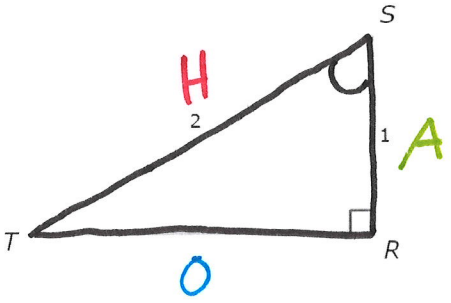
Worked Examples - Trigonometric ratios: find an angle measure (IXL Geometry Q.12)

Important Note:
There are two ways to express inverse trigonometric ratios:

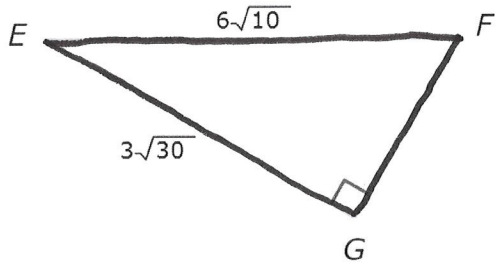
- Inverse sine ($\sin^{-1}$) is the same as arcsine (arcsin).
- Inverse cosine ($\cos^{-1}$) is the same as arccosine (arccos).
- Inverse tangent ($\tan^{-1}$) is the same as arctangent (arctan).

1. Find m∠S. Write your answer as an integer or as a decimal rounded to the nearest tenth.



1. Label
2. Have to Look
   $\frac{A}{H}$ m∠S
3. which Trig
   cos

2. Find m∠F. Write your answer as an integer or as a decimal rounded to the nearest tenth.



4. Formula
   $\cos(\theta) = \frac{A}{H}$
5. Plug in
   $\cos(S) = \frac{1}{2}$
6. Use Inverse

$\cos^{-1}[\cos(S)] = \cos^{-1}[\frac{1}{2}]$

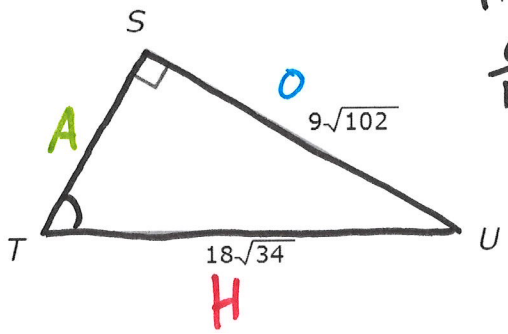
$S = \cos^{-1}(\frac{1}{2})$

Buttons

Alpha | Y= | 1 <-

7. Enter into Calculator $S = 60°$
8. Round if needed

3. Find m∠T. Write your answer as an integer or as a decimal rounded to the nearest tenth.



Have $\frac{O}{H}$ Look ∠T sin

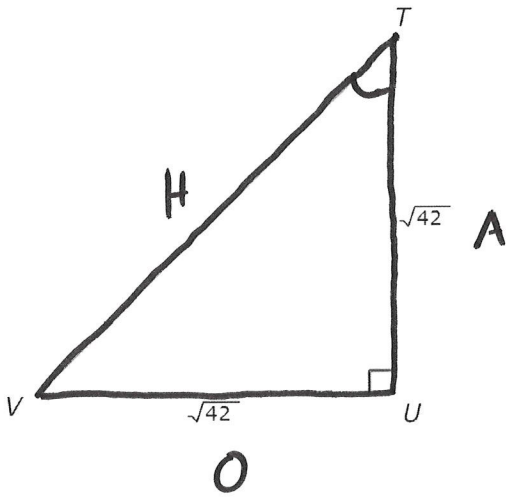
$\sin(\theta) = \frac{O}{H}$

$\sin(T) = \frac{9\sqrt{102}}{18\sqrt{34}}$

$T = \sin^{-1}\left(\frac{9\sqrt{102}}{18\sqrt{34}}\right)$

$T = 60°$

4. Find m∠T. Write your answer as an integer or as a decimal rounded to the nearest tenth.



Have $\frac{O}{A}$ Look T tan

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

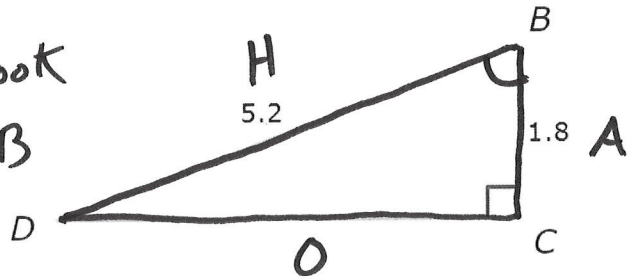
$\tan(T) = \frac{\sqrt{42}}{\sqrt{42}}$

$\tan(T) = 1$

$T = \tan^{-1}(1)$

$T = 45°$

5. Find m∠B. Write your answer as an integer or as a decimal rounded to the nearest tenth.



Have $\frac{A}{H}$ Look B cos

$\cos(\theta) = \frac{A}{H}$

$\cos(B) = \frac{1.8}{5.2}$

$B = \cos^{-1}\left(\frac{1.8}{5.2}\right)$

$B = 69.74°$

$B = 69.7°$