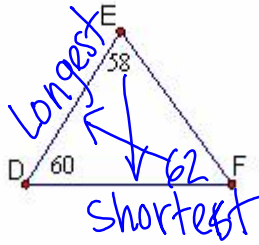


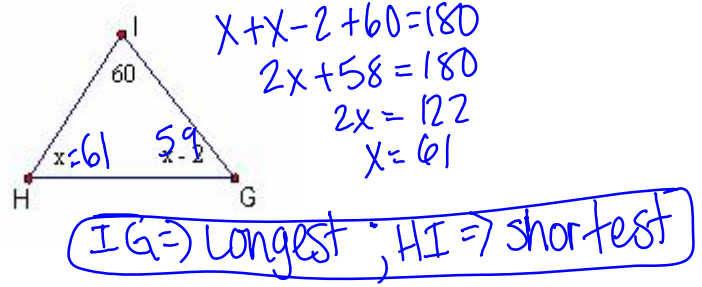
Midterm Review: Part I; Chapters 8-9

For #1-2, name the longest and shortest sides of the triangle.

1.

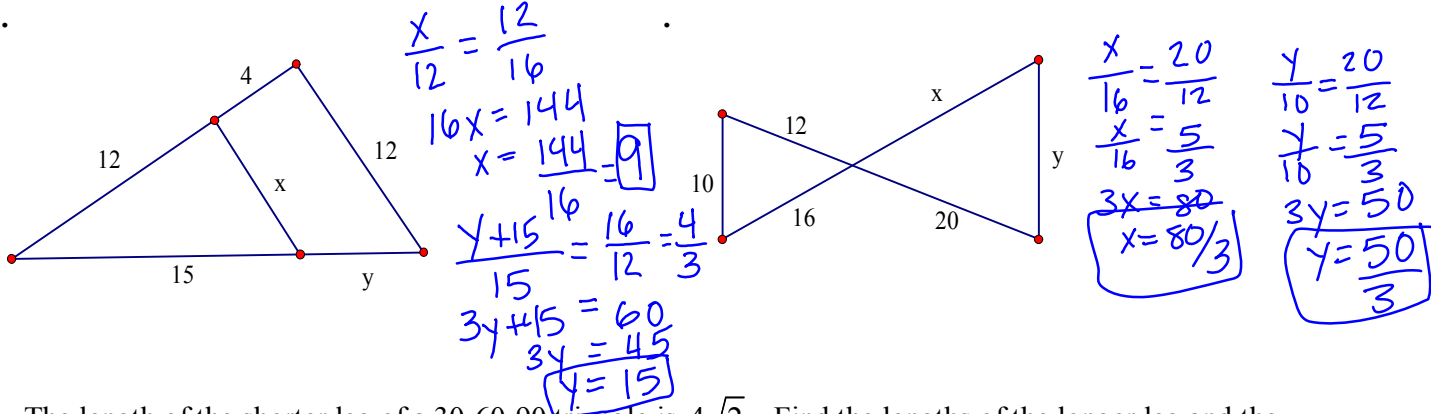


2.

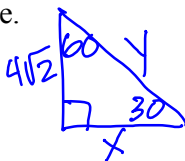


For #3-4, the triangles are similar. Solve for x and y.

3.

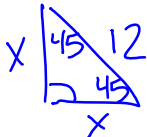


5. The length of the shorter leg of a 30-60-90 triangle is $4\sqrt{2}$. Find the lengths of the longer leg and the hypotenuse.



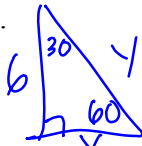
$x = 4\sqrt{2} \cdot \sqrt{3} = 4\sqrt{6}$
 $y = (4\sqrt{2})^2 = 8\sqrt{2}$

6. The length of the hypotenuse of a 45-45-90 triangle is 12. Find the lengths of the legs.



$x = \frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$

7. The length of the longer leg of a 30-60-90 triangle is 6. Find the length of the shorter leg and the length of the hypotenuse.



$x = \frac{6}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{6\sqrt{3}}{3} = 2\sqrt{3}$
 $y = (2\sqrt{3})^2 = 4\sqrt{3}$

8. The hypotenuse of a right triangle has length 12. If one leg of the triangle has a length of 4, find the length of the other leg.



$x^2 + 4^2 = 12^2$
 $x^2 = 144 - 16$
 $x = \sqrt{128} = 8\sqrt{2}$

9. Find the geometric mean of 4 and 9.

$x^2 = 4 \cdot 9$
 $x = \sqrt{36} = 6$

Geometry

Midterm Review: Part I; Chapters 8-9

10. Classify the triangle with the given side lengths as obtuse, acute, right, or not possible:

a. 4, 5, 6

b. 13, 1, 17

c. 15, 7, 8

$6^2 < 4^2 + 5^2$
 $36 < 16 + 25$

\triangle is acute

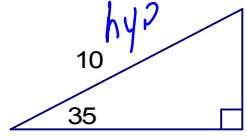
$13 + 1 \neq 17$

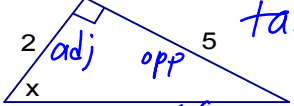
NOT possible

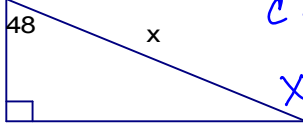
$7 + 8 \neq 15$

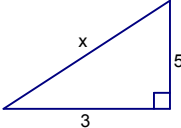
NOT POSSIBLE

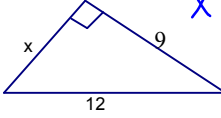
Solve for x; round to the nearest tenth:

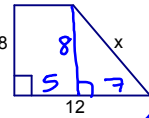
(11)  $\sin 35 = \frac{x}{10}$
 $x = 10 \sin 35$
 $x = 5.7$

(12)  $\tan x = \frac{5}{2}$
 $x = \tan^{-1}(\frac{5}{2})$
 $x = 68.2$

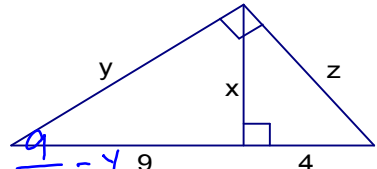
(13)  $\cos 48 = \frac{7}{x}$
 $x = \frac{7}{\cos 48}$
 $x = 10.5$

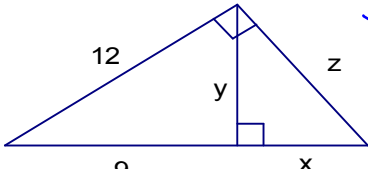
14.  $x^2 = 3^2 + (5\sqrt{3})^2$
 $x^2 = 9 + 75$
 $x = \sqrt{84}$
 $x = 2\sqrt{21}$

15.  $x^2 + 81 = 144$
 $x^2 = 63$
 $x = 3\sqrt{7}$

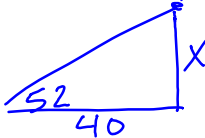
16.  $x^2 = 64 + 49$
 $x^2 = 113$
 $x = \sqrt{113}$

Solve for x, y, and z.

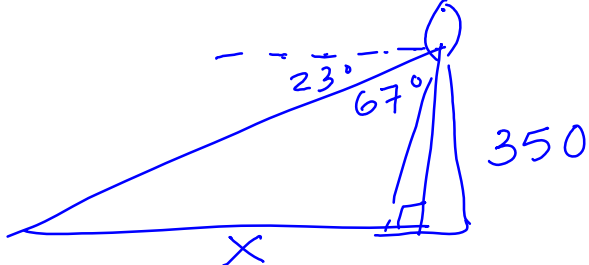
(17)  $\frac{9}{x} = \frac{x}{4}$
 $x^2 = 36$
 $x = 6$
 $\frac{y}{9} = \frac{4}{13}$
 $y = \frac{36}{13}$
 $z^2 = 4 \cdot 13$
 $z = 2\sqrt{13}$

(18)  $y^2 + 81 = 144$
 $y^2 = 63$
 $y = 3\sqrt{7}$
 $\frac{9}{3\sqrt{7}} = \frac{z}{x} \Rightarrow 9x = 9 \cdot 7$
 $x = 7$
 $z^2 = 7^2 + (3\sqrt{7})^2$
 $z^2 = 49 + 63$
 $z = \sqrt{112} = 4\sqrt{7}$

19. If the sun's angle of elevation is 52° and a flag pole casts a shadow that is 40 feet long, how tall is the flag pole?

 $\tan 52 = \frac{x}{40}$
 $x = 40 \tan 52 = 51.2$

20. From a lighthouse that is 350m above the shore, the angle of depression to a ship is 23°. How far is the ship from the shore?

 $\tan 67 = \frac{x}{350}$
 $x = (\tan 67)(350)$
 $x = 824.5$

Midterm Review: Part I; Chapters 8-9

21. If $m\widehat{FG} = 100^\circ$, find $m\widehat{FH}$

$m\widehat{GH} = 100$ (since $FG = GH$)

$m\widehat{FH} = 360 - 100 - 100 = 160$

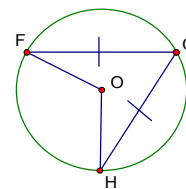
22. If $m\angle FGH = 40^\circ$, find $m\angle FOH$

23. If $m\widehat{GH} = 80^\circ$, find $m\angle FGH$

$m\widehat{FG} = 80$

$m\widehat{FH} = 360 - 160 = 200$

$m\angle FGH = \frac{1}{2} 200 = 100$ For #21-23.



24. If $m\widehat{KJ} = 80^\circ$ and $m\angle KLJ = 65$, find $m\widehat{MN}$

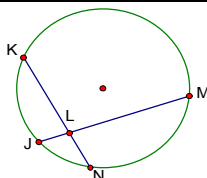
$65 = \frac{80 + x}{2}$

$130 = 80 + x$

$x = 50$

25. If $m\widehat{KM} = 170^\circ$ and $m\widehat{JN} = 20$, find $m\angle KLM$

$m\angle KLM = \frac{170 + 20}{2} = \frac{190}{2} = 95$



For #24-26.

26. If $JL = 2$, $LM = 8$, $KL = 6$, find LN .

$2 \cdot 8 = 6 \cdot x$

$x = 16/6 = 8/3$

For 27-28, refer to the diagram to the right:

27. If $QP = 4$, $TP = 5$, and $SR = 9$, find QR .

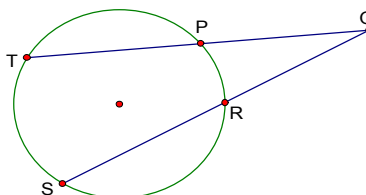
$4 \cdot 9 = x(x + 9)$

$x^2 + 9x - 36 = 0$ $(x - 3)(x + 9) = 0$

$x = 3$

28. If $m\widehat{TS} = 90^\circ$ and $m\widehat{PR} = 20$, find $m\angle Q$

$m\angle Q = \frac{90 - 20}{2} = \frac{70}{2} = 35$



Make sure to review the Chapter 8 and 9 Study Guides that I issued out throughout the school year.