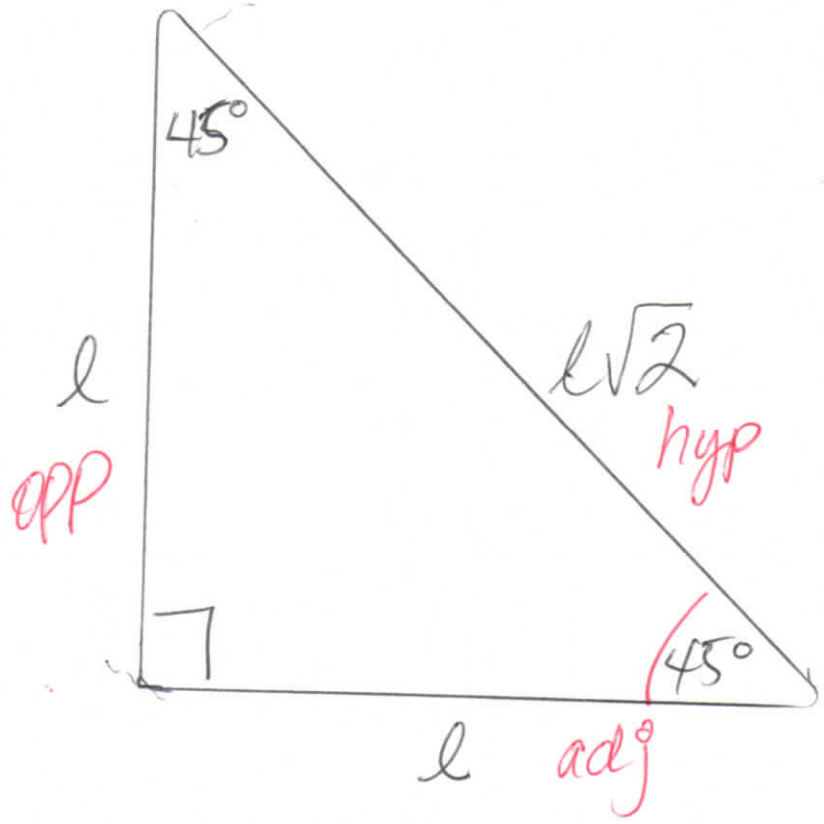
Obj: Identify the Trig Ratios of Special Right Triangles

45-45-90



reference angle

$$\sin 45 = \frac{opp}{hyp} = \frac{\ell}{\ell\sqrt{2}} \cdot \frac{\ell\sqrt{2}}{\ell\sqrt{2}} =$$

$$\frac{\ell^2\sqrt{2}}{\ell^2 2} = \boxed{\frac{\sqrt{2}}{2}}$$

$$\cos 45 = \frac{adj}{hyp} = \frac{\ell}{\ell\sqrt{2}} =$$

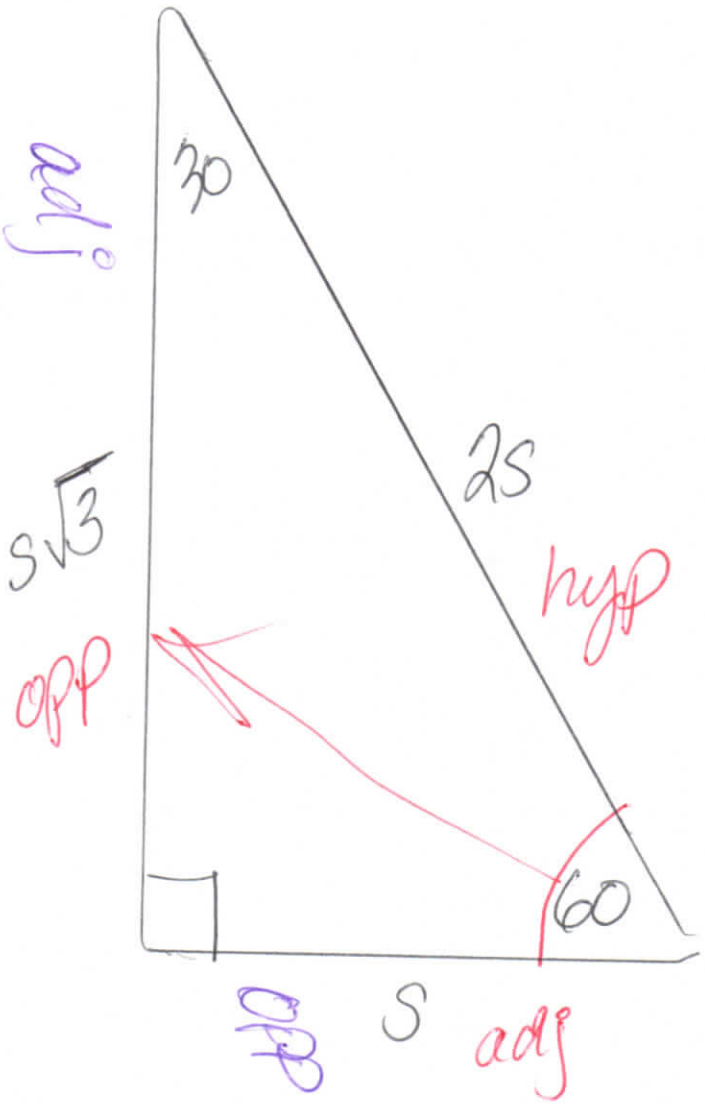
$$\boxed{\frac{\sqrt{2}}{2}}$$

$$\tan 45 = \frac{opp}{adj} = \frac{\ell}{\ell}$$

$$= \boxed{1}$$

30-60-90

adjacent = next to



$$\sin 60° = \frac{opp}{hyp} = \frac{s\sqrt{3}}{2s} = \boxed{\frac{\sqrt{3}}{2}}$$

$$\cos 60° = \frac{adj}{hyp} = \frac{s}{2s} = \boxed{\frac{1}{2}}$$

$$\tan 60° = \frac{opp}{adj} = \frac{s\sqrt{3}}{s} = \boxed{\sqrt{3}}$$

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

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

$$\tan 30° = \frac{s}{s\sqrt{3}}$$

$$\frac{s}{s\sqrt{3}} \cdot \frac{s\sqrt{3}}{s\sqrt{3}} = \frac{s^2\sqrt{3}}{s^2 \cdot 3}$$

$$= \boxed{\frac{\sqrt{3}}{3}}$$

3/4/15

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

angle

$$\cos(\theta) = \frac{adj}{hyp}$$

angle

SOH-CAH-TOA

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

angle

(3A) $\frac{\tan(25)}{1} = \frac{x}{18}$

$18 \cdot \tan(25) = x$

$8.39 = x$

(3B) $\cos(70) = \frac{15}{x}$

$\frac{x \cdot \cos(70)}{\cos 70} = \frac{15}{\cos 70}$

$x = 43.86$

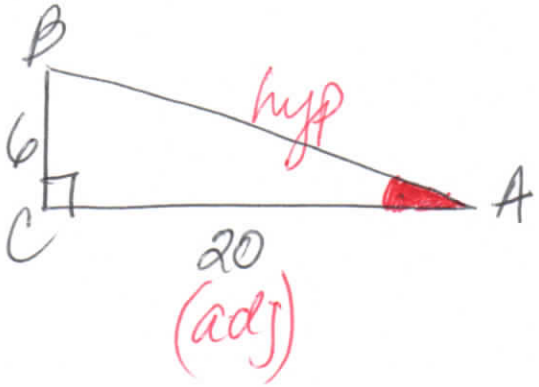
Find angles using inverse trig ratios

$\sin^{-1}$

$\cos^{-1}$

$\tan^{-1}$

(4A) Pg 565



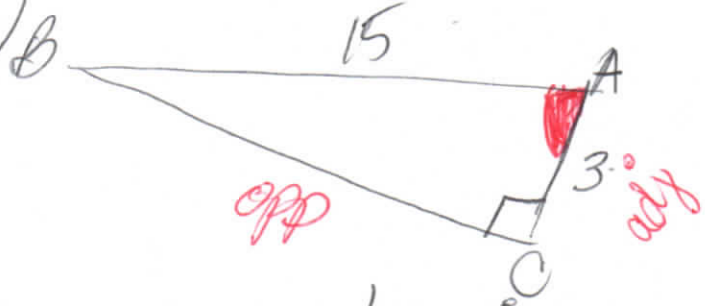
What I'm trying to find

$$\tan A = \frac{6}{20} \quad \begin{matrix} \text{opp} \\ \text{adj} \end{matrix}$$

$$A = \tan^{-1}\left(\frac{6}{20}\right)$$

$$A \approx 16.7$$

(4B)



$$\cos A = \frac{\text{adj}}{\text{hyp}}$$

$$\cos A = \frac{3}{15}$$

$$A = \cos^{-1}\left(\frac{3}{15}\right)$$

$$\approx 78.5^\circ$$

Decimals are ok!

* Must have two sides to use inverse trig ratios