

Directions: Complete the following problems showing all of your work. No calculator is allowed except for the trigonometric problems.

1. Find the geometric mean of 9 and 11.

$$= \sqrt{9(11)}$$

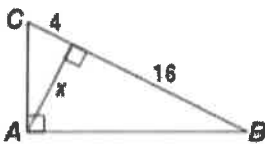
$$= 3\sqrt{11}$$

2. Find the geometric mean of 7 and 36.

$$= \sqrt{36 \cdot 7}$$

$$= 6\sqrt{7}$$

3. Find  $x$  in  $\triangle ABC$



$$\frac{4}{x} = \frac{x}{16}$$

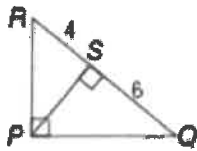
$$x = \sqrt{4 \cdot 16}$$

$$= 2 \cdot 4$$

$$= 8$$

or separate  $\Delta$ 's to see proportion

4. In  $\triangle PQS$ ,  $RS = 5$  and  $QS = 8$ . Find  $PS$

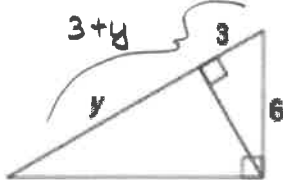


$$\frac{4}{PS} = \frac{PS}{6}$$

$$PS = \sqrt{4 \cdot 6}$$

$$= 2\sqrt{6}$$

5. Find the value of  $y$



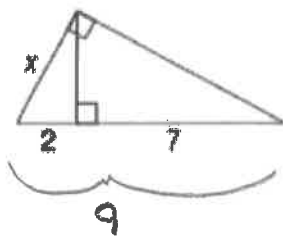
$$\frac{6}{3+y} = \frac{3}{6}$$

$$36 = 9 + 3y$$

$$27 = 3y$$

$$9 = y$$

6. Find the value of  $x$



$$\frac{x}{2} = \frac{2}{9}$$

$$x^2 = 18$$

$$x = \sqrt{18} = 3\sqrt{2}$$

Geometry CP  
Chapter 8 Review

7. Determine if the following side lengths could be used to form a triangle. Then determine if the triangle would be an acute, obtuse, or right triangle. Justify your answer!

a. 2, 3, 4

$2+3 > 4 \checkmark$   
can form a  $\Delta$

$4^2 ? 2^2 + 3^2$

$16 ? 4 + 9$

$16 ? 13$

**obtuse**

b. 7, 11, 14

$7+11 > 14 \checkmark$

$14^2 ? 7^2 + 11^2$

$196 ? 49 + 121$

$196 ? 170$

$>$

**obtuse**

c. 8, 10, 12

$8+10 > 12 \checkmark$

$12^2 ? 8^2 + 10^2$

$144 ? 64 + 100$

$144 ? 164$

d. 9, 12, 15

**Acute**

$15^2 ? 9^2 + 12^2$

$9+12 > 15 \checkmark$

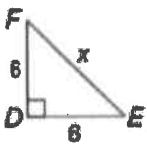
$225 ? 81 + 144$

$225 ? 225$

$=$

**Right**

8. Find  $x$  in  $\triangle DEF$ . Are the side lengths a pythagorean triple?



$6^2 + 6^2 = x^2$

$36 + 36 = x^2$

$72 = x^2$

$\sqrt{72} = x$

$\sqrt{72} = x$

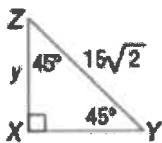
$\sqrt{36 \cdot 2} = x$

$6\sqrt{2} = x$

not a pythagorean triple

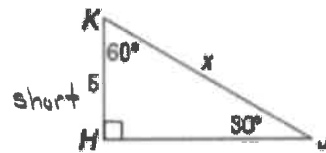
9. Find the value of the variables in the following special right triangles.

a.



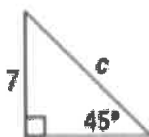
**$y = 15$**

c.



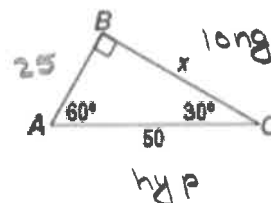
**$x = 10$**

b.



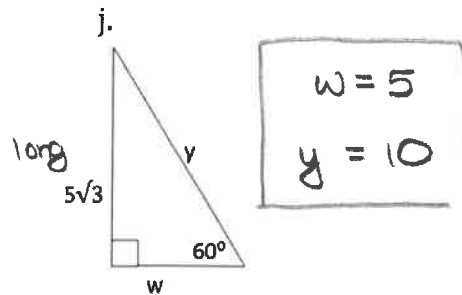
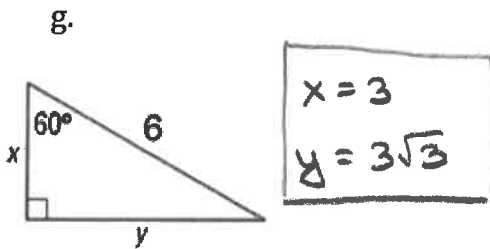
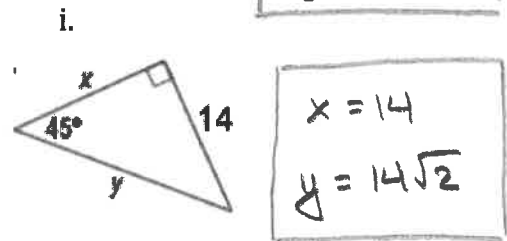
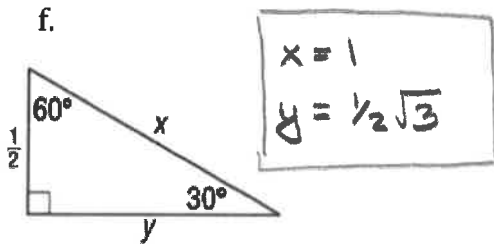
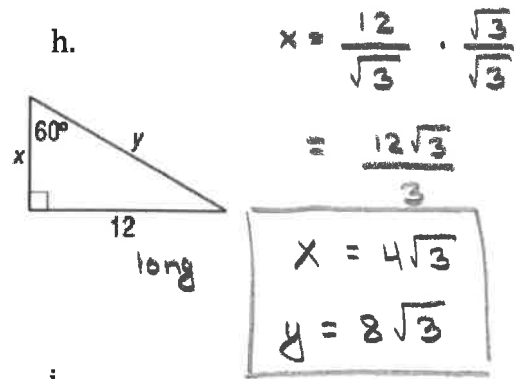
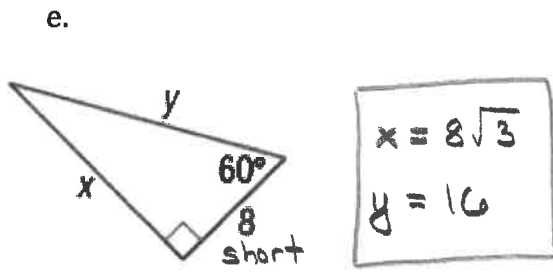
**$c = 7\sqrt{2}$**

d.



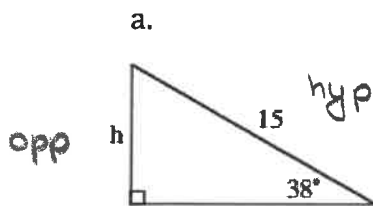
**$x = 25\sqrt{3}$**

Geometry CP  
Chapter 8 Review



calculator only section

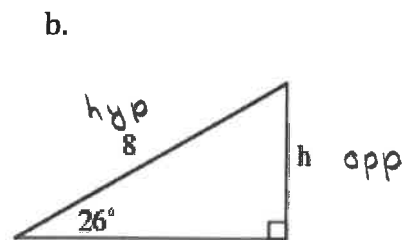
10. Use trigonometric ratios to solve for each variable in the figures below:



$$\sin 38 = \frac{h}{15}$$

$$15 \sin 38 = h$$

$$9.2 \approx h$$

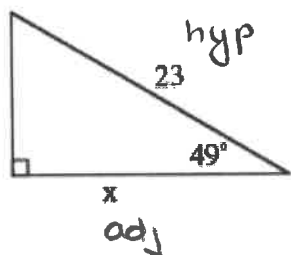


$$\sin 26 = \frac{h}{8}$$

$$8 \sin 26 = h$$

$$3.5 \approx h$$

c.

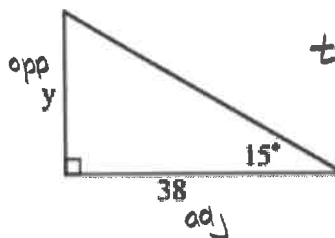


$$\cos 49 = \frac{x}{23}$$

$$23 \cos 49 = x$$

$$15.1 \approx x$$

e.

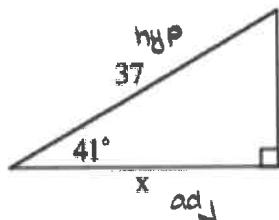


$$\tan 15 = \frac{y}{38}$$

$$38 \tan 15 = y$$

$$10.2 \approx y$$

d.

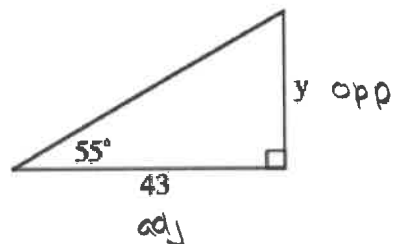


$$\cos 41 = \frac{x}{37}$$

$$37 \cos 41 = x$$

$$27.9 \approx x$$

f.



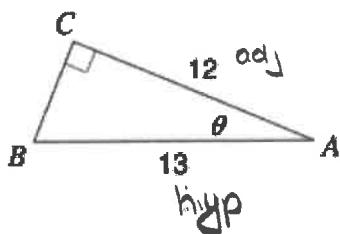
$$\tan 55 = \frac{y}{43}$$

$$43 \tan 55 = y$$

$$61.4 \approx y$$

11. Solve for the missing angle:

a.

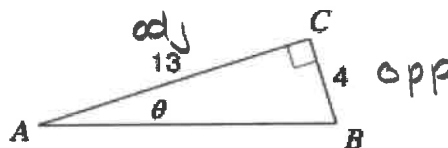


$$\cos \theta = \frac{12}{13}$$

$$\theta = \cos^{-1}\left(\frac{12}{13}\right)$$

$$\theta \approx 22.6^\circ$$

b.

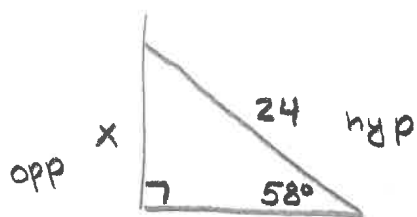


$$\tan \theta = \frac{4}{13}$$

$$\theta = \tan^{-1}\left(\frac{4}{13}\right)$$

$$\theta \approx 17.1^\circ$$

12. If a 24-foot ladder makes a  $58^\circ$  angle with the ground, how many feet up a wall will it reach? Round your answer to the nearest tenth.

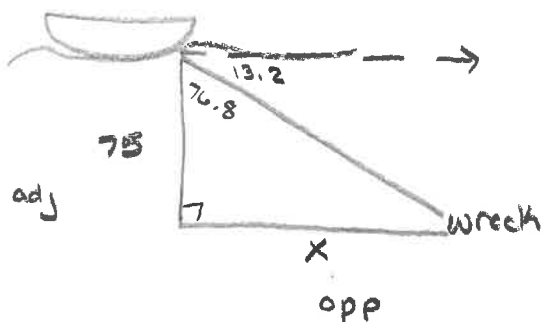


$$\sin 58 = \frac{x}{24}$$

$$24 \sin 58 = x$$

$$20.4 \text{ ft} \approx x$$

13. A ship's sonar finds that the angle of depression to a wreck on the bottom of the ocean is  $13.2^\circ$ . If a point on the ocean floor is 75 meters directly below the ship, how many meters is it from the point on the ocean floor to the wreck? Round to the nearest tenth.

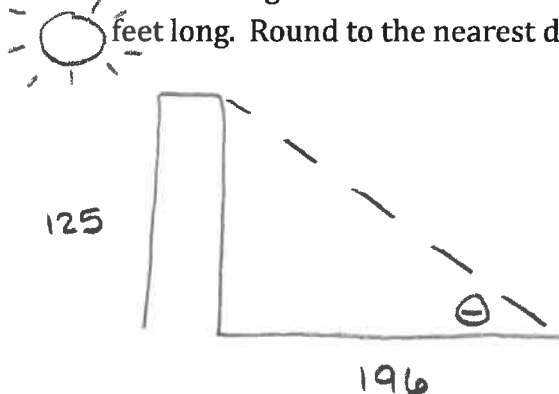


$$\tan 76.8 = \frac{x}{75}$$

$$75 \tan 76.8 = x$$

$$319.8 \text{ m} \approx x$$

14. Find the angle of elevation of the sun if a building 125 feet tall casts a shadow 196 feet long. Round to the nearest degree.



$$\tan \theta = \frac{125}{196}$$

$$\theta = \tan^{-1} \left( \frac{125}{196} \right)$$

$$\theta \approx 32.5^\circ$$

