Warm Up
Solve for each missing side length.


1. $a=4, b=2 \sqrt{2}$
2. $x=y=2 \sqrt{2}$
3. $y=\frac{3 \sqrt{2}}{2}, x=3$
4. $y=3 \sqrt{2}, x=6$
5. $x=y=3 \sqrt{2}$
6. $x=y=2 \sqrt{3}$
7. $y=8, x=8 \sqrt{3}$
8. $v=2 \sqrt{3}, u=4$
9. $a=4, b=2.83$
10. $x=y=2.83$
11. $y=2.12, x=3$
12. $y=4.24, x=6$
13. $x=y=4.24$
14. $x=y=3.46$

## 7. $y=8, x=13.86$

8. $v=3.46, u=4$

Notes
Theta $(\theta)$ represents an unknown angle.


Notes
Right triangle trig:

Sine: $\sin (\theta)=\frac{\text { opposite }}{\text { hypotenuse }}$
Opposite

Cosine: $\cos (\theta)=\frac{\text { adjacent }}{\text { hypotenuse }}$
Adjacent

$$
S=\frac{O}{H}
$$

Tangent: $\tan (\theta)=\frac{\text { opposite }}{\text { adjacent }}$

$$
C=\frac{A}{1 t}
$$

$$
T=\frac{0}{4}
$$

We can easily remember these with the acronym SOH CAH TOA.

Activity

Notes
In this triangle, which side is opposite, adjacent, and hypotenuse based on angle C?


$$
\begin{aligned}
& \text { Opposite }=\overline{A B} \\
& \text { Adjacent }=\overline{B C} \\
& \text { Hypotenuse }=\overline{A C}
\end{aligned}
$$

Notes
In this triangle, which side is opposite, adjacent, and hypotenus based on angle L?


Notes - You try!
In this triangle, which side is opposite, adjacent, and hypotenuse based on angle M ?

$$
\begin{aligned}
& \text { Opposite }=A D \\
& \text { Adjacent }=\overline{M A} \\
& \text { Hypotenuse }=\overline{M D}
\end{aligned}
$$



Notes
Is this a right triangle? Trig functions only work on right triangles!!


$$
\begin{aligned}
& \text { Find } \theta \\
& \tan (\theta)=\frac{0}{A}=\frac{8}{15} \\
& (\theta)=\frac{0}{4}=\frac{8}{17} \\
& \sin (\theta) \\
& \theta \\
& \cos (\theta)=\frac{A}{H}=\frac{15}{17}
\end{aligned}
$$

Notes
Label each leg opposite, adjacent or hypotenuse. Write the formula for n and solve to the nearest tenth.


Notes
Label each leg opposite, adjacent or hypotenuse.
Write the formula for $y$ and solve to the nearest tenth.


$$
\begin{aligned}
& y \cdot \cos \left(82^{\circ}\right)=\frac{4}{y} \cdot y \\
& y \cdot \frac{\cos \left(82^{\circ}\right)=4}{\cos \left(82^{\circ}\right)} \frac{4}{\cos \left(82^{\circ}\right)} \\
& y=28.74 u n i+5
\end{aligned}
$$

Notes
Label each leg opposite, adjacent or hypotenuse.
Write the formula for x and solve to the nearest tenth.


Notes - You try!
Label each leg opposite, adjacent or hypotenuse.
Write the formula for n and solve to the nearest tenth.

$\cos (39)=\frac{n}{6}$

$$
\cos (39)=n
$$



Notes - You try!
Label each leg opposite, adjacent or hypotenuse. Write the formula for y and solve to the nearest tenth.


Notes - You try!
Label each leg opposite, adjacent or hypotenuse. Write the formula for x and solve to the nearest tenth.


