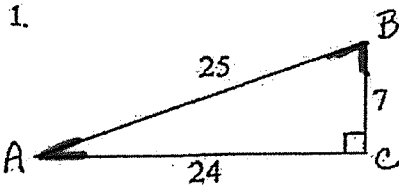


Sine, Cosine, and Tangent worksheet

Name:

Remember "SOH CAH TOA"

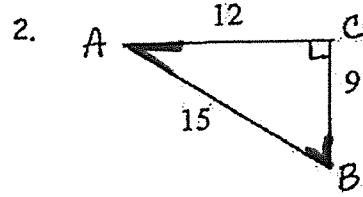
#1-2: Write the sin, cos and tan of each angle as a fraction in simplest form.



$$\sin A = \frac{7}{25} \quad \cos B = \frac{7}{25}$$

$$\sin B = \frac{24}{25} \quad \tan A = \frac{7}{24}$$

$$\cos A = \frac{24}{25} \quad \tan B = \frac{24}{7}$$



$$\tan A = \frac{9}{12} \quad \cos A = \frac{12}{15}$$

$$\tan B = \frac{12}{9} \quad \sin B =$$

$$\sin A = \frac{9}{15} \quad \cos B = \frac{9}{15}$$

#3-11: Find the trig value using a calculator or the trig chart. Round to 4 decimal places.

3. $\sin 32 = 0.520$

4. $\cos 49 = 0.656$

5. $\sin 75 = 0.966$

6. $\tan 19 = 0.3443$

7. $\tan 35 = 0.700$

8. $\sin 13 = 0.2250$

9. $\sin 51 = 0.7771$

10. $\tan 54 = 1.3764$

11. $\cos 14 = 0.9703$

Calculator.

"Read"

Notes
2/12/19

Right Triangles and SOH CAH TOA: Finding the Length of a Side Given One Side and One Angle

Keep in mind-SOH CAH TOA

Example #1:

Calculate the value of x to the nearest tenth: $\sin 38^\circ = \frac{x}{80}$

- Find $\sin 38^\circ = 0.62$
- Replace $0.62 = \frac{x}{80}$

- Solve for x by cross multiply
 $x = (0.62)(80) = \boxed{49.3 = x}$

Calculate the value of y to the nearest tenth: $\cos 52^\circ = \frac{y}{80}$

- Find $\cos 52^\circ = 0.62$
- Replace $0.62 = \frac{y}{80}$

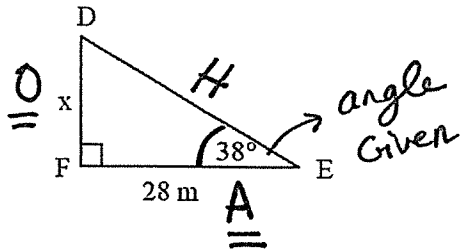
- Solve for y by cross multiply
 $y = (0.62)(80) = \boxed{y = 49.3}$

Calculate the value of z to the nearest hundredth: $\tan 24^\circ = \frac{z}{34}$

- Find $\tan 24^\circ = 0.45$
- Replace $0.45 = \frac{z}{34}$

- Solve for z by cross multiply
 $z = (0.45)(34) = \boxed{z = 15.14}$

Example #2: Find x using trig ratios



SOH CAH (TOA)

O and A are given

$$\tan 38^\circ = \frac{O}{A} = \frac{x}{28}$$

$$0.78 = \frac{x}{28}$$

Solve for x

$$x = (0.78)(28) = \boxed{21.9 = x}$$

(SOH) CAH TOA

H and O are given

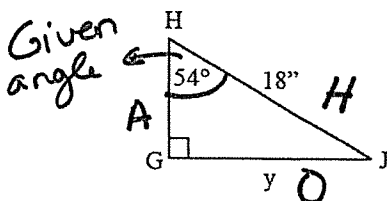
$$\sin 54^\circ = \frac{O}{H}$$

$$\sin 54^\circ = \frac{y}{18}$$

$$0.81 = \frac{y}{18}$$

Solve for y

$$y = (0.81)(18) = \boxed{y = 14.6''}$$

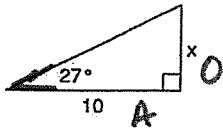


Using Trigonometry To Find Lengths

Find the missing side. Round to the nearest tenth.

(Read given notes to answer these questions)

1) SOHCAHTOA

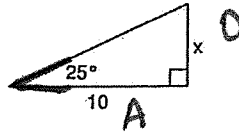


$$\tan 27^\circ = \frac{x}{10}$$

$$0.51 = \frac{x}{10}$$

$$\boxed{x = 5.1}$$

2)

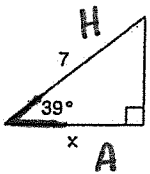


$$\tan 25^\circ = \frac{x}{10}$$

$$0.47 = \frac{x}{10}$$

$$\boxed{x = 4.7}$$

3)

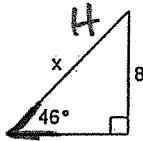


$$\cos 39^\circ = \frac{x}{7}$$

$$0.78 = \frac{x}{7}$$

$$\boxed{x = 5.44}$$

4)



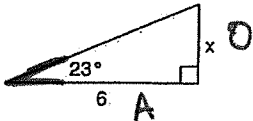
$$\sin 46^\circ = \frac{8}{x}$$

$$0.72 = \frac{8}{x}$$

$$\frac{0.72x}{0.72} = \frac{8}{0.72}$$

$$\boxed{x = 11.1}$$

5)

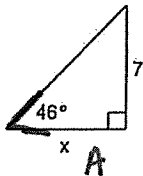


$$\tan 23^\circ = \frac{x}{6}$$

$$0.42 = \frac{x}{6}$$

$$\boxed{x = 2.52}$$

6)



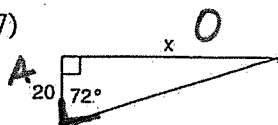
$$\tan 46^\circ = \frac{7}{x}$$

$$1.04 = \frac{7}{x}$$

$$\frac{1.04x}{1.04} = \frac{7}{1.04}$$

$$\boxed{x = 6.76}$$

7)

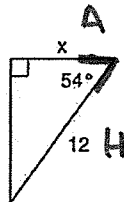


$$\tan 72^\circ = \frac{x}{20}$$

$$3.078 = \frac{x}{20}$$

$$\boxed{x = 61.6}$$

8)



$$\cos 54^\circ = \frac{x}{12}$$

$$0.59 = \frac{x}{12}$$

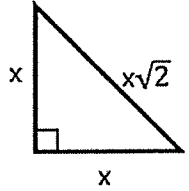
$$\boxed{x = 7.05}$$

Special Right Triangle Review

Key

Summary

Isosceles Right (45-45-90)
Triangle Shortcut



hypotenuse = leg \times $\frac{\sqrt{2}}{1}$
leg = hypotenuse \div $\frac{\sqrt{2}}{1}$

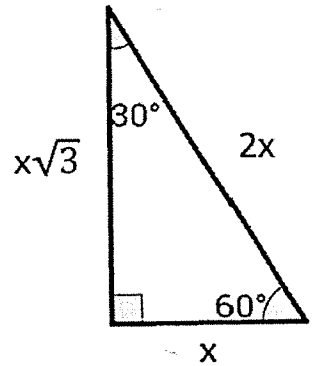
A 30-60-90 right triangle has two legs and a hypotenuse. The leg opposite the 30° angle is called the short leg. The leg opposite the 60° angle is called the long leg.

Hypotenuse = short leg \times $\frac{2}{1}$

Long leg = short leg \times $\frac{\sqrt{3}}{1}$

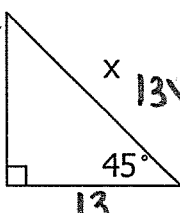
Short leg = hypotenuse \div $\frac{2}{1}$

Short leg = long leg \div $\frac{\sqrt{3}}{1}$

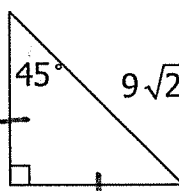


PRACTICE "Use the Rules above"

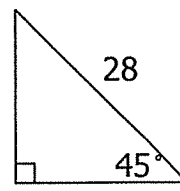
In questions 1-9, use special right triangles to find the value of x and y. **Show your work.**

1. 

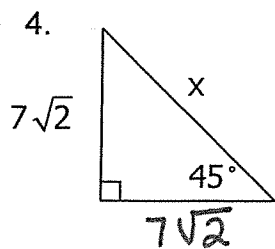
x = $\underline{13\sqrt{2}}$

2. 

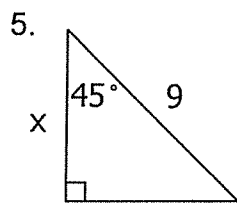
x = $\underline{9}$

3. 

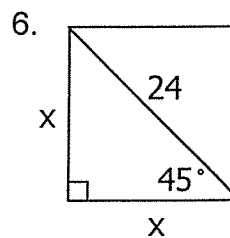
x = $\frac{28(\sqrt{2})}{\sqrt{2}(\sqrt{2})} = \boxed{14\sqrt{2}}$



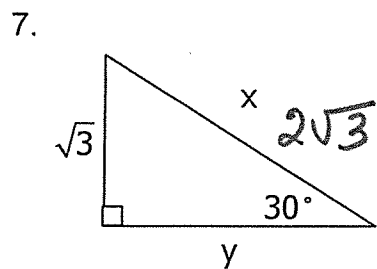
$$x = \frac{7(\sqrt{2})(\sqrt{2})}{1} = 14$$



$$x = \frac{9(\sqrt{2})}{\sqrt{2}(\sqrt{2})} = \frac{9\sqrt{2}}{2}$$

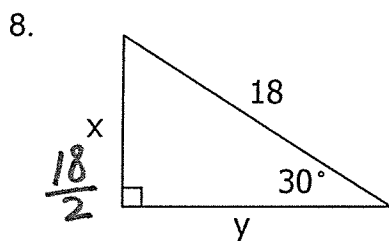


$$x = \frac{24(\sqrt{2})}{\sqrt{2}(\sqrt{2})} = 12\sqrt{2}$$



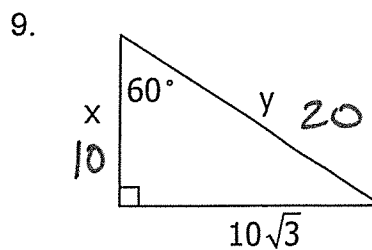
$$x = \frac{2\sqrt{3}}{2}$$

$$y = (\sqrt{3})(\sqrt{3}) = 3$$



$$x = \frac{18}{2} = 9$$

$$y = 9\sqrt{3}$$



$$x = \frac{20}{2} = 10$$

$$y = 10\sqrt{3}$$

