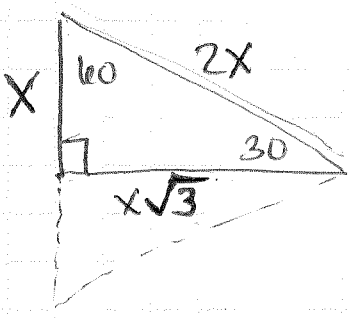
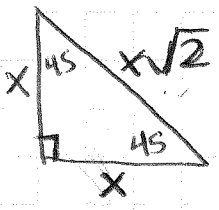
Special Right triangles

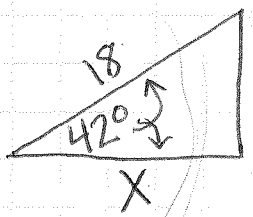




θ	30°	45°	60°
sinθ	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$
cosθ	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$
tanθ	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$
cscθ	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$
secθ	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2
cotθ	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$

Finding a missing side Length: (Right Δ)

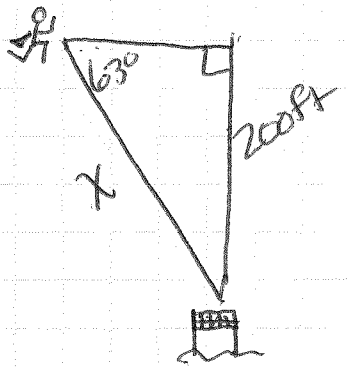
* Need one acute angle, one side



$\cos\theta = \frac{A}{H}$ $\quad 18\cos 42° = \frac{X}{18} \cdot 18$

$18\cos 42° = X \approx 13.4$

Triathelon:



$\sin\theta = \frac{O}{H}$

$\sin 63 = \frac{200}{X}$

$X = \frac{200}{\sin 63°}$ $\quad X \approx 224.5$ feet

Inverse Trig. Functions

Solve for an angle

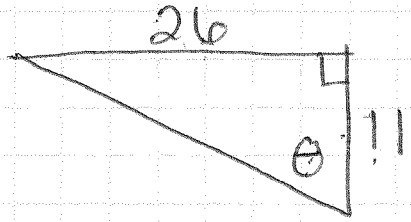
not an exponent!

Inverse sine: if $\sin\theta = x$, then $\sin^{-1} x = \theta$

Inverse cosine: if $\cos\theta = x$, then $\cos^{-1} x = \theta$

Inverse tangent: if $\tan\theta = x$, then $\tan^{-1} x = \theta$

Example: find missing angle



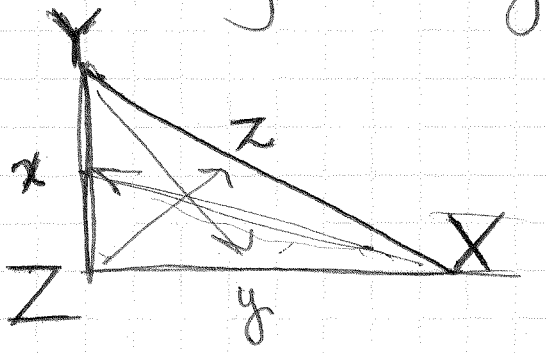
find θ

$\frac{O}{A} = \tan\theta$ $\quad \tan\theta = \frac{26}{11}$

$\tan^{-1}\left(\frac{26}{11}\right) = \theta$

$\theta \approx 67°$

Naming Triangles



Angle - capital

sides - lowercase

Same letter opposite angle/side

HW: 227: 19-24, 27, 28, 31, 32, 47, 48, 93-94, 102