Name: **Answer Key**   Period: _____

# Trigonometry Test #2 Review Sheet

Radians & Degrees

**Directions:** Give each degree measure in radians and radian measure in degrees.

1. 165°	2. -54°	3. 243°
$\frac{165}{180} \to \boxed{\frac{11\pi}{12}}$	$\frac{-54}{180} \to \boxed{\frac{-3\pi}{10}}$	$\frac{243}{180} \to \boxed{\frac{27\pi}{20}}$
4. $\frac{9\pi}{5}$	5. $-\frac{13\pi}{20}$	6. $-\frac{4\pi}{45}$
$\frac{9(180)}{5} = \boxed{324°}$	$\frac{-13(180)}{20} = \boxed{-117°}$	$\frac{-4(180)}{45} = \boxed{-16°}$

The Unit Circle

7. Which trigonometric functions are negative in quadrant IV?	8. If $\cos\theta < 0$ and $\sin\theta < 0$, which quadrant(s) could the terminal side of θ lie?
$\begin{array}{c\|c} II & I \\ \hline III & IV \end{array}$ $\begin{array}{c\|c} S & A \\ \hline T & C \end{array}$ $\boxed{\begin{array}{c}\cos \\ \& \\ \sec\end{array}}$	$\boxed{\text{quad } III}$
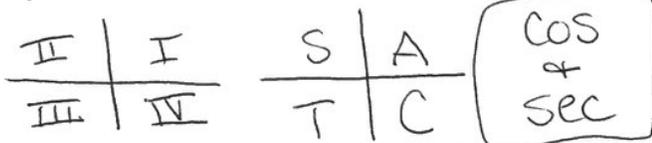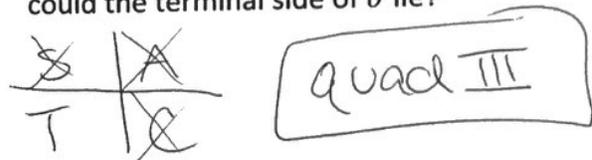
Directions: Give the exact value of each trigonometric function.

9. sin 45	10. cos 135	11. tan 330
$\boxed{\dfrac{\sqrt{2}}{2}}$	$\boxed{-\dfrac{\sqrt{2}}{2}}$	$\dfrac{\sqrt{1}}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = \boxed{-\dfrac{\sqrt{3}}{3}}$
12. cos 90 *plug in calc $\boxed{0}$	13. tan 60 $\dfrac{\sqrt{3}}{\sqrt{1}} = \boxed{\sqrt{3}}$	14. sin 210 $\dfrac{\sqrt{1}}{2} = \boxed{-\dfrac{1}{2}}$
15. tan 150 $\dfrac{\sqrt{1}}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}} = \boxed{-\dfrac{\sqrt{3}}{3}}$	16. sin 270 *plug in calc $\boxed{-1}$	17. cos 300 $\dfrac{\sqrt{1}}{2} = \boxed{\dfrac{1}{2}}$

Law of Sines & Cosines

✱3 sides or 2 sides/finding !
— Law of cosines

Directions: Find each missing measure to the nearest tenth.

18.

$$\frac{\sin 68}{x} \times \frac{\sin 77}{12}$$

$$\frac{12\sin 68 = x\sin 77}{\sin 77} \quad \frac{}{\sin 77}$$

$$\boxed{11.4 = x}$$
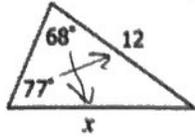
19.

$$x^2 = 13^2 + 17^2 - 2(13)(17)\cos 75$$

plug in calc

$$\sqrt{x^2} = \sqrt{343.6019821}$$

$$\boxed{x = 18.5}$$
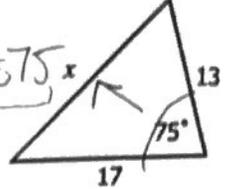
20.

$$22^2 = 16^2 + 9^2 - 2(16)(9)\cos x$$
$$484 = 337 - 288\cos x$$
$$\frac{-337 \quad -337}{}$$
$$\frac{147}{-288} = \frac{-288\cos x}{-288} \rightarrow -0.5104 = \cos x$$

2nd button

$$\boxed{120.7° = x}$$
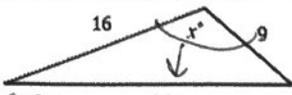
21.

$$180 - (126 + 18) = 36°$$

$$\frac{\sin 18}{15} \times \frac{\sin 36}{x}$$

$$\frac{15\sin 36 = x\sin 18}{\sin 18} \quad \frac{}{\sin 18}$$

$$\boxed{28.5 = x}$$
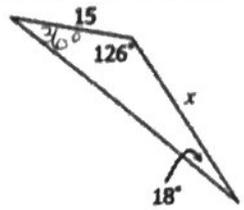
Directions: Solve each triangle. Round all answers to the nearest tenth.

22. In $\triangle ABC$, $m\angle A = 40°$, $AB = 26$, and $BC = 20$. Find $m\angle C$.
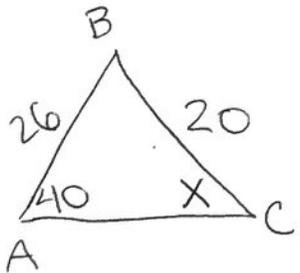
$$\frac{\sin x}{26} = \frac{\sin 40}{20}$$

$$\frac{20\sin x}{20} = \frac{26\sin 40}{20}$$

$$\sin x = 0.8356 \quad \longleftarrow \text{*2nd button}$$

$$\boxed{x = 56.7°}$$

23. In $\triangle PQR$, $m\angle P = 53°$, $PQ = 16$, and $QR = 10$. Find $m\angle Q$.

✱need to find $\angle R$ first
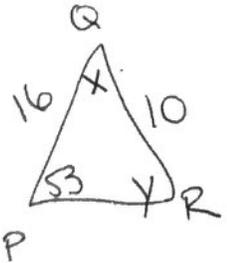
$$\frac{\sin y}{16} = \frac{\sin 53}{10}$$

$$\frac{10\sin y}{10} = \frac{16\sin 53}{10}$$

$$\sin y = 1.27781 \rightarrow \text{not possible!}$$

**24.** In $\triangle XYZ$, $m\angle X = 96°$, $XZ = 15$, and $XY = 24$. Find YZ.
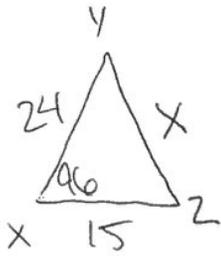
$x^2 = 24^2 + 15^2 - 2(24)(15)\cos 96$

plug in calc

$\sqrt{x^2} = \sqrt{876.2604936}$

$\boxed{x = 29.6}$

25. In $\triangle JKL$, $m\angle L = 113°$, $JK = 21$, and $JL = 10$. Find $m\angle K$.
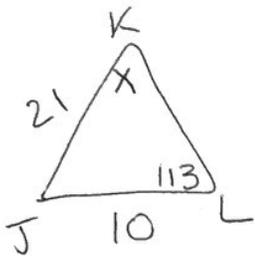
$\dfrac{\sin x}{10} = \dfrac{\sin 113}{21}$

$\dfrac{21\sin x}{21} = \dfrac{10\sin 113}{21}$

$\sin x = 0.4383$ ← *2nd button*

$\boxed{x = 26.0°}$

Area of a Triangle

Directions: Find the area of each triangle to the nearest tenth.

26.

11 mm 103° 24 mm 22°
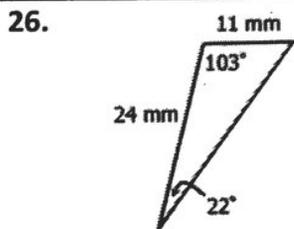
$A = \frac{1}{2}(24)(11)\sin 103$

$\boxed{A = 128.6 \text{ mm}^2}$

$* A = \frac{1}{2}ab\sin C$

27.

15° 19 in 141° $X = 12.3$ 24°
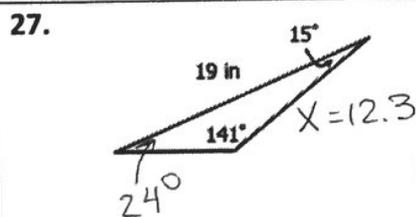
$A = \frac{1}{2}(19)(12.3)\sin 15$

$\boxed{A = 30.2 \text{ in}^2}$

$\dfrac{\sin 141}{19} = \dfrac{\sin 24}{x}$

1st → $X = 12.3$

28.

66° 17 m x y 22 m
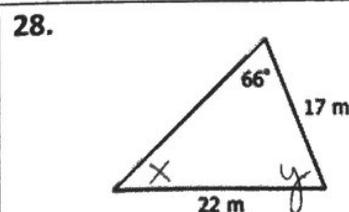
$A = \frac{1}{2}(17)(22)\sin 69.1$

$\boxed{A = 174.7 \text{ m}^2}$

$\dfrac{\sin x}{17} = \dfrac{\sin 66}{22}$

$X = 44.9°$

$y = 69.1°$