

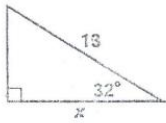
Key

Name _____ Date _____ Class _____

Lesson 4 Worksheet 1
Using trig ratios to solve for a side in a right triangle

Solve for x in each triangle below. Use what you learned in lesson 3 to first identify the ratio, then write the equation, and then solve the equation. Make sure your calculator is in degree mode. Round your answers to 2 decimal places.

1.

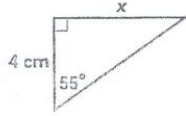


$$\cos 32 = \frac{x}{13}$$

$$13 \cos 32 = x$$

$$11.0 = x$$

2.

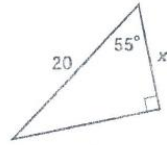


$$\tan 55 = \frac{x}{4}$$

$$4 \tan 55 = x$$

$$5.7 = x$$

3.



$$\cos 55 = \frac{x}{20}$$

$$20 \cos 55 = x$$

$$11.5 = x$$

4.

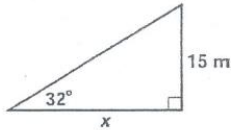


$$\sin 28 = \frac{x}{15}$$

$$15 \sin 28 = x$$

$$7.0 = x$$

5.

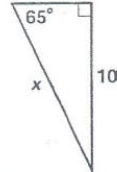


$$\tan 32 = \frac{15}{x}$$

$$x = \frac{15}{\tan 32}$$

$$x = 24.0$$

6.

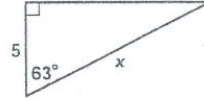


$$\sin 65 = \frac{10}{x}$$

$$x = \frac{10}{\sin 65}$$

$$x = 11.0$$

7.

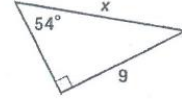


$$\cos 63 = \frac{5}{x}$$

$$x = \frac{5}{\cos 63}$$

$$x = 11.0$$

8.

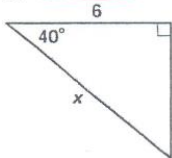


$$\sin 54 = \frac{9}{x}$$

$$x = \frac{9}{\sin 54}$$

$$x = 11.1$$

9.



$$\cos 40 = \frac{6}{x}$$

$$x = \frac{6}{\cos 40}$$

$$x = 7.8$$

10.

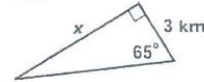


$$\tan 25 = \frac{12}{x}$$

$$x = \frac{12}{\tan 25}$$

$$x = 25.7$$

11.

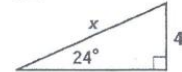


$$\tan 65 = \frac{x}{3}$$

$$3 \tan 65 = x$$

$$6.4 = x$$

12.



$$\sin 24 = \frac{4}{x}$$

$$x = \frac{4}{\sin 24}$$

$$x = 9.8$$

Name Key Date _____ Class _____

Lesson 4 Worksheet 2
Using inverse trig ratios to solve for an angle in a right triangle

Part I: Use your calculator and inverse trig functions to find the angle for each ratio below to the nearest tenth (round to 1 decimal place).

1. $\sin^{-1} .86 = 59.3^\circ$ 5. $\cos^{-1} .72 = 43.9^\circ$ 9. $\tan^{-1} .53 = 27.9^\circ$
 2. $\sin^{-1} 5/8 = 38.7^\circ$ 6. $\cos^{-1} 1/8 = 82.8^\circ$ 10. $\tan^{-1} 2 = 63.4^\circ$
 3. $\sin^{-1} .5 = 30^\circ$ 7. $\cos^{-1} .3 = 72.5^\circ$ 11. $\tan^{-1} 4.6 = 77.7^\circ$
 4. $\sin x = 3/4, x = 48.6^\circ$ 8. $\cos x = 1/2, x = 60^\circ$ 12. $\tan x = 7/8, x = 41.2^\circ$

Part II: Solve for x in each triangle below. Use what you learned in lesson 3 to first identify the ratio, then write the equation, and then solve the equation. Make sure your calculator is in degree mode. Round your answers to the nearest tenth.

1. $\cos X = \frac{11.3}{15}$
 $X = \cos^{-1}(11.3/15)$
 $X = 41.1^\circ$

2. $\cos X = \frac{7}{9}$
 $X = \cos^{-1}(7/9)$
 $X = 38.9^\circ$

3. $\sin X = \frac{12}{24}$
 $X = \sin^{-1}(12/24)$
 $X = 30^\circ$

4. $\sin X = \frac{4}{5}$
 $X = \sin^{-1}(4/5)$
 $X = 53.1^\circ$

5. $\tan X = \frac{7}{14}$
 $X = \tan^{-1}(7/14)$
 $X = 26.6^\circ$

6. $\cos X = \frac{25}{28}$
 $X = \cos^{-1}(25/28)$
 $X = 26.8^\circ$

7. $\tan X = \frac{9}{3}$
 $X = \tan^{-1}(9/3)$
 $X = 71.6^\circ$

8. $\sin X = \frac{15}{20}$
 $X = \sin^{-1}(15/20)$
 $X = 48.6^\circ$

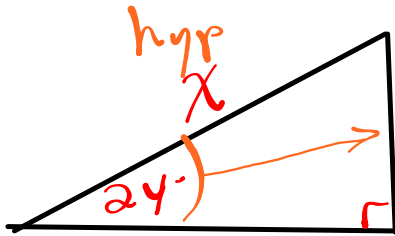
9. $\sin X = \frac{10}{16}$
 $X = \sin^{-1}(10/16)$
 $X = 38.7^\circ$

10. $\cos X = \frac{8}{18}$
 $X = \cos^{-1}(8/18)$
 $X = 63.6^\circ$

11. $\sin X = \frac{12.5}{15}$
 $X = \sin^{-1}(12.5/15)$
 $X = 56.4^\circ$

12. $\tan X = \frac{4}{5}$
 $X = \tan^{-1}(4/5)$
 $X = 38.7^\circ$

12



SOH CAH TOA

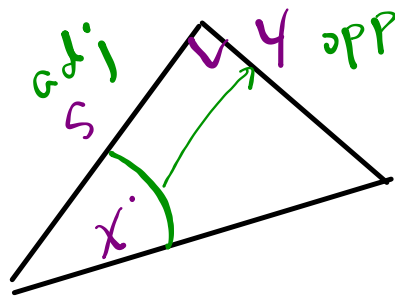
$$\cancel{x} \cdot \sin 24^\circ = \frac{4}{\cancel{x}} \cdot \cancel{x}$$

$$\sin 24^\circ \rightarrow x \sin 24^\circ$$

$$x = \frac{4}{\sin 24^\circ}$$

$x = 9.8$

12

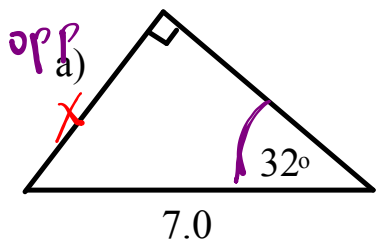


$$\tan^{-1} \tan x = \tan^{-1} \left(\frac{4}{5} \right)$$

$x = 39^\circ$

Warm Up...

SOH CAH TOA



hyp

$$7 \sin 32^\circ = \frac{x}{7}$$

$$3.7 = x$$

b) Find angle B given... $\sin B = 0.8051$

c) Find angle C given... $\tan C = \frac{7}{4}$

b) $\sin B = (0.8051)$

$$\sin^{-1}(\sin B)$$

$$\angle B = 54^\circ$$

c) $\tan C = \left(\frac{7}{4}\right)$

$$\tan^{-1}\left(\tan C\right)$$

$$\angle C = 60^\circ$$

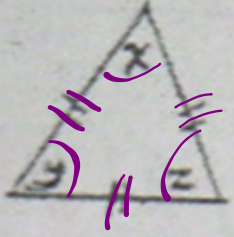
Assignment Solutions...Front page

1. $x = 80^\circ$	7. $x = 29^\circ$	12. $x = 70^\circ$	17. $x = 25^\circ$
2. $x = 65^\circ$	8. $x = 39^\circ$	$y = 110^\circ$	18. $x = 60^\circ$
3. $x = 35^\circ$	9. $a = 80^\circ$	$z = 70^\circ$	$y = 60^\circ$
4. $a = 80^\circ$	$b = 80^\circ$	13. $x = 27^\circ$	$z = 60^\circ$
$b = 100^\circ$	$c = 20^\circ$	14. $x = 100^\circ$	19. $x = 34^\circ$
5. $x = 28^\circ$	10. $x = 22^\circ$	$y = 10^\circ$	20. $x = 29^\circ$
6. $a = 40^\circ$	11. $x = 18^\circ$	15. $x = 22^\circ$	$y = 60^\circ$
$b = 70^\circ$		16. $x = 15^\circ$	$a = 66^\circ$
			$b = 114^\circ$

Back page...

1. $x = 45^\circ$	7. $x = 35^\circ$	$y = 65^\circ$	12. $x = 26^\circ$	16. $x = 110^\circ$
2. $x = 60^\circ$	8. $x = 50^\circ$	$y = 62^\circ$		$y = 70^\circ$
3. $x = 75^\circ$	$y = 130^\circ$	13. $a = 62^\circ$	17. $a = 65^\circ$	
$y = 105^\circ$	9. $x = 75^\circ$	$b = 43^\circ$	$b = 40^\circ$	
4. $x = 65^\circ$	$y = 35^\circ$	$c = 75^\circ$	$c = 75^\circ$	
5. $a = 85^\circ$	$z = 75^\circ$	14. $a = 120^\circ$	18. $x = 60^\circ$	
$b = 35^\circ$	10. $x = 55^\circ$	$b = 20^\circ$	19. $x = 40^\circ$	
$c = 60^\circ$	$y = 70^\circ$	$c = 100^\circ$	20. $x = 115^\circ$	
6. $x = 18^\circ$	11. $a = 60^\circ$	15. $x = 92^\circ$	$y = 65^\circ$	
	$b = 60^\circ$	$a = 32^\circ$		
	$c = 120^\circ$	$b = 92^\circ$		

18

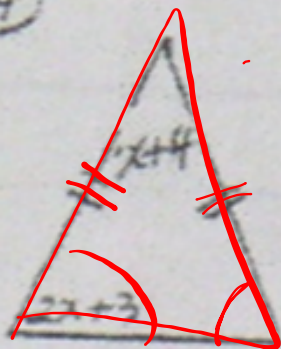


equilateral

$$\frac{180}{3} = \boxed{60}$$

$x = y = z = 60$

19



$(x+4) + (2x+3) + (2x+3) = 180$

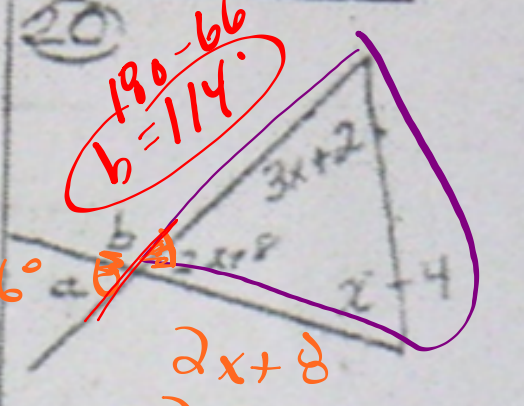
$5x + 10 = 180$

$5x = 180 - 10$

$\frac{5x}{5} = \frac{170}{5}$

$x = \boxed{34}$

20



$180 - 66 = 114$

$2x+8 + 3x+2 + x-4 = 180$

$6x + 6 = 180$

$6x = 180 - 6$

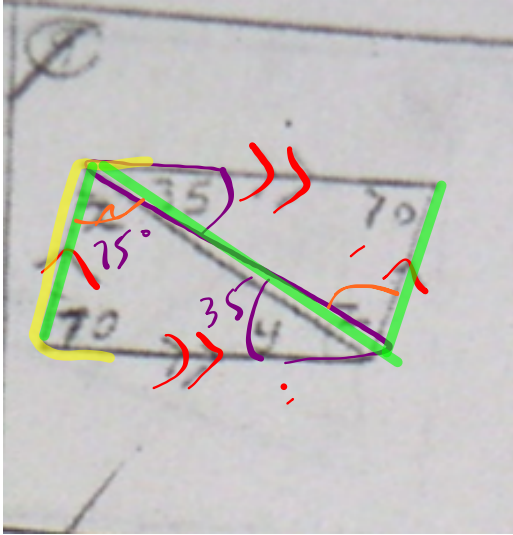
$\frac{6x}{6} = \frac{174}{6}$

$x = \boxed{29}$

$a = 66$

$2(29) + 8 = 66$

9



$$y = 35^\circ$$

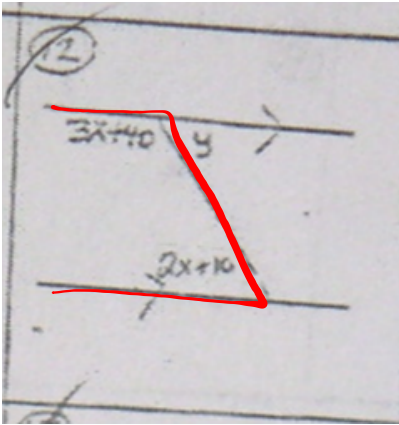
$$x = 180^\circ$$

$$\quad - 70$$

$$\quad - 35$$

$$x = 75^\circ$$

$$z = 75^\circ$$



$$3x + 40 + 2x + 10 = 180$$

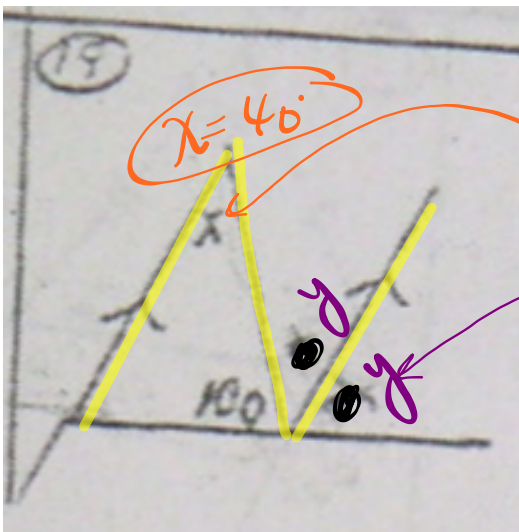
$$5x + 50 = 180$$

$$5x = 180 - 50$$

$$5x = 130$$

$$\frac{5x}{5} = \frac{130}{5}$$

$$x = 26$$




$$100 + 2y = 180$$


$$2y = 180 - 100$$

$$\frac{2y}{2} = \frac{80}{2}$$

$$y = 40$$

HOMEWORK...

 Puzzle Worksheet - Finding an Unknown Side with Trig.pdf

 Puzzle Worksheet - Finding an Unknown Angle with Trig.pdf

Attachments

Puzzle Worksheet - Finding an Unknown Angle with Trig.pdf

Puzzle Worksheet - Finding an Unknown Side with Trig.pdf