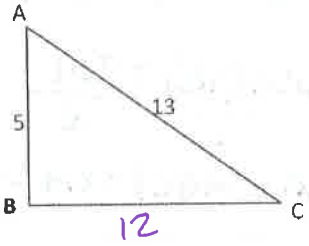
Unit 3 Test Study Guide

Name Answers... No cap... S: ____

Sin = $\frac{o}{h}$ Cos = $\frac{a}{h}$ Tan = $\frac{o}{a}$

Use the triangle to the right for questions 1-5.

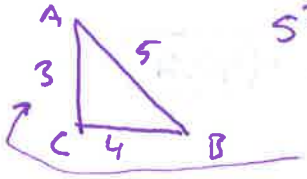


1. $\overline{BC}$ = 12
2. Tan C = $\frac{5}{12}$
3. Sin A = $\frac{12}{13}$
4. Find $m\angle A$ 22.6°
5. Find $m\angle C$ 67.4°

$5^2 + b^2 = 13^2$
$-5^2 \quad -5^2$
$b^2 = 144$
$b = 12$

Use whichever inverse you want

6. In ΔABC, where $\angle ACB = 90°$, $\sin A = \frac{4}{5}$. Find cos *A*. Draw a diagram.

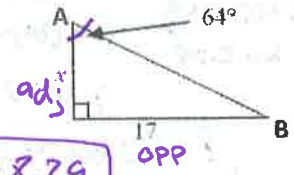


$5^2 - 4^2 = b^2$
$9 = b^2$
$3 = b$

$\cos(A) = \frac{3}{5}$

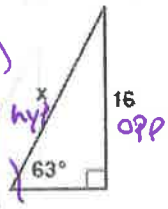
Find the missing side or angle in the following triangles

7. $\tan(64) = \frac{17}{x}$
$x \cdot \tan(64) = 17$
$x = \frac{17}{\tan(64)}$ → $x = 8.29$



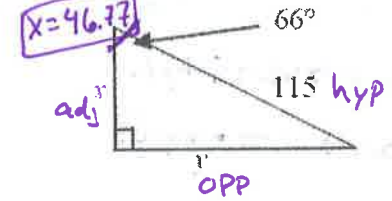
8. $\sin^{-1}\left(\frac{10}{39}\right) = ?$
$? = 14.86°$

9. $\frac{\sin(63)}{1} = \frac{16}{x}$
$x \cdot \sin(63) = 16$
$\frac{x \cdot \sin(63)}{\sin(63)} = \frac{16}{\sin(63)}$
$x = \frac{16}{\sin(63)}$
$x = 17.96$

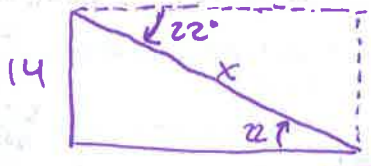


10. $\sin(66) = \frac{y}{115}$
$115 \cdot \sin(66) = y$
$y = 105.06$

$\cos(66) = \frac{x}{115}$
$x = 46.77$

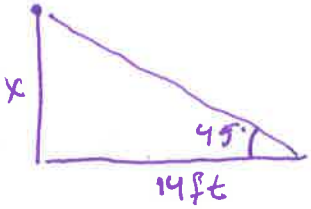


11. The top of a waterslide is 14 ft above the ground. The angle of depression from the top of the water slide to the ground is 22°. How long is the slide?



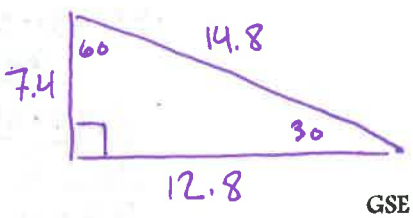
$\angle AOD = \angle AOE$
$\sin(22) = \frac{14}{x}$
$x = \frac{14}{\sin(22)}$
$x = 37.37$ ft

12. A pole casts a shadow that is 14 ft long. The angle of elevation is 45°. What is the length of the pole?



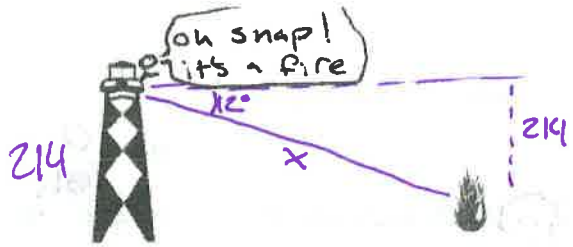
$\tan(45) = \frac{x}{14}$
$14 \cdot \tan(45) = x$
$x = 14$ ft

13. The shorter leg of a 30-60-90 triangle is 7.4 meters long. Find the triangle's perimeter.



$P = 7.4 + 14.8 + 12.8 = 35$ m

14. A forest ranger is on a fire lookout tower in a national forest. His observation post is 214 ft above the ground. He spots a fire. The angle of depression from his line of sight to the fire is 12°. How far away is the fire from the lookout tower in terms of line of sight?



$\frac{\sin(12)}{1} = \frac{214}{x}$ → $x = \frac{214}{\sin(12)}$ → $x = 1029.28$ ft

$x \cdot \sin(12) = 214$

15. Find angles X and Z.

$\cos^{-1}\left(\frac{21}{35}\right) = x$

$x = 53.13°$

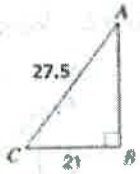
$\sin^{-1}\left(\frac{21}{35}\right) = Z$

$Z = 36.87°$

16. Find angles A and C.

$\sin^{-1}\left(\frac{21}{27.5}\right) = A$

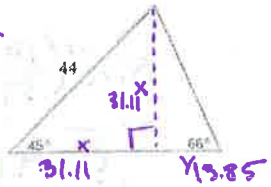
$A = 49.79$



$C = 90 - 49.79 = 40.21°$

Find the area of ~~each~~ this triangle

17.



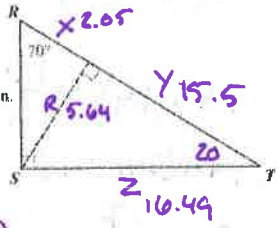
$\sin(45) = \frac{x}{44}$ $\tan(66) = \frac{31.11}{y}$

$x = 31.11$ $y = 13.85$

$\frac{B \cdot h}{2} = \frac{1398.7056}{2} = 699.35$

Find the perimeter of this triangle.

18.



$\sin(70) = \frac{R}{6}$ $\sin(20) = \frac{5.64}{z}$

$R = 5.64$ $z = 16.49$

$\cos(70) = \frac{x}{6}$ $\tan(20) = \frac{5.64}{y}$

$x = 2.05$ $y = 15.5$

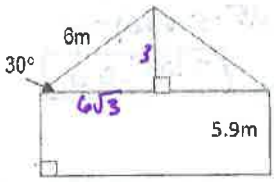
$P = 40.04 \approx 40$ in

For questions 19 - 22, leave your answer in simplest radical form.

19. What is the heigth of the house?

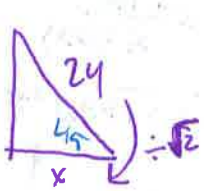
hyp → SL = ÷ by 2

SL → LL = • by $\sqrt{3}$



height = 8.9 m

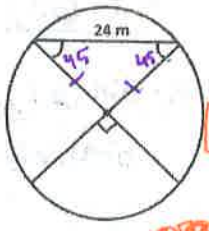
20. What is the area of the circle?



$\frac{24}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$

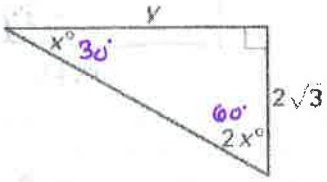
$\frac{24\sqrt{2}}{2}$

$12\sqrt{2}$ m → $\frac{12\sqrt{2} \cdot 12\sqrt{2}}{2}$



Area = πr^2 → $\pi \cdot (12\sqrt{2})^2$ → 288π or 904.78 m^2

21.



$x + 2x = 90°$

$3x = 90°$

$x = 30°$

SL → LL = • by $\sqrt{3}$

so...

$2\sqrt{3} \cdot \sqrt{3} = 2\sqrt{9}$ → $2 \cdot 3 = 6$

22. The figure below is a parallelogram which has an area of b x h. Find its area.

$x = \frac{22}{\sqrt{3}} = \frac{22\sqrt{3}}{3} = 12.7$

$30 \cdot 22 = 660$ cm

$\left(\frac{12.7 \cdot 22}{2}\right) \cdot 2 = 279.44$

939.44 cm^2