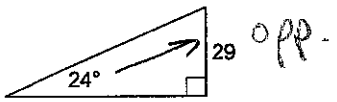
Geometry B Name KEY

Ch. 5 Review

Hour____

Find the missing side. Round to the nearest tenth. Or hundredth

1)



opp.

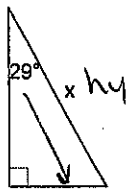
adj

$$\frac{\tan 24}{1} = \frac{29}{x}$$

$$\frac{x \cdot \tan 24}{\tan 24} = \frac{29}{\tan 24}$$

$$x = 65.14$$

2)



hyp.

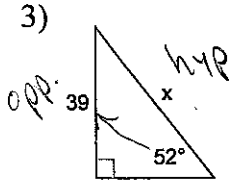
opp.

$$\frac{\sin 29^\circ}{1} = \frac{24}{x}$$

$$\frac{x \cdot \sin 29^\circ}{\sin 29} = \frac{24}{\sin 29}$$

$$x = 49.5$$

3)



opp.

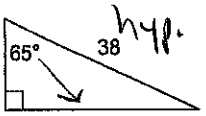
hyp.

$$\frac{\sin 52}{1} = \frac{39}{x}$$

$$\frac{x \cdot \sin 52}{\sin 52} = \frac{39}{\sin 52}$$

$$x = 49.49$$

4)



adj

hyp.

$$\frac{\cos 65}{1} = \frac{x}{38}$$

$$x = 38 \cdot \cos 65$$

$$x = 16.06$$

Find each angle measure to the nearest degree.

5) $\cos Y = 0.8480$

$Y = \cos^{-1}(0.8480)$

$Y = 32°$

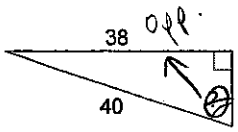
6) $\cos Z = 0.9986$

$Z = \cos^{-1}(0.9986)$

$Z = 3.03°$

Find the measure of the indicated angle to the nearest degree.

7)

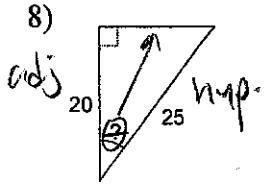


$\sin\theta = \frac{38}{40}$

$\theta = \sin^{-1}\left(\frac{38}{40}\right)$

$\theta = 71.81°$

8)

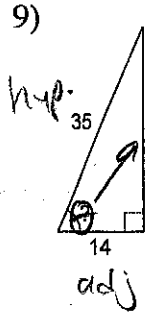


$\cos\theta = \frac{20}{25}$

$\theta = \cos^{-1}\left(\frac{20}{25}\right)$

$\theta = 36.87°$

9)

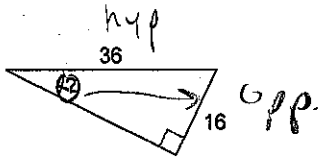


$\cos\theta = \frac{14}{35}$

$\theta = \cos^{-1}\left(\frac{14}{35}\right)$

$\theta = 66.42°$

10)

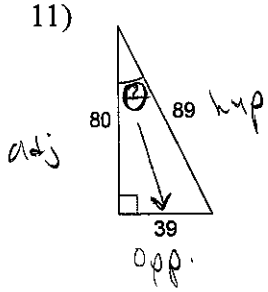


$\sin\theta = \frac{16}{36}$

$\theta = \sin^{-1}\left(\frac{16}{36}\right)$

$\theta = 26.39°$

11)

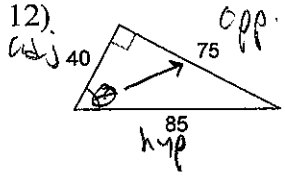


Pick one: $\cos^{-1}\left(\frac{80}{89}\right) = 25.99°$

$\sin^{-1}\left(\frac{39}{80}\right) = 25.99°$

$\tan^{-1}\left(\frac{39}{80}\right) = 25.99°$

12)



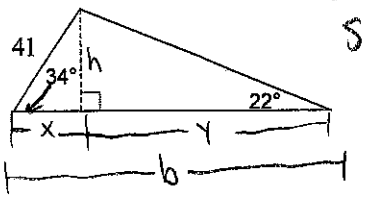
Pick one: $\cos^{-1}\left(\frac{40}{85}\right) = 61.93°$

$\sin^{-1}\left(\frac{75}{85}\right) = 61.93°$

$\tan^{-1}\left(\frac{75}{40}\right) = 61.93°$

Find the area of the triangle. Show all work.

13)



2 ways shown below!

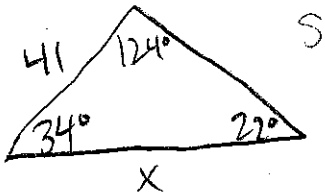
$\frac{\sin 34}{1} = \frac{h}{41}$ $\frac{\cos 34}{1} = \frac{x}{41}$

$h = 22.93$ $x = 33.99$

$\frac{\tan 22}{1} = \frac{22.93}{y}$ $b = 56.75 + 33.99$

$y = 56.75$ $A_\Delta = \frac{90.74 \cdot 22.93}{2}$

$A_\Delta = 1040.29\ u^2$



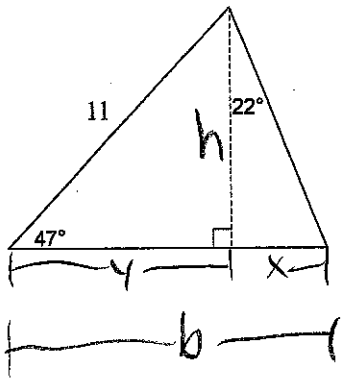
$\frac{\sin 124}{x} = \frac{\sin 22}{41}$

$x = 90.74$

$A_\Delta = \frac{1}{2} \cdot (90.74)(41) \cdot \sin 34$

$A_\Delta = 1040.16\ u^2$

14)



$\frac{\sin 47}{1} = \frac{h}{11}$ $\frac{\cos 47}{1} = \frac{y}{11}$

$h = 8.04$ $y = 7.5$

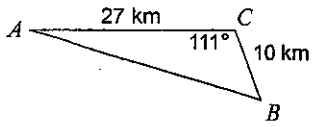
$\frac{\tan 22}{1} = \frac{x}{8.04}$ $b = 7.5 + 3.25$

$x = 3.25$ $A_\Delta = \frac{10.75 \cdot 8.04}{2}$

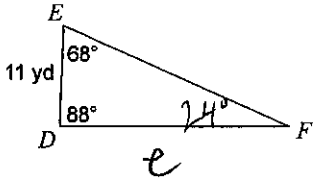
$A_\Delta = 43.22\ u^2$

For #'s 15-18, find each measurement indicated. Round your final answers to the nearest tenth.

15) Find AB



16) Find DF

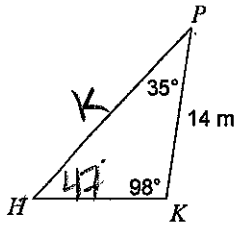


$$\frac{\sin 68}{e} = \frac{\sin 24}{11}$$

$$\frac{e \cdot \sin 24}{\sin 24} = \frac{11 \cdot \sin 68}{\sin 24}$$

$$e = 25.08 \text{ yd}$$

17) Find HP

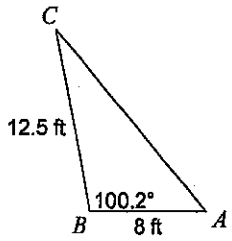


$$\frac{\sin 98}{K} = \frac{\sin 47}{14}$$

$$\frac{K \cdot \sin 47}{\sin 47} = \frac{14 \cdot \sin 98}{\sin 47}$$

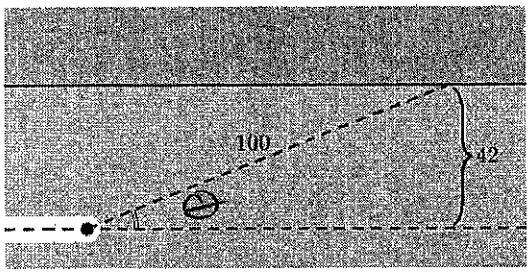
$$K = 18.96 \text{ m}$$

18) Find AC



19. Bugs Bunny was 42 meters below ground, digging his way toward Albuquerque, when he realized he wanted to be above ground. He turned and dug through the dirt diagonally for 100 meters until he was above ground.

What angle did Bugs have to dig at to reach the surface?



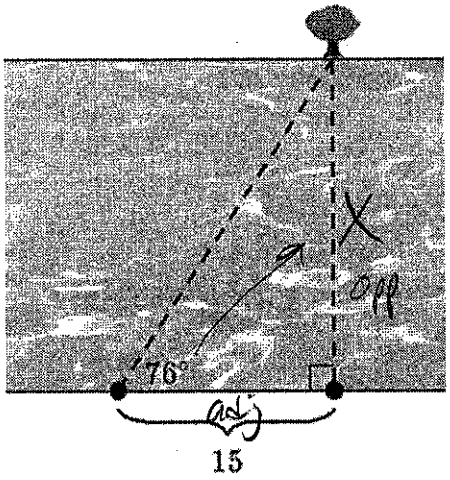
$$\sin\theta = \frac{42}{100}$$

$$\theta = \sin^{-1}\left(\frac{42}{100}\right) = \boxed{24.83^\circ}$$

20. The people of Bridgetown wanted to build a bridge across a nearby river. Since they were poor swimmers, their master Trigonomos agreed to measure the width of the river without actually crossing it.

Trigonomos spotted a tree across the river and marked the spot directly across from it. Then he walked to another point 15 meters down the river and found that the angle between his side of the river and the line connecting him to the tree was 76°.

How wide is the river?



$$\frac{\tan 76}{1} = \frac{X}{15}$$

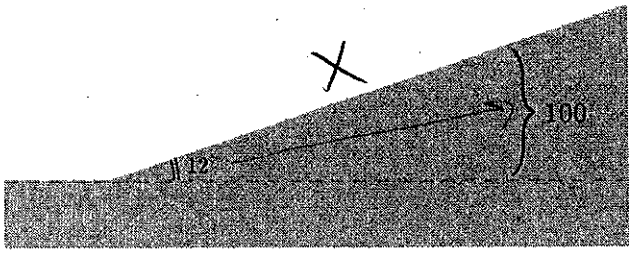
$$X = 15 \cdot \tan 76$$

$$\boxed{X = 60.16\text{m}}$$

21. Galileo wanted to release a wooden ball and an iron ball from a height of 100 meters and measure the duration of their fall.

He found a plane with an incline of 12° that he could climb until he could get to an altitude of 100 m.

How far should Galileo walk up the inclined plane?

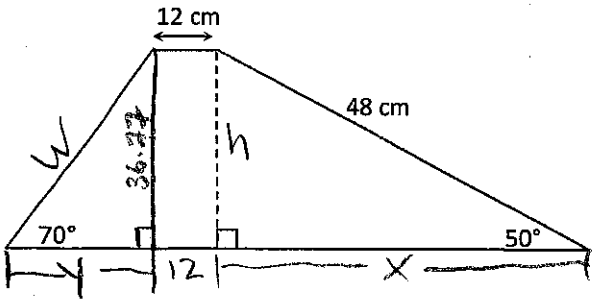


$$\frac{\sin 12}{1} = \frac{100}{X}$$

$$\frac{X \cdot \sin 12}{\sin 12} = \frac{100}{\sin 12}$$

$$\boxed{X = 480.97\text{m}}$$

22. Find the area and perimeter of the figure below. Not drawn to scale. Show all work!



$\frac{\sin 50}{1} = \frac{h}{48}$ → $h = 36.77\text{cm}$

$\frac{\cos 50}{1} = \frac{x}{48}$ → $x = 30.85\text{cm}$

$\tan 70 = \frac{36.77}{y}$ → $y = 13.38\text{cm}$

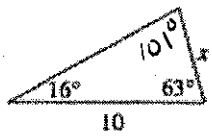
$\frac{\sin 70}{1} = \frac{36.77}{w}$ → $w = 39.13\text{cm}$

AREA: $1254.41\ \text{cm}^2$ $A = \frac{(12+56.23)\cdot 36.77}{2}$

PERIMETER: $155.36\ \text{cm}$

23. While working on homework, Zachary was finding the value of each variable in the diagrams below. His first step for each problem is shown under the diagram. If his first step is correct, continue solving the problem to find the solution. If his first step is incorrect, explain his mistake and solve the problem correctly.

a.



$\sin 16° = \frac{x}{10}$

She does not work on a non-right Δ. Zachary should use the Law of Sines.

$\frac{\sin 101}{10} = \frac{\sin 16}{x}$

$\frac{x \cdot \sin 101}{\sin 101} = \frac{10 \sin 16}{\sin 101}$

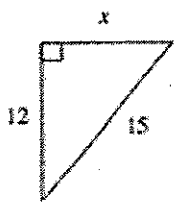
$x = 2.81$

b.

$x^2 = 10^2 + 70^2 - 2(10)(70)\cos 50°$

24. In parts (a) and (b), use what you know about Pythagorean Theorem to find the third side quickly. In parts (c) and (d), give all possible lengths (don't find the actual length) for the third side of the triangle.

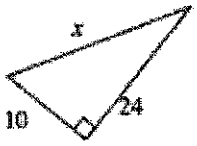
a.



$x^2+12^2=15^2$

$x=9$

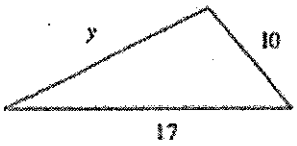
b.



$10^2+24^2=x^2$

$x=26$

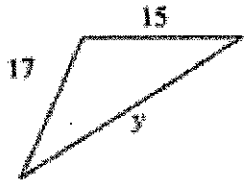
c.



$17-10 \qquad 17+10$

$7<y<27$

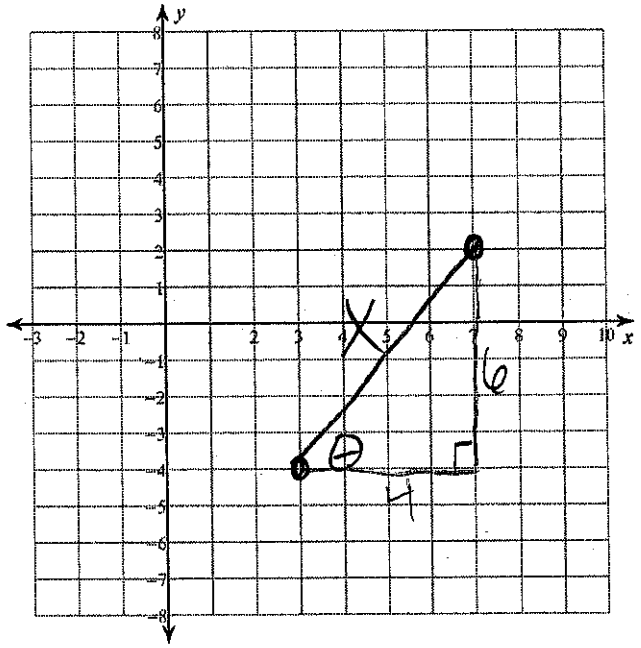
d.



$17-15 \qquad 17+15$

$2<y<32$

25. Graph the points (3, –4) and (7, 2) on graph paper and draw the line segment and a slope triangle that connects the points.



Find:

a. The length of the segment

b. The slope of the line segment

c. The area of the slope triangle

d. The measure of the slope angle

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

$x=7.21$

b) $\frac{6}{4}=\frac{3}{2}$

c) $A_\Delta=\frac{6\cdot4}{2}=12u^2$

d) $\tan^{-1}\left(\frac{6}{4}\right)=56.31°=\theta$