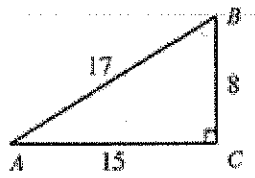
Name: KEY Hour: _____ Date: _____ ID: Practice

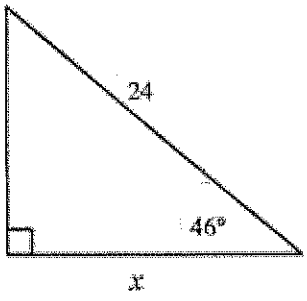
Algebra 2 -- Trig Test

1. Write sin B as a fraction in lowest terms.



sin A = $\frac{15}{17}$

2. Find x to the nearest hundredth.

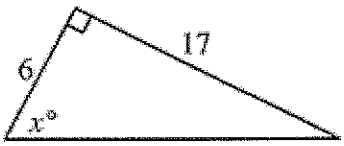


$\cos 46 = \frac{x}{24}$

$24 \cos 46 = x$

x = 16.67

3. Solve for x. Round to the nearest hundredth.



$\tan x = \frac{17}{6}$ $x = \tan^{-1}\left(\frac{17}{6}\right)$

x = 70.56°

d 4. Convert 240° to radians.

a. $\frac{8}{3}\pi$

b. $\frac{3}{8}\pi$

$240 \cdot \frac{\pi}{180} = \frac{4\pi}{3}$

c. $\frac{3}{4}\pi$

(d.) $\frac{4}{3}\pi$

a 5. Convert $\frac{17}{20}\pi$ to degrees.

(a.) 153° b. 212° c. 77° d. 306°

$\frac{17\pi}{20} \cdot \frac{180}{\pi} = 153°$

6. Find the reference angle for $\frac{5\pi}{4}$.

$\frac{5\pi}{4} \cdot \frac{180}{\pi} = 225°$

Reference angle = $45°$ or $\frac{\pi}{4}$

$225 - 180 = 45°$

Find all possible values θ (between 0 and 360) for which...

7. $\sin\theta = -0.342$ $\sin^{-1}(-0.342) = -20°$ ... this is $340°$ (reference angle = $20°$)

$\theta = 340°$ or $\theta = 200°$

↖ angle in Quadrant III with ref. angle = 20

↑ because sin is negative here also

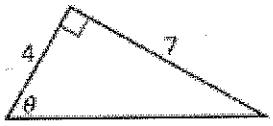
8. $\tan\theta = 11.43$ $\tan^{-1}(11.43) = 85°$

$\theta = 85°$ or $\theta = 265$

↖ angle in Quadrant III with ref. angle = 85

↑ because tan is negative here also

9. Find the measure of the angle θ. Round to hundredths.

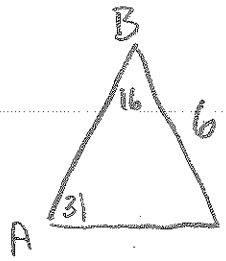


$\tan\theta = \frac{7}{4}$

$\theta = 60.26°$

$\tan^{-1}\left(\frac{7}{4}\right) = 60.26$

10. Solve triangle ABC with $a = 6$, $A = 31°$, and $B = 16°$. Round your answers to two decimal places.



$\frac{\sin A}{a} = \frac{\sin B}{b}$ $\quad \frac{\sin 31}{6} = \frac{\sin 16}{b}$

$b = 3.21$

$\angle C = 180 - (31 + 16)$
$= 133°$

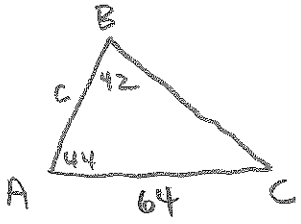
$\frac{\sin C}{c} = \frac{\sin A}{a}$

$\frac{\sin 133}{c} = \frac{\sin 31}{6}$

$c = 8.52$

b = 3.21 $\quad$ c = 8.52 $\quad$ $\angle C$ = 133°

11. Solve triangle ABC given that $A = 44°$, $B = 42°$, and $b = 64$. Round to hundredths.



$\frac{\sin A}{a} = \frac{\sin B}{b} \rightarrow \frac{\sin 44}{a} = \frac{\sin 42}{64}$ $\quad a = 66.44$

$\angle C = 180 - (44 + 42)$
$= 94°$

$\frac{\sin C}{c} = \frac{\sin B}{b}$

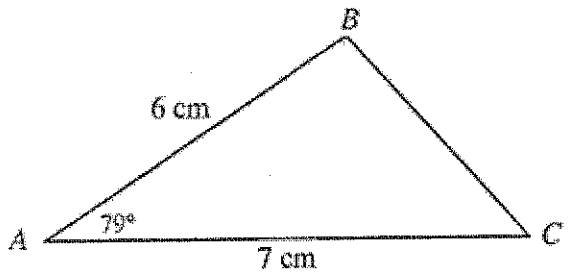
$\frac{\sin 94}{c} = \frac{\sin 42}{64}$

$c = 95.41$

a = 66.44 $\quad$ c = 95.41 $\quad$ $\angle C$ = 94°

a

12. Find the area of ΔABC. The figure is not drawn to scale.



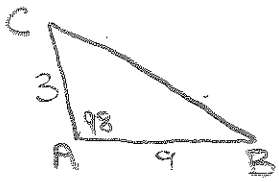
Area $= \frac{1}{2} bc \sin A$

$= \frac{1}{2}(7)(6)\sin 79$

$= 20.61$

(a.) 20.61 cm^2 b. 19.50 cm^2 c. 21.0 cm^2 d. 18.39 cm^2

13. Solve triangle ABC with $b = 3$, $c = 9$, and $A = 98°$. Round your answers to two decimal places.



SAS - Use Cosine Law

$a^2 = b^2 + c^2 - 2bc\cos A$

$a^2 = 3^2 + 9^2 - 2(3)(9)\cos 98$

$a^2 = 9 + 81 - 54\cos 98$

$a^2 = 90 - 54\cos 98$

$a = 9.87$

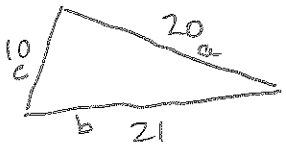
$\frac{\sin A}{a} = \frac{\sin B}{b}$

a = 9.87 ∠B = 17.52° ∠C = 64.48°

$\frac{\sin 98}{9.87} = \frac{\sin B}{3}$ $B = 17.52$

$\angle C = 180 - (98 + 17.52) =$

14. Solve triangle ABC given that $a = 20$, $b = 21$, and $c = 10$. Round to hundredths.



Find ∠B first

SSS: Use cosine law: $b^2 = a^2 + c^2 - 2ac\cos B$

$21^2 = 20^2 + 10^2 - 2(20)(10)\cos B$

$441 = 400 + 100 - 400\cos B$

$441 = 500 - 400\cos B$

$-59 = -400\cos B$

$81.52° = B$

∠A = 70.38 ∠B = 81.52° ∠C = 28.1°

$\angle C = 180 - (70.38 + 81.52)$

$=$

$\frac{\sin A}{a} = \frac{\sin B}{b}$ $\frac{\sin A}{20} = \frac{\sin 81.52}{21}$

$A = 70.38$

Name_____ Trig Practice Test Part 1

NO CALCULATOR OR NOTES!

Complete each part for each expression:

A. Determine in which quadrant the angle θ lies.
B. Determine the reference angle θ'. (Complete this part only if the angle is not in the first quadrant.)
C. Find the indicated ratio for θ'. This must be an exact value. (Complete this part only if the angle is not in the first quadrant.)
D. Determine the value for the original expression using the ASTC mneumonic.

1. sin 315	A. IV	B. 45	C. $\frac{\sqrt{2}}{2}$	D. $-\frac{\sqrt{2}}{2}$
2. tan $\frac{2\pi}{3}$	A. II	B. 60	C. $\sqrt{3}$	D. $-\sqrt{3}$
3. cos $\frac{5\pi}{6}$	A. II	B. 30	C. $\frac{\sqrt{3}}{2}$	D. $-\frac{\sqrt{3}}{2}$
4. sin $\frac{5\pi}{3}$	A. IV	B. 60	C. $\frac{\sqrt{3}}{2}$	D. $-\frac{\sqrt{3}}{2}$
5. cos 210	A. III	B. 30	C. $\frac{\sqrt{3}}{2}$	D. $-\frac{\sqrt{3}}{2}$

Note: These are not always negative; it was coincidence. It depends on the trig ratio and quadrant.

S | A
T | C