Geometry

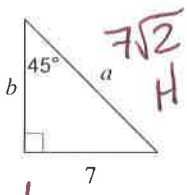
Name Key

Chapters 5.5/10 Review

Date _____ Block ____

Find the missing side lengths. Leave your answers as radicals in simplest form.

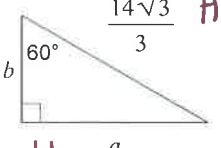
1)



L → H

$7 \cdot \sqrt{2} = 7\sqrt{2}$

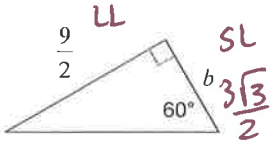
2)



SL → LL

$\frac{7\sqrt{3}}{3} \cdot \sqrt{3} = \frac{7\sqrt{9}}{3} = \frac{7 \cdot 3}{3} = \frac{21}{3} = 7$

3)



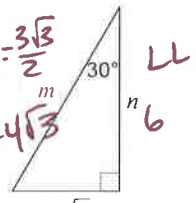
LL → SL

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

SL → H

$\frac{3\sqrt{3}}{2} \cdot 2 = \frac{6\sqrt{3}}{2} = 3\sqrt{3}$

4)



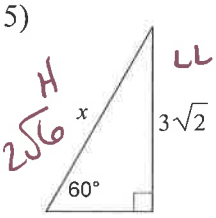
SL → LL

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

SL → H

$2\sqrt{3} \cdot 2 = 4\sqrt{3}$

5)



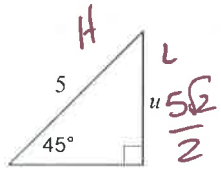
LL → SL

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

SL → H

$\sqrt{6} \cdot 2 = 2\sqrt{6}$

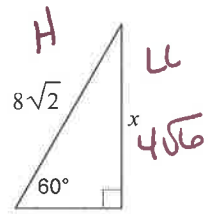
6)



H → L

$\frac{5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{4}} = \frac{5\sqrt{2}}{2}$

7)



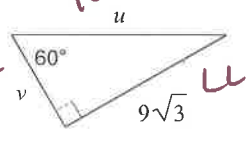
H → SL

$\frac{8\sqrt{2}}{2} = 4\sqrt{2}$

SL → LL

$4\sqrt{2} \cdot \sqrt{3} = 4\sqrt{6}$

8)



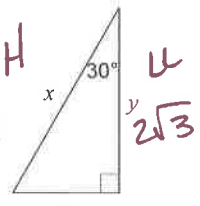
LL → SL

$\frac{9\sqrt{3}}{\sqrt{3}} = 9$

SL → H

$9 \cdot 2 = 18$

9)



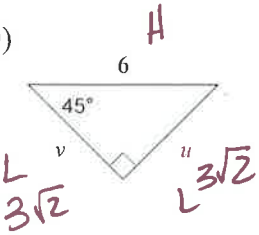
SL → LL

$2 \cdot \sqrt{3} = 2\sqrt{3}$

SL → H

$2 \cdot 2 = 4$

10)

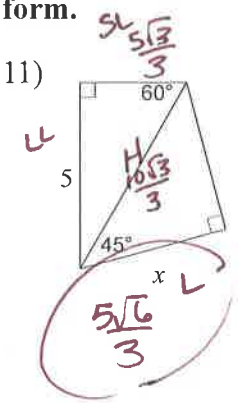


H → L

$\frac{6}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{\sqrt{4}} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$

****CHALLENGE** Find the missing side lengths. Leave your answers as radicals in simplest form.**

11)



LL → SL

$\frac{5}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{5\sqrt{3}}{\sqrt{9}} = \frac{5\sqrt{3}}{3}$

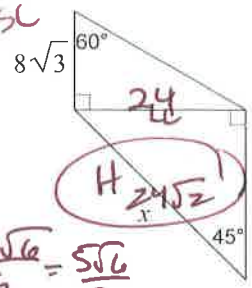
SL → H

$\frac{5\sqrt{3}}{3} \cdot 2 = \frac{10\sqrt{3}}{3}$

H → L

$\frac{10\sqrt{3}}{3\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{10\sqrt{6}}{3 \cdot 4} = \frac{10\sqrt{6}}{3 \cdot 2} = \frac{10\sqrt{6}}{6} = \frac{5\sqrt{6}}{3}$

12)



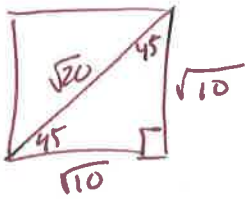
SL → LL

$8\sqrt{3} \cdot \sqrt{3} = 8\sqrt{9} = 8 \cdot 3 = 24$

L → H

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

13) The diagonal of a square is $\sqrt{20}$. Find its perimeter and area.



H → L

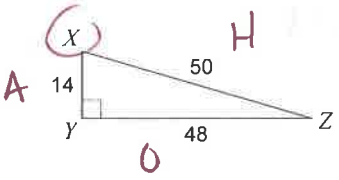
$\frac{\sqrt{20}}{\sqrt{2}} = \sqrt{10}$

$P = 4 \cdot \sqrt{10} = 4\sqrt{10}$ units

$A = \sqrt{10} \cdot \sqrt{10} = 10$ units^2

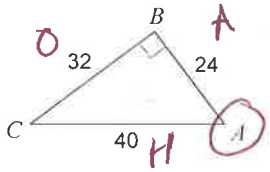
Find the value of each trigonometric ratio. Reduce all fractions.

14) cos *X*



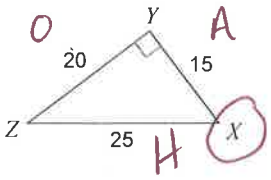
$\frac{14}{50} = \frac{7}{25}$

15) cos *A*



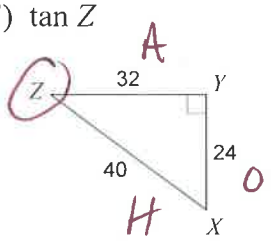
$\frac{24}{40} = \frac{3}{5}$

16) sin *X*



$\frac{20}{25} = \frac{4}{5}$

17) tan *Z*



$\frac{24}{32} = \frac{3}{4}$

Find the value of each trigonometric ratio to the nearest ten-thousandth.

18) sin 12° .2079

19) sin 23° .3907

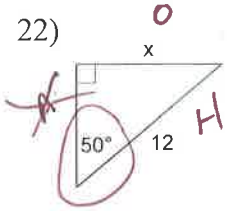
Find each angle measure to the nearest degree.

20) cos V = 0.6947 46°

21) tan V = 1.4826 56°

Find the missing side. Round to the nearest tenth.

22)

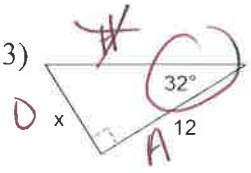


$\sin(50) = \frac{x}{12}$

$12 \cdot \sin(50) = x$

$9.2 = x$

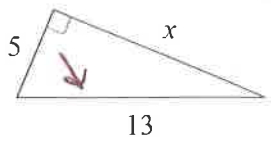
23)



$\tan(32) = \frac{x}{12}$

$12 \cdot \tan(32) = x$

$7.5 = x$

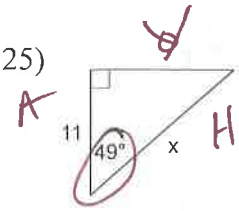
24) 

$5^2 + x^2 = 13^2$

$25 + x^2 = 169$

$x^2 = 144$

$x = 12$

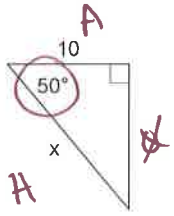
25) 

$\frac{\cos(49)}{1} = \frac{11}{x}$

$x\cos(49) = 11$

$x = \frac{11}{\cos(49)}$

$x = 16.8$

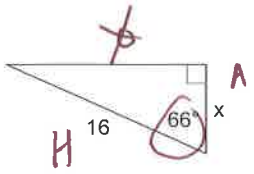
26) 

$\frac{\cos(50)}{1} = \frac{10}{x}$

$x\cos(50) = 10$

$x = \frac{10}{\cos(50)}$

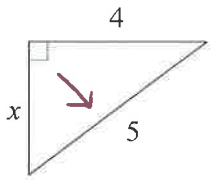
$x = 15.6$

27) 

$\frac{\cos(66)}{1} = \frac{x}{16}$

$16 \cdot \cos(66) = x$

$6.5 = x$

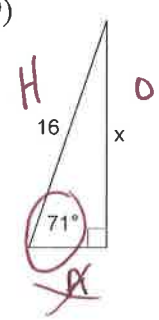
28) 

$x^2 + 4^2 = 5^2$

$x^2 + 16 = 25$

$x^2 = 9$

$x = 3$

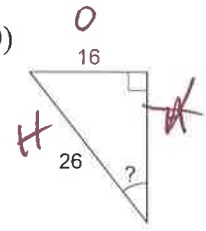
29) 

$\sin(71) = \frac{x}{16}$

$16 \cdot \sin(71) = x$

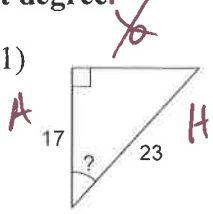
$15.1 = x$

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

30) 

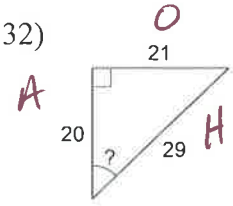
$\sin^{-1}\left(\frac{16}{26}\right) = \theta$

$\theta = 38°$

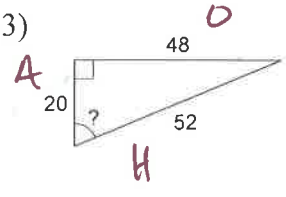
31) 

$\cos^{-1}\left(\frac{17}{23}\right) = \theta$

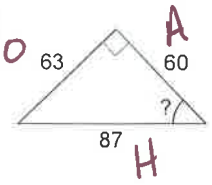
$\theta = 42°$

32) 

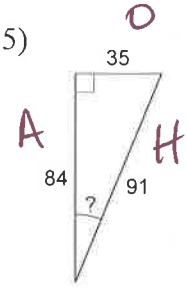
$\left.\begin{array}{l}\sin^{-1}\left(\frac{21}{29}\right)\\ \cos^{-1}\left(\frac{20}{29}\right)\\ \tan^{-1}\left(\frac{21}{20}\right)\end{array}\right\} = 46°$

33) 

$\left.\begin{array}{l}\sin^{-1}\left(\frac{48}{52}\right)\\ \cos^{-1}\left(\frac{20}{52}\right)\\ \tan^{-1}\left(\frac{48}{20}\right)\end{array}\right\} = 67°$

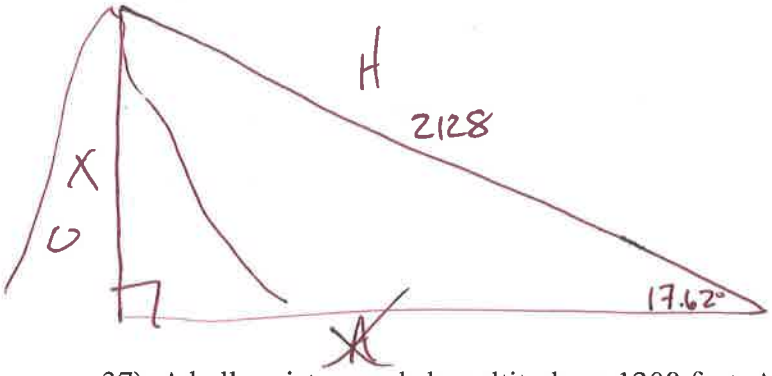
34) 

$\sin^{-1}\left(\frac{63}{87}\right)$
$\cos^{-1}\left(\frac{60}{87}\right)$ $= 46°$
$\tan^{-1}\left(\frac{63}{60}\right)$

35) 

$\sin^{-1}\left(\frac{35}{91}\right)$
$\cos^{-1}\left(\frac{84}{91}\right)$ $= 23°$
$\tan^{-1}\left(\frac{35}{84}\right)$

36) The gondola ski lift at Whistler Mountain in BC has a length of 2128 metres. The angle between the horizon and the gondola cable is 17.62°. How tall is the gondola ski lift, to the nearest tenth?

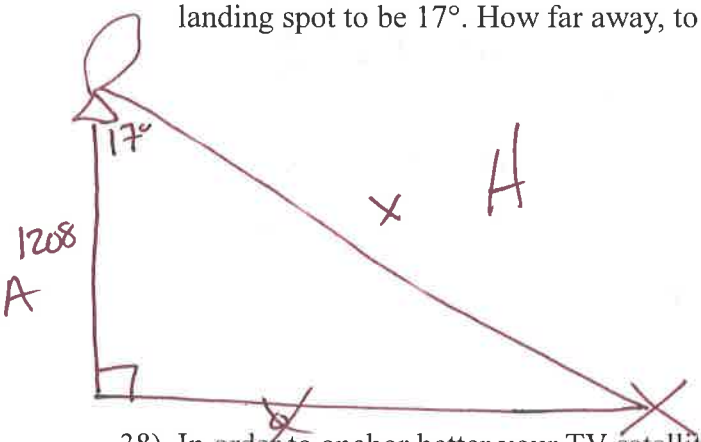


$\frac{\sin(17.62)}{1} = \frac{X}{2128}$

$2128 \cdot \sin(17.62) = X$

$644.2m = X$

37) A balloonist records her altitude as 1208 feet. At the same time she measures the angle of depression of the landing spot to be 17°. How far away, to the nearest foot, is the landing spot from the balloon?

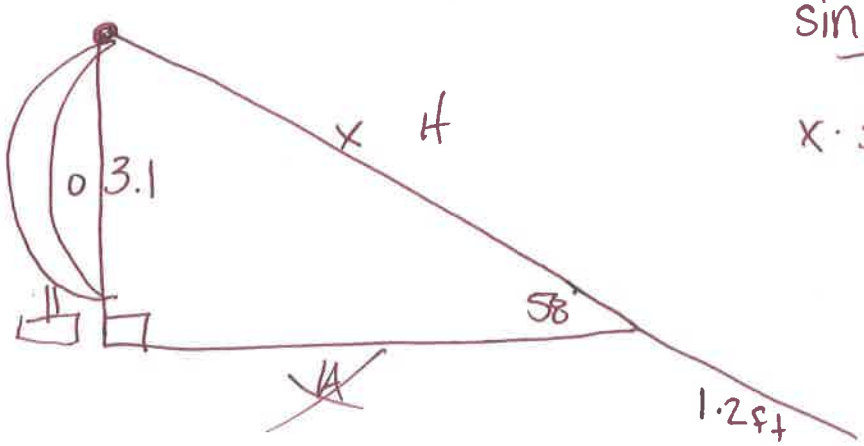


$\frac{\cos(17)}{1} = \frac{1208}{X}$

$X \cdot \cos(17) = 1208$

$X = \frac{1208}{\cos(17)} = 1263.2\,ft$

38) In order to anchor better your TV satellite dish you decide to attach a wire from its top to the ground. The top is at a height of 3.1 feet. For best results, you are told that the angle between the wire and the ground should be 58°. You decide the wire will need an extra 1.2 feet for fastening the wire to the dish and to the ground. How long a wire do you need to buy, to the nearest tenth?



$\frac{\sin(58)}{1} = \frac{3.1}{X}$

$X \cdot \sin(58) = 3.1$

$X = \frac{3.1}{\sin(58)} = 3.7$

$+ 1.2$

$4.9\,ft$