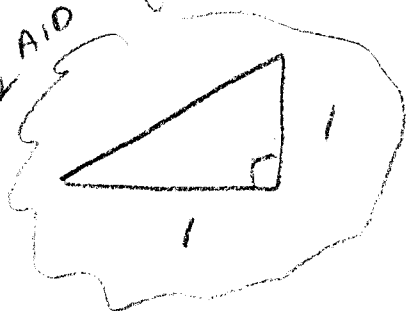
$$\sqrt{162.2682} = a$$

$$\boxed{12.7385 = a \text{ cm}}$$

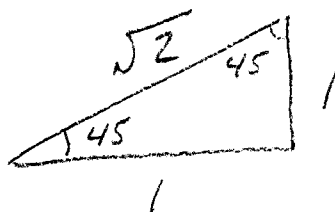


Two Special Triangles:

Memory Aid



$\Rightarrow$

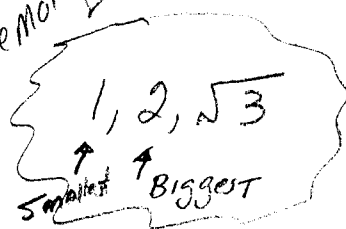


$$\sin 45 = \frac{1}{\sqrt{2}}$$

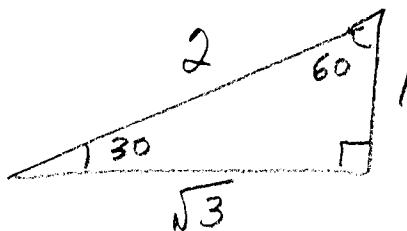
$$\cos 45 = \frac{1}{\sqrt{2}}$$

$$\tan 45 = \frac{1}{1} = 1$$

Memory Aid



$\Rightarrow$



$$\sin 30 = \frac{1}{2}$$

$$\sin 60 = \frac{\sqrt{3}}{2}$$

$$\cos 30 = \frac{\sqrt{3}}{2}$$

$$\cos 60 = \frac{1}{2}$$

$$\tan 30 = \frac{1}{\sqrt{3}}$$

$$\tan 60 = \frac{\sqrt{3}}{1}$$

NOTE: $\sqrt{2} = 1.414\dots$

$\sqrt{3} = 1.732\dots$

$$\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

THE RECIPROCAL RATIOS

$$\frac{1}{\sin \theta} = \frac{1}{\frac{O}{H}} = \frac{H}{O} = \text{cosecant } \theta = \text{csc } \theta$$

$$\frac{1}{\cos \theta} = \frac{1}{\frac{a}{H}} = \frac{H}{a} = \text{secant } \theta = \text{sec } \theta$$

$$\frac{1}{\tan \theta} = \frac{1}{\frac{O}{a}} = \frac{a}{O} = \text{cotangent } \theta = \text{cot } \theta$$

Trig. Identities $\Rightarrow$ RELATIONSHIPS THAT ARE ALWAYS TRUE, FOR ANY θ

The biggie $\Rightarrow$ MEMORIZE!

$$\boxed{\sin^2 \theta + \cos^2 \theta = 1}$$

$\Downarrow$ means $\Downarrow$

$$(\sin \theta)^2 + (\cos \theta)^2 = 1$$

NOT $\sin(\theta)^2 + \cos(\theta)^2$

• Homework: Pg 302 #10-15, #22
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