EMA
Geometry Test Review

SOHCAHTOA Superstar: ____________________
Date: ______________ Period: ______

Simplify the expressions. No decimals.

1.) $\sqrt{300}$

$3 \cdot 100$

$10 \cdot 10$

$2 \cdot 5 \cdot 2 \cdot 5$

$\boxed{10\sqrt{3}}$

2.) $2\sqrt{90}$

$9 \cdot 10$

$3 \cdot 3 \quad 2 \cdot 5$

$\boxed{6\sqrt{10}}$

3.) $9\sqrt{2}\cdot 4\sqrt{6}$

$36\sqrt{12}$

$4 \cdot 3$

$2 \cdot 2$

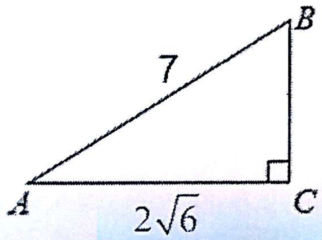
$\boxed{72\sqrt{3}}$

Find the value of sine, cosine, and tangent for the indicated angles. Simplify your results.

4.) sin A = $\frac{5}{7}$ sin B = $\frac{2\sqrt{6}}{7}$

cos A = $\frac{2\sqrt{6}}{7}$ cos B = $\frac{5}{7}$

tan A = $\frac{5}{2\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{5\sqrt{6}}{12}$ tan B = $\frac{2\sqrt{6}}{5}$



$(2\sqrt{6})^2 + a^2 = 7^2$

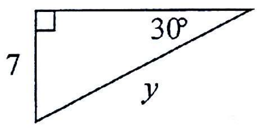
$24 + a^2 = 49$

$a^2 = 25$

$a = 5$

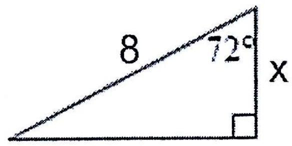
Find the value of each variable. Round your answers to the nearest hundredth.

5.)



$\boxed{y = 14}$

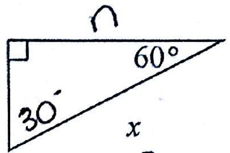
6.)



$\frac{\cos 72°}{1} \times \frac{x}{8}$

$\boxed{x = 2.47}$

7.)



30	60	90
n	$n\sqrt{3}$	$2n$
	3	

$n\sqrt{3} = 3$

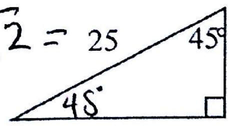
$n = \frac{3}{\sqrt{3}}$

$n = \frac{3\sqrt{3}}{3}$

$n = \sqrt{3}$

$\boxed{x = 2\sqrt{3}}$

8.)



$n = \boxed{\frac{25\sqrt{2}}{2}}$

45	45	90
n	n	$n\sqrt{2}$
		25

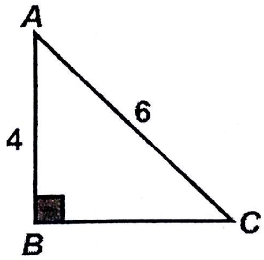
$n\sqrt{2} = 25$

$n = \frac{25}{\sqrt{2}}$

$n = \frac{25\sqrt{2}}{2}$

Solve each right triangle. Round your answers to the nearest hundredth.

9.)



BC = $2\sqrt{5}$

$m\angle A =$ 48.19°

$m\angle C =$ 41.81°

$4^2 + a^2 = 6^2$

$16 + a^2 = 36$

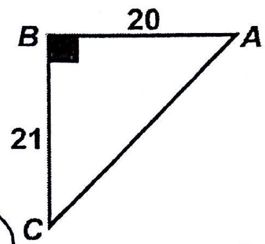
$a^2 = 20$

$a = 2\sqrt{5}$

$\cos A = 4/6$

$A = \cos^{-1}(4/6)$

10.)



AC = 29

$m\angle A =$ 46.34°

$m\angle C =$ 43.66°

$20^2 + 21^2 = AC^2$

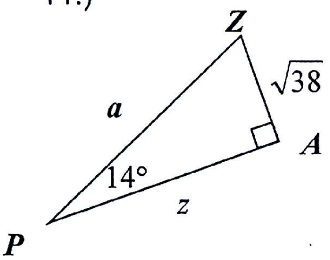
$\sqrt{841} = \sqrt{AC^2}$

$29 = AC$

$\tan A = \frac{21}{20}$

$A = \tan^{-1}\left(\frac{21}{20}\right)$

11.)



a = 25.48

z = 24.72

$m\angle Z =$ 76°

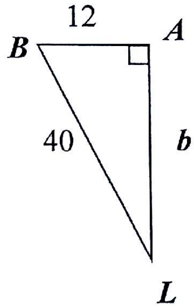
$\frac{\sin 14^\circ}{1} = \frac{\sqrt{38}}{a}$

$a \sin 14^\circ = \sqrt{38}$

$a = \frac{\sqrt{38}}{\sin 14^\circ}$

$a = 25.48$

12.)



b = $4\sqrt{91}$

$m\angle L =$ 17.46°

$m\angle B =$ 72.54°

$\sqrt{b^2} = \sqrt{1456}$

4 364

2 2 4 91

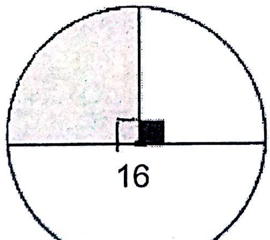
2 2 7 13

$\sin L = \frac{12}{40}$

$L = \sin^{-1}\left(\frac{12}{40}\right)$

Find the area and perimeter of the shaded region. Round your answers to the nearest hundredth.

13.)



$A_{\odot} = \pi(8)^2 = 64\pi$

$A_{sr} = \frac{1}{4}(64\pi)$

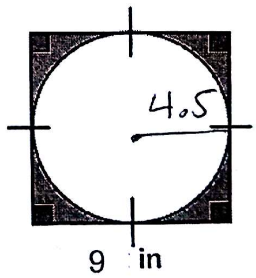
Area = 16π or 50.25 units^2

Perimeter = 4π or 12.57 units

$C_{\odot} = 16\pi$

$C_{sr} = \frac{1}{4}(16\pi)$

14.)



$A_{\square} = 9^2 = 81$

$A_{\odot} = (4.5)^2\pi$

$= 20.25\pi$

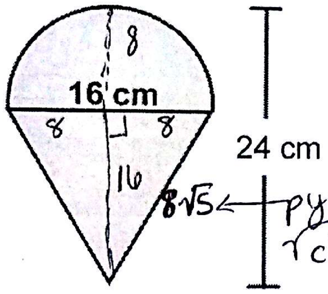
$81 - 20.25\pi$

Area = 17.38 in^2

Perimeter = 36 in

15.)

$C = 16\pi$
$\frac{1}{2}C = 8\pi$



$8\sqrt{5} \leftarrow$ pythagorean thm.

$c^2 = \sqrt{320}$

$A_{\triangle} = \frac{1}{2}(16)(16) = 128$

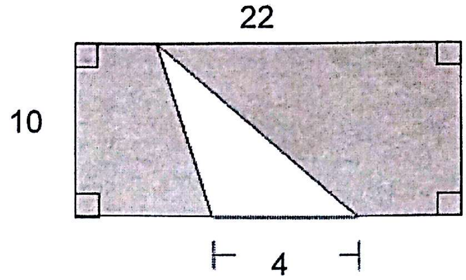
$A_{\ominus} = \pi(8)^2 = 64\pi$ but times $\frac{1}{2}$ for semi-circle $= 32\pi$

Area = $\underline{228.53 \text{ cm}^2}$

Perimeter = $\underline{60.91 \text{ cm}}$

$8\pi + \cancel{8}\sqrt{5} + 8\sqrt{5}$

16.)



$A_{\square} = 10 \cdot 22 = 220$

$A_{\triangle} = \frac{1}{2}(4)(10) = 20$

Area = $\underline{200 \text{ units}^2}$

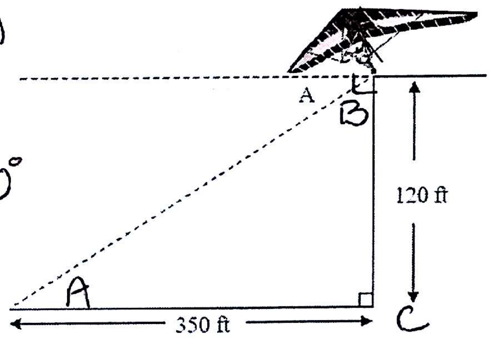
Perimeter = $\underline{60 \text{ units}}$

$10 + 22 + 10 + 22 - 4$

Draw a picture and solve the problem (round to the nearest hundredth). Don't forget to label your answer.

17.) Alicia is hang gliding off a cliff that is 120ft high. She needs to travel 350ft horizontally to reach his destination. To the nearest degree, what is the angle of depression, A?

2 ways. Place A as angle of elevation and solve: $A = \tan^{-1}\left(\frac{120}{350}\right) = \boxed{A = 18.92°}$

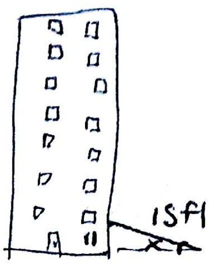


OR: Find ∠B then subtract from 90°

$B = \tan^{-1}\left(\frac{350}{120}\right) = 71.08°$

$90 - 71.08° = \boxed{18.92°}$

18.) Danny is trying to reach a window with a ladder that is 15ft long. Find the angle of elevation that the ladder must form with the ground in order to reach a window that is 11ft high.



$\sin x = \frac{11}{15}$

$x = \sin^{-1}\left(\frac{11}{15}\right)$

$\boxed{x = 47.17°}$