Name: Answer Key
Period: _____

Date: _____
Trigonometry: Chapter 2 Review

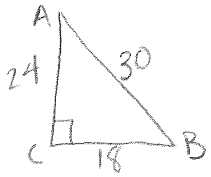
1. Evaluate each of the following trig expressions. Round all expressions to four decimal places.

a. $\tan 87°20' =$ 21.4704 *b.* $\sin 88°10' =$ .9995 *c.* $\csc 17°30' =$ 3.3255 $\csc 17.5 = \frac{1}{\sin 17.5}$

d. $\cos 122° =$ -.5299 *e.* $\sec 112° =$ -2.6695 *f.* $\cot 310°30' =$ -.8541

2. Refer to right triangle ABC, where $C = 90°$. Find all missing pieces. Round all angles and lengths to the nearest tenth.

a. $c = 30\ ft$ $b = 24\ ft$



$a = 18\ ft$

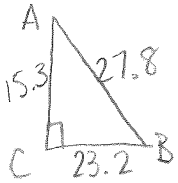
$\tan B = \frac{24}{18}$

$B = 53.1°$

$\tan A = \frac{18}{24}$

$A = 36.9°$

b. $a = 23.2m$ $b = 15.3m$



$c = 27.8m$

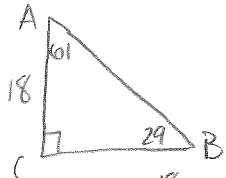
$\tan B = \frac{15.3}{23.2}$

$B = 33.4°$

$\tan A = \frac{23.2}{15.3}$

$A = 56.6°$

c. $A = 61°$ $b = 18\ in$



$B = 29°$

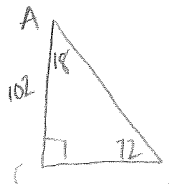
$\cos 61 = \frac{18}{c}$

$c = 37.1in$

$\tan 61 = \frac{a}{18}$

$a = 32.5in$

d. $B = 72°$ $b = 102cm$



$A = 18°$

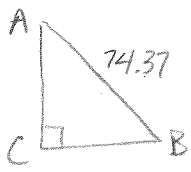
$\sin 72 = \frac{102}{c}$

$c = 107.2\ cm$

$\tan 72 = \frac{102}{a}$

$a = 33.1\ cm$

e. $B = 62°53'$ $c = 74.37\ yd$



$B \approx 62.883$

$A = 27.1167$

$A = 27°7'$

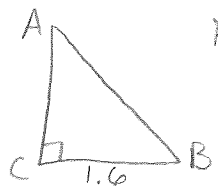
$\sin 62.883 = \frac{b}{74.37}$

$b = 66.2\ yd$

$\cos 62.883 = \frac{a}{74.37}$

$a = 33.9\ yd$

f. $B = 55°40'$ $a = 1.6in$



$B \approx 55.667°$

$A = 34.333°$

$A = 34°20'$

$\cos 55.667 = \frac{1.6}{c}$

$c = 2.8\ in$

$\tan 55.667 = \frac{b}{1.6}$

$b = 2.3\ in$

3. Solve for θ. Round all angles to the nearest minute.

a. $\sin\theta = 0.3907$ *b.* $\cos\theta = 0.9136$ *c.* $\tan\theta = 3.0237$

$\theta =$ 23° $\theta =$ 23° $\theta =$ 71°42'

22.998° 23.992° 71.7°

4. Solve for θ. Round all angles to the nearest tenth of a degree.

a. $\sec\theta = 5.9963$ *b.* $\csc\theta = 3.9175$ *c.* $\cot\theta = 1.5211$

$\frac{1}{\cos\theta} = \frac{5.9963}{1}$ $\theta =$ 80.4° $\theta =$ 14.8° $\theta =$ 33.3°

$\cos\theta = \frac{1}{5.9963}$ $\sin\theta = \frac{1}{3.9175}$ $\tan\theta = \frac{1}{1.5211}$

5. Use the Cofunction Theorem to fill in the blanks.

a. $\sin 43.9° =$ cos 46.1° *b.* $\csc 42°14' =$ sec 47°46' *c.* $\cot 22.26° =$ tan 67.74°

89 90
42 14
47° 46'

6. Fill in the table of exact values:

θ	0°	30°	45°	60°	90°
$\sin\theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos\theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan\theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	undefined

7. Use the table of values to simplify each expression.

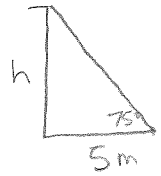
a. $\sin^3 30^\circ$ $\quad \frac{1}{8}$

b. $\cos 45^\circ - \sin 60^\circ$ $\quad \frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2} = \frac{\sqrt{2}-\sqrt{3}}{2}$

c. $\tan^2 45^\circ + \sec 30^\circ$ $\quad 1 + \frac{2\sqrt{3}}{3} = \frac{3+2\sqrt{3}}{3}$

d. $\cot^2 60^\circ - \sin 30^\circ$ $\quad \frac{1}{3} - \frac{1}{2} = \frac{2}{6} - \frac{3}{6} = -\frac{1}{6}$

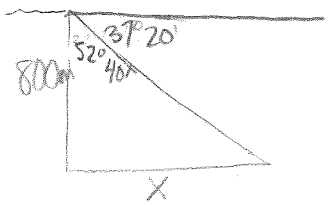
8. A person stands five meters from a building. The angle of elevation from where the person stands to the top of the building is 75°. Find the height of the building. Round to the nearest meter.



$\tan 75 = \frac{h}{5}$

$h = 19\text{m}$

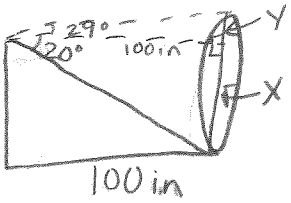
9. The angle of depression from the top of a cliff 800 meters high to the base of a log cabin is $37^\circ 20'$. How far is the cabin from the foot of the cliff?



$\tan 52.667 = \frac{x}{800}$

$x = 1048.9\text{ ft}$

10. A person standing 100 inches from a mirror notices that the angle of depression from her eyes to the bottom of the mirror is 20°, while the angle of elevation to the top of the mirror is 29°. Find the vertical dimensions of the mirror.

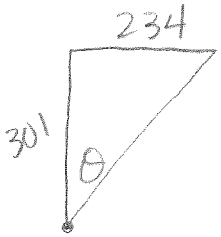


$\tan 20 = \frac{x}{100}$ $\quad \tan 29 = \frac{y}{100}$

$x = 36.4\text{ in}$ $\quad y = 55.4\text{ in}$

$h = x + y = 91.8\text{ in}$

11. A boat travels on a course for 301 miles north and 234 miles east. What is the bearing that boat has traveled?



$\tan\theta = \frac{234}{301}$

$\theta = 37.86$

N 37.86° E