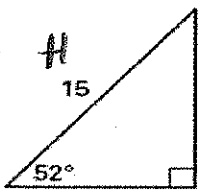
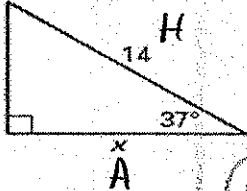


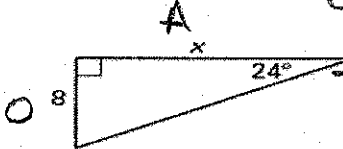
February 7, 2014

8.4 Warm-Up Soh-Cah-Toa

Find the value of each variable.
Round decimals to the nearest tenth.

1.  $(\sin 52) = \frac{x}{15}$
 $(\sin 52) \cdot 15$
 $0.19 \cdot 15$
 $= 11.85$

2.  $\cos 37 = \frac{x}{14}$
 $(\cos 37) \cdot 14$
 $0.80 \cdot 14$
 $= 11.2$

3.  $\tan 24 = \frac{8}{x}$
 $\frac{8}{\tan 24} = \frac{8}{0.45} = 17.8$

8.4 Trigonometry

Target: Use trig properties to solve problems

Example 4 Find Angle Measures Using Inverse Trigonometric Ratios

Use a calculator to find the measure of $\angle A$ to the nearest tenth.

The measures given are those of the leg opposite $\angle A$ and the hypotenuse, so write an equation using the sine ratio.

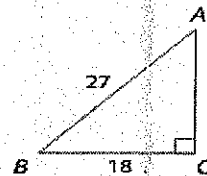
$$\sin A = \frac{18}{27} \text{ or } \frac{2}{3} \quad \sin A = \frac{\text{Opp}}{\text{Hyp}}$$

If $\sin A = \frac{2}{3}$, then $\sin^{-1} \frac{2}{3} = m\angle A$. Use a calculator.

KEYSTROKES: [2nd] [SIN⁻¹] () 2 (÷) 3 () ENTER 41.8103149

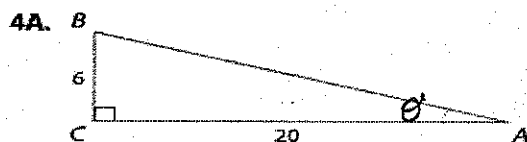
So, $m\angle A \approx 41.8^\circ$.

$\theta \rightarrow \text{theta}$



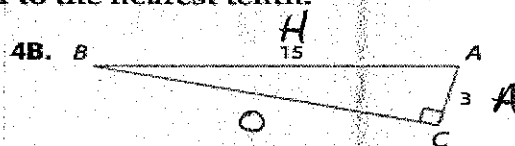
Guided Practice

Use a calculator to find the measure of $\angle A$ to the nearest tenth.



$$\tan \theta = \frac{6}{20} = x = 16.7^\circ$$

$$\tan^{-1} = \frac{6}{20} = 16.7^\circ$$

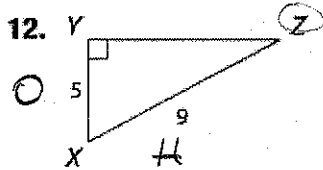


$$\cos A = \frac{3}{15}$$

$$\cos^{-1} = \frac{3}{15} = 78.46^\circ$$

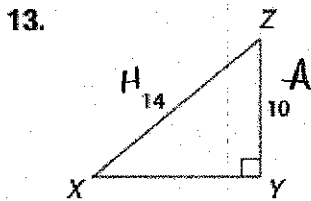
Soh-Cah-Toa

CCSS TOOLS Use a calculator to find the measure of $\angle Z$ to the nearest tenth.



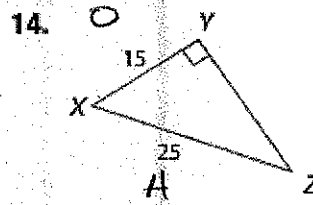
$$\sin^{-1} = \frac{5}{9}$$

$$\boxed{33.8^\circ}$$



$$\cos^{-1} = \frac{10}{14}$$

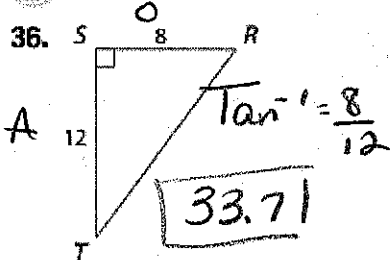
$$\boxed{44.4^\circ}$$



$$\sin^{-1} = \frac{15}{25}$$

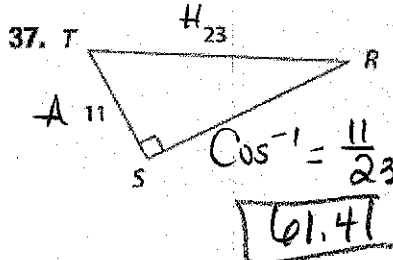
$$\boxed{36.9^\circ}$$

CCSS TOOLS Use a calculator to find the measure of $\angle T$ to the nearest tenth.



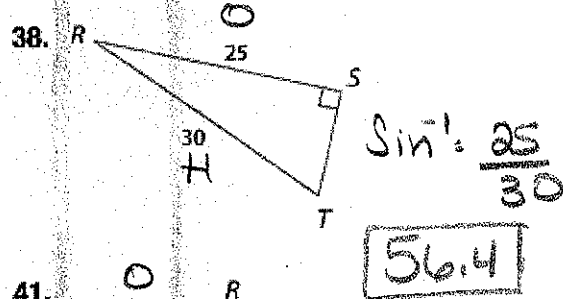
$$\tan^{-1} = \frac{8}{12}$$

$$\boxed{33.7^\circ}$$



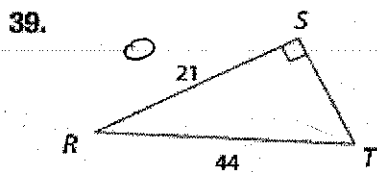
$$\cos^{-1} = \frac{11}{23}$$

$$\boxed{61.4^\circ}$$



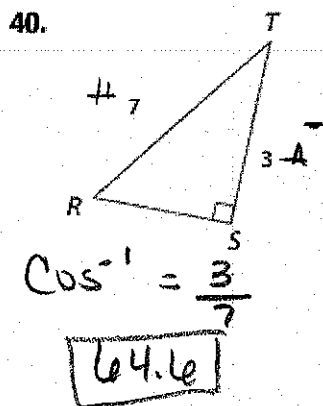
$$\sin^{-1} = \frac{25}{30}$$

$$\boxed{56.4^\circ}$$



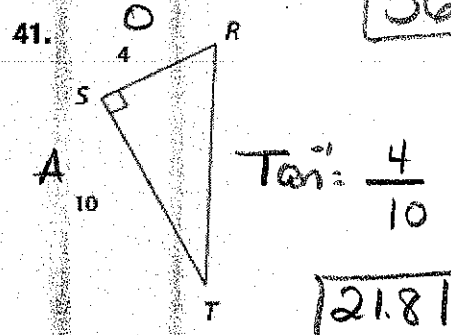
$$\sin^{-1} = \frac{21}{44}$$

$$\boxed{28.5^\circ}$$



$$\cos^{-1} = \frac{3}{7}$$

$$\boxed{64.6^\circ}$$



$$\tan^{-1} = \frac{4}{10}$$

$$\boxed{21.8^\circ}$$

46. **BACKPACKS** Ramón has a rolling backpack that is $3\frac{3}{4}$ feet tall when the handle is extended. When he is pulling the backpack, Ramón's hand is 3 feet from the ground. What angle does his backpack make with the floor? Round to the nearest degree.

$$\sin^{-1} = \frac{3}{3.75}$$

$$\boxed{53.1^\circ}$$

