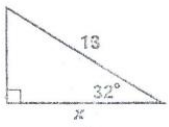
Name Key Date Class

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.

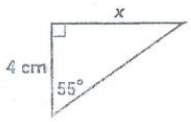


$\cos 32 = \frac{x}{13}$

$13\cos 32 = x$

$11.0 = x$

2.

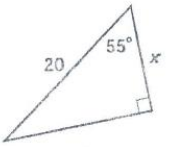


$\tan 55 = \frac{x}{4}$

$4\tan 55 = x$

$5.7 = x$

3.



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

$20\cos 55 = x$

$11.5 = x$

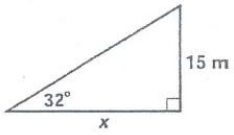
4.

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

$15\sin 28 = x$

$7.0 = x$

5.

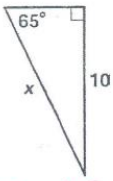


$\tan 32 = \frac{15}{x}$

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

$x = 24.0$

6.

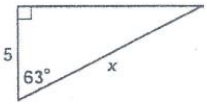


$\sin 65 = \frac{10}{x}$

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

$x = 11.0$

7.

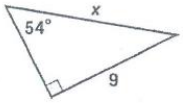


$\cos 63 = \frac{5}{x}$

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

$x = 11.0$

8.

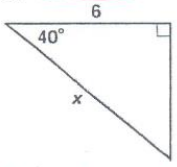


$\sin 54 = \frac{9}{x}$

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

$x = 11.1$

9.



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

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

$x = 7.8$

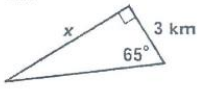
10.

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

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

$x = 25.7$

11.

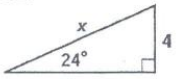


$\tan 65 = \frac{x}{3}$

$3\tan 65 = x$

$6.4 = x$

12.



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

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

$x = 9.8$

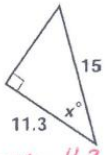
Name Key Date Class

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

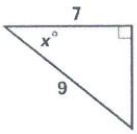
Part I: Use your calculator and inverse trig functions to find the angle for each ratio below to the nearest tenth (round to 1 decimal place).

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

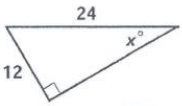
Part II: Solve for x in each triangle below. Use what you learned in lesson 3 to first identify the ratio, then write the equation, and then solve the equation. Make sure your calculator is in degree mode. Round your answers to the nearest tenth.

1. 

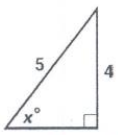
$\cos X = \frac{11.3}{15}$
$X = \cos^{-1}(11.3/15)$
$X = 41.1°$

2. 

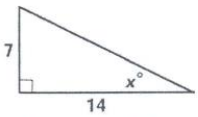
$\cos X = \frac{7}{9}$
$X = \cos^{-1}(7/9)$
$X = 38.9°$

3. 

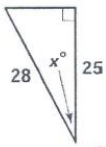
$\sin x = \frac{12}{24}$
$X = \sin^{-1}(12/24)$
$X = 30°$

4. 

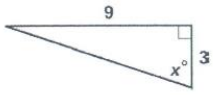
$\sin X = \frac{4}{5}$
$X = \sin^{-1}(4/5)$
$X = 53.1°$

5. 

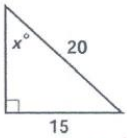
$\tan X = \frac{7}{14}$
$X = \tan^{-1}(7/14)$
$X = 26.6°$

6. 

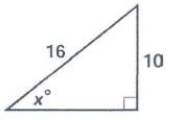
$\cos X = \frac{25}{28}$
$X = \cos^{-1}(25/28)$
$X = 26.8°$

7. 

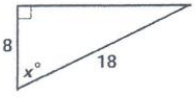
$\tan X = \frac{9}{3}$
$X = \tan^{-1}(9/3)$
$X = 71.6°$

8. 

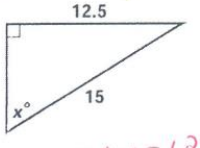
$\sin X = \frac{15}{20}$
$X = \sin^{-1}(15/20)$
$X = 48.6°$

9. 

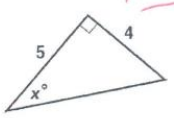
$\sin X = \frac{10}{16}$
$X = \sin^{-1}(10/16)$
$X = 38.7°$

10. 

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

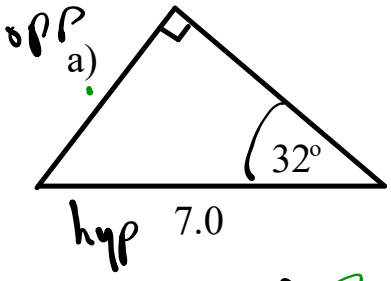
11. 

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

12. 

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

Warm Up...



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

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

opp

a) $7 \sin 32^\circ = \frac{a}{7.0}$ (7)

$7 \sin 32 = a$

$3.7 = a$

b) $\sin^{-1} \sin B = (0.8051)$

$\sin^{-1}$

$\angle B = 54^\circ$

c) $\tan^{-1} \tan C = \left(\frac{7}{4}\right)$

$\tan^{-1}$

$\angle C = 60^\circ$

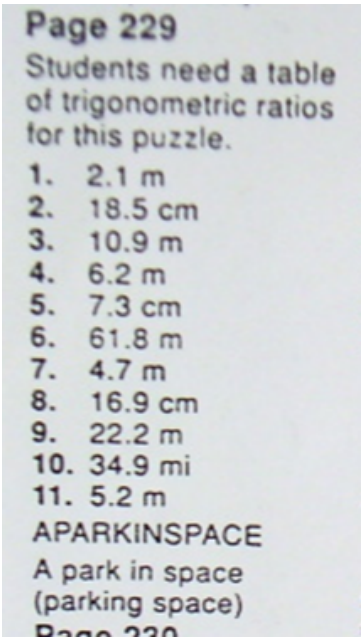
HOMEWORK:

Puzzle Worksheet - Finding an Unknown Angle with Trig.pdf

Puzzle Worksheet - Finding an Unknown Side with Trig.pdf

Solutions...

Finding a side:



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Students need a table of trigonometric ratios for this puzzle.

1. 2.1 m
2. 18.5 cm
3. 10.9 m
4. 6.2 m
5. 7.3 cm
6. 61.8 m
7. 4.7 m
8. 16.9 cm
9. 22.2 m
10. 34.9 mi
11. 5.2 m

APARKINSPACE

A park in space (parking space)

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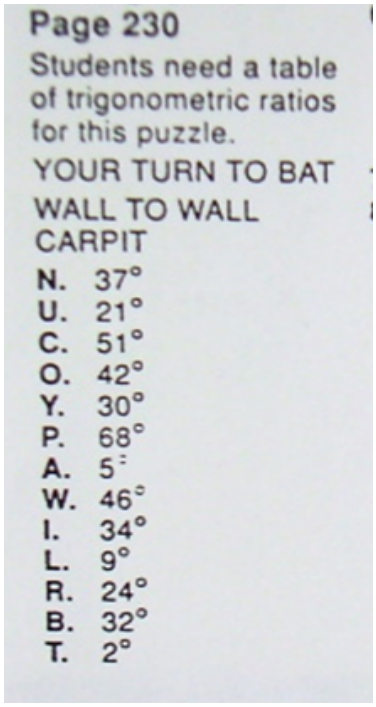
Finding an angle:



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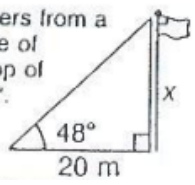
Students need a table of trigonometric ratios for this puzzle.

YOUR TURN TO BAT

WALL TO WALL CARPIT

N. 37°
U. 21°
C. 51°
O. 42°
Y. 30°
P. 68°
A. 5°
W. 46°
I. 34°
L. 9°
R. 24°
B. 32°
T. 2°

(9) At a point 20 meters from a flagpole, the angle of elevation of the top of the flagpole is 48°. How tall is the flagpole?



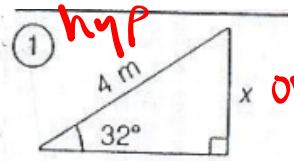
opp

adj

$20 \tan 48^\circ = \frac{x}{20}(20)$

$22.2 = x$

use trigonometric ra



hyp

opp

$\sin 32^\circ = \frac{x}{4}$

$4 \sin 32^\circ = x$

$2.1 = x$

Attachments

Puzzle Worksheet - Finding an Unknown Side with Trig.pdf

Puzzle Worksheet - Finding an Unknown Angle with Trig.pdf