Review 6.1-6.3

Name Answer Key (1)

Period# ____

**Please show all work !!!

1. Change from degrees to radians: 240°

$$240 \times \frac{\pi}{180} = \frac{240\pi \div 30}{180 \div 30} = \frac{8\pi \div 2}{6 \div 2} = \boxed{\frac{4\pi}{3}}$$

2. Change from radians to degrees: $\frac{7\pi}{6}$

$$\frac{7\pi}{6} \cdot \frac{180}{\pi} = \boxed{210°}$$

3. Find the length of an arc that subtends a central angle of 120° in a circle of radius 5 cm.

$S = \theta \cdot r \longrightarrow S = \frac{2\pi}{3} \cdot 5 = \boxed{\frac{10\pi}{3}}$

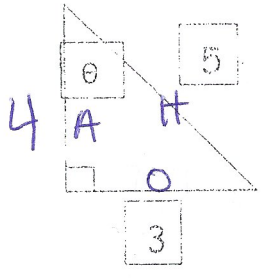
change 120° to radians first: $120° \times \frac{\pi}{180} = \frac{120\pi \div 60}{180 \div 60} = \frac{2\pi}{3}$

4. Find the area of a sector with central angle 90 in a circle with radius 6m.

$A = \frac{1}{2}\theta \cdot r^2 \Rightarrow A = \frac{1}{2} \cdot \frac{\pi}{2} \cdot 6^2 = \frac{36\pi}{4} = \boxed{9\pi}$

change 90° to radians: $90° \times \frac{\pi}{180} = \frac{90\pi \div 90}{180 \div 90} = \frac{\pi}{2}$

5. Find the exact value of the six trig functions.



$\sin\theta = \frac{O}{H}$	$\frac{3}{5}$	$\csc\theta = \frac{H}{O}$	$\frac{5}{3}$
$\cos\theta = \frac{A}{H}$	$\frac{4}{5}$	$\sec\theta = \frac{H}{A}$	$\frac{5}{4}$
$\tan\theta = \frac{O}{A}$	$\frac{3}{4}$	$\cot\theta = \frac{A}{O}$	$\frac{4}{3}$

Use $a^2+b^2=c^2$

$a^2+3^2=5^2$

$a^2+9=25$

$-9 \quad -9$

$\sqrt{a^2}=\sqrt{16}$

$a=4$

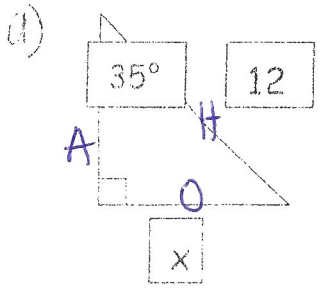
SOH CAH TOA

Csc Sec Cot

SOH CAH TOA

6. Find x.

a)



$\sin\theta = \frac{O}{H}$

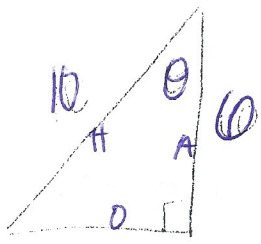
$\sin 35° = \frac{X}{12}$

$X = 12 \cdot \sin 35°$

$\boxed{X = 6.88}$

Find θ

b)



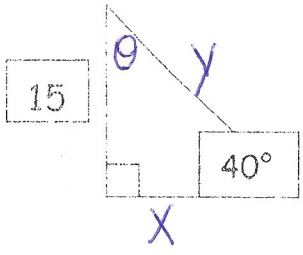
$\cos\theta = \frac{A}{H}$

$\cos\theta = \frac{6}{10}$

$\cos^{-1}\cos\theta = \cos^{-1}0.6$

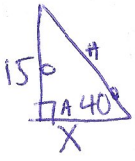
$\boxed{\theta = 53.1°}$

7. Solve the right triangle.



$\theta = 180 - (90 + 40)$

$\boxed{\theta = 50°}$



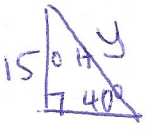
$\tan\theta = \frac{O}{A}$

$\tan 40° = \frac{15}{X}$

$X \cdot \tan 40° = 15$

$\frac{X \cdot \tan 40°}{\tan 40°} = \frac{15}{\tan 40°}$

$\boxed{X = 17.88}$



$\sin\theta = \frac{O}{H}$

$\sin 40° = \frac{15}{y}$

$y \cdot \sin 40° = 15$

$\frac{y \cdot \sin 40°}{\sin 40°} = \frac{15}{\sin 40°}$

$\boxed{y = 23.34}$

**Find the exact value of the trig function.

8. $\cot 210° = \frac{x}{y} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}}$ Flip

$(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$ x y

$= +\frac{\sqrt{3}}{2} \cdot \frac{+2}{1}$

$= \boxed{\sqrt{3}}$

9. $\sin 300° = y = \boxed{-\frac{\sqrt{3}}{2}}$

$(\frac{1}{2}, -\frac{\sqrt{3}}{2})$

10. $\tan(-60°) = \frac{y}{x}$

$+360$

$300°$

$(\frac{1}{2}, -\frac{\sqrt{3}}{2})$

$= \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}}$ Flip

$= -\frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \boxed{-\sqrt{3}}$

11. $\csc\frac{11\pi}{3} = \frac{1}{y}$

$\frac{11\pi}{3} - \frac{2\pi \cdot 3}{1 \cdot 3} = \frac{11\pi}{3} - \frac{6\pi}{3} = \frac{5\pi}{3}$

$(\frac{1}{2}, -\frac{\sqrt{3}}{2})$ y

$\frac{1}{-\frac{\sqrt{3}}{2}} = 1 \cdot -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{\sqrt{3}\sqrt{3}} = \boxed{-\frac{2\sqrt{3}}{3}}$