

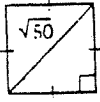
Geo CH)

Sect 8.4 - more Practice Problems

KEY

1. Find the perimeter of each polygon.

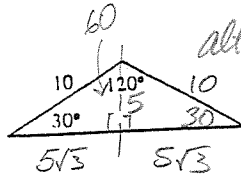
a.



diag = $\sqrt{50}$
 $x\sqrt{2} = \sqrt{50}$
 $x = \sqrt{25}$
 $x = 5$

Perim = 20

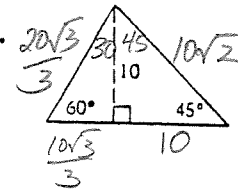
b.



altitude = 5

$P = 20 + 10\sqrt{3}$

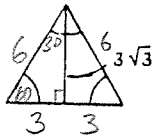
c.



$x\sqrt{3} = 10$
 $x = \frac{10}{\sqrt{3}}$
 $x = \frac{10\sqrt{3}}{3}$

$P = 10 + 10\sqrt{2} + 10\sqrt{3}$

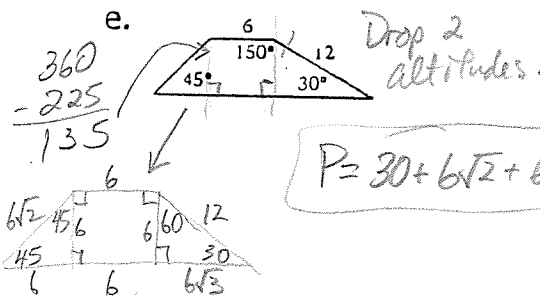
d.



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

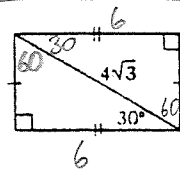
Per = 18

e.



$P = 30 + 6\sqrt{2} + 6\sqrt{3}$

f.

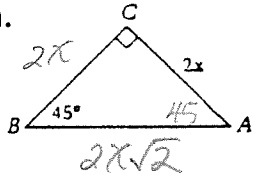


$2x = 4\sqrt{3}$
 $x = 2\sqrt{3}$

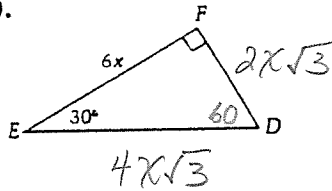
$P = 12 + 4\sqrt{3}$

2. Find the length of the other two sides of each triangle in terms of x.

a.

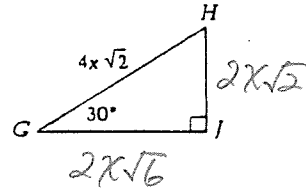


b.



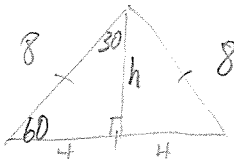
$y\sqrt{3} = 6x$
 $y = \frac{6x}{\sqrt{3}}$
 $y = 2x\sqrt{3}$

c.



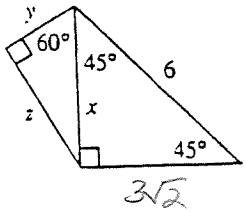
$2x\sqrt{2}\sqrt{3}$

3. Find the length of the altitude of an equilateral triangle with perimeter 24.



altitude = $4\sqrt{3}$

4. Find lengths x, y and z.



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

$x = 3\sqrt{2}$

$y = \frac{3\sqrt{2}}{2}$

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

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

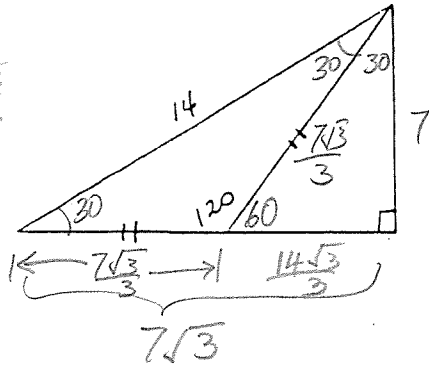
Find the missing lengths.

5.

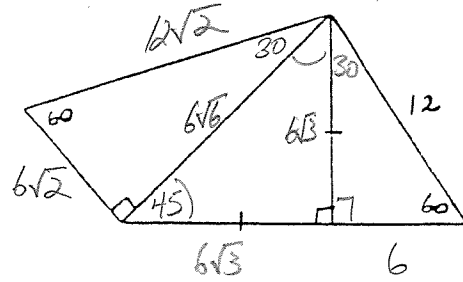
$$x\sqrt{3} = 7$$

$$x = \frac{7 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}}$$

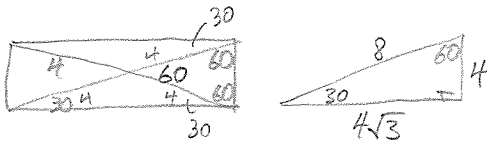
$$x = \frac{7\sqrt{3}}{3}$$



6.

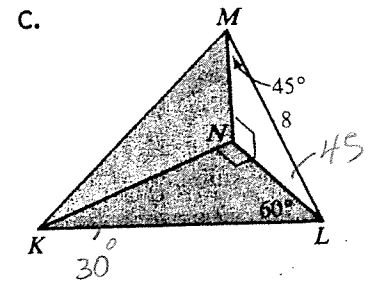
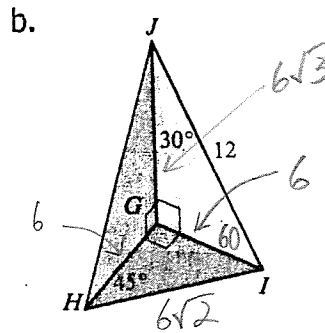
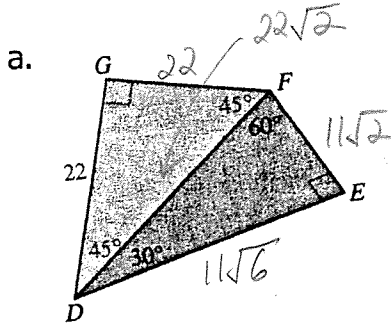


7. The diagonals of a rectangle are 8 units long and intersect at a 60° angle. Find the dimensions of the rectangle.



$4\sqrt{3}$ by 4

8. Find the lengths of as many segments as possible.



$$\begin{aligned} GI &= 6 & HJ &= 12 \\ JG &= 6\sqrt{3} \\ HG &= 6 \\ HI &= 6\sqrt{2} \end{aligned}$$

$$\begin{aligned} MN &= 4\sqrt{2} & KM &= 8\sqrt{2} \\ NL &= 4\sqrt{2} \\ KN &= 4\sqrt{2} \\ KL &= 8\sqrt{2} \end{aligned}$$

9. In quadrilateral QRST, $m\angle R = 60$, $m\angle T = 90$, $QR = RS$, $ST = 8$, and $TQ = 8$.

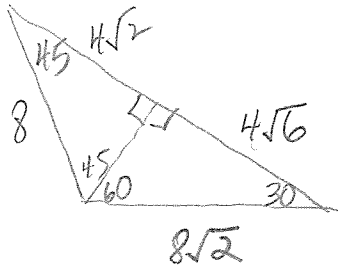
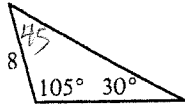
a. How long is the longer diagonal of the quadrilateral?

$4\sqrt{2} + 4\sqrt{6}$

b. Find the ratio of RT to QS.

$$\begin{aligned} (4\sqrt{2} + 4\sqrt{6}) &\text{ to } 8\sqrt{2} \\ (\sqrt{2} + \sqrt{6}) &\text{ to } 4\sqrt{2} \end{aligned}$$

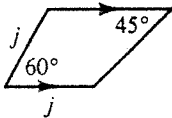
10. Find the perimeter of the triangle.



$$P = 8 + 12\sqrt{2} + 4\sqrt{6}$$

$$\begin{array}{r} 180 \\ 135 \\ \hline 45 \end{array}$$

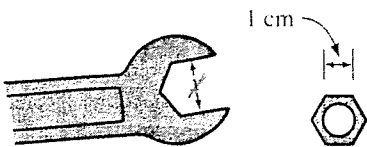
11. Find the length of the median of the trapezoid in terms of j .



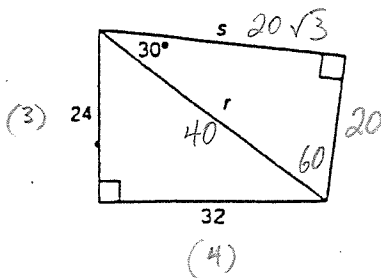
$$\frac{3j + j\sqrt{3}}{4}$$

12. If the wrench just fits the hexagonal nut, what is the value of x ?

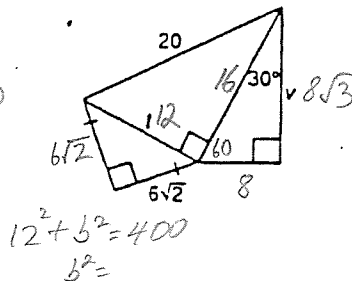
$$\sqrt{3}$$



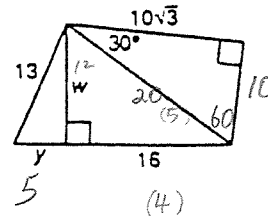
13. $r = 40$ $s = 20\sqrt{3}$
 $r = ?$ $s = ?$



14. $r = 12$ $v = 8\sqrt{3}$
 $r = ?$ $v = ?$



15. $w = 12$ $y = 5$
 $w = ?$ $y = ?$

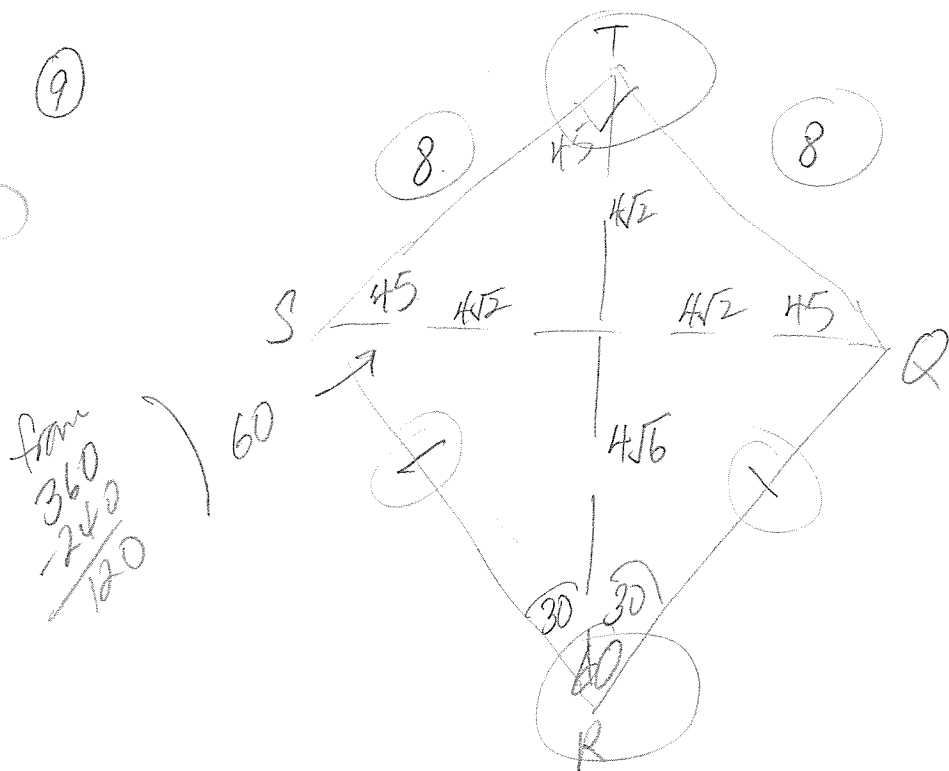


$$y^2 + 12^2 = 13^2$$

$$y^2 = 25$$

$$y = 5$$

9



$$\triangle STR \cong \triangle QTR \text{ (SAS)}$$

$$\text{So } \frac{1}{2} m \angle T = 45$$

$$\frac{1}{2} m \angle R = 30$$

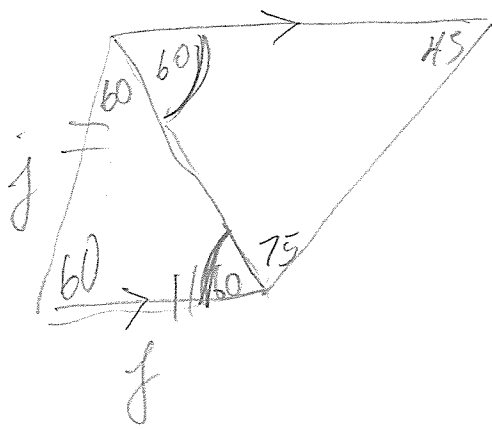
b) RT to QS Text ans: $(1 + \sqrt{3}) : 2$

$$(4\sqrt{2} + 4\sqrt{6}) : 8\sqrt{2}$$

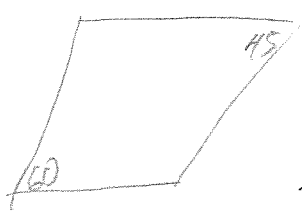
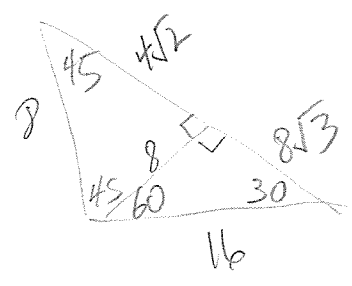
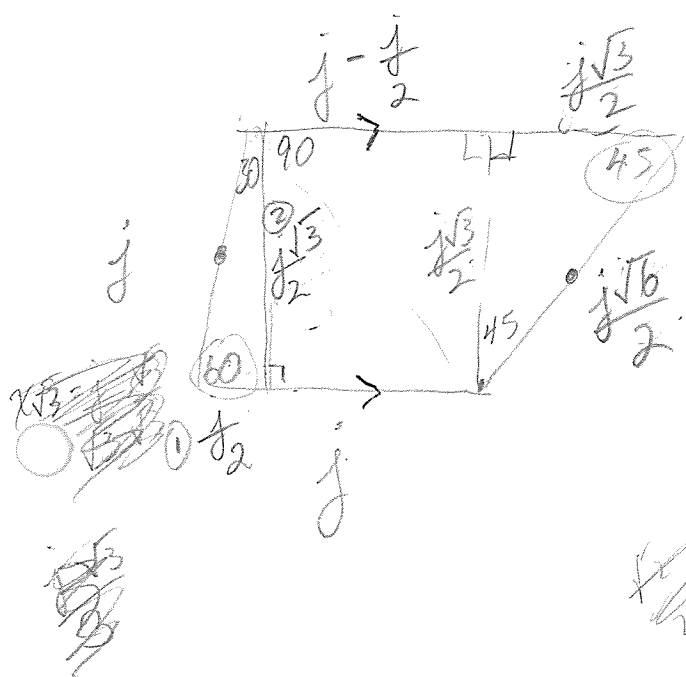
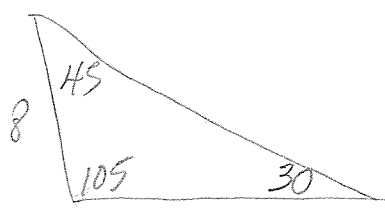
$$4(\sqrt{2} + \sqrt{6}) : 4(2\sqrt{2})$$

$$\frac{(\sqrt{2} + \sqrt{6}) \cdot \sqrt{2}}{2\sqrt{2} \cdot \sqrt{2}} = \frac{2 + \sqrt{12}}{4 \cdot 4} = \frac{1 + \frac{\sqrt{3}}{2}}{2}$$

11



180
45



$$\frac{1}{2} \left(j + j - \frac{j}{2} + \frac{j\sqrt{3}}{2} \right)$$

$$\frac{1}{2} \left(2j - \frac{j}{2} + \frac{j\sqrt{3}}{2} \right)$$

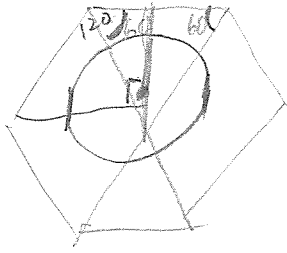
$$\frac{1}{2} \left(\frac{4}{2}j - \frac{j}{2} + \frac{j\sqrt{3}}{2} \right)$$

$$\frac{1}{2} \left(\frac{3j}{2} + \frac{j\sqrt{3}}{2} \right)$$

$$\frac{3j + j\sqrt{3}}{4}$$

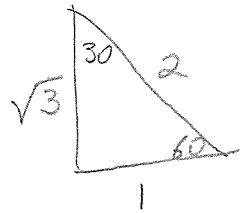
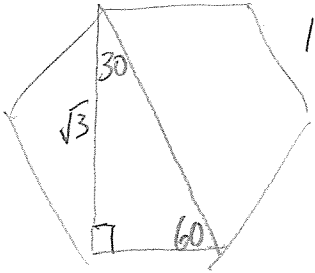
Answer!
Correct!

12

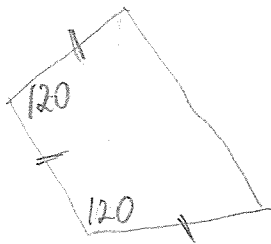
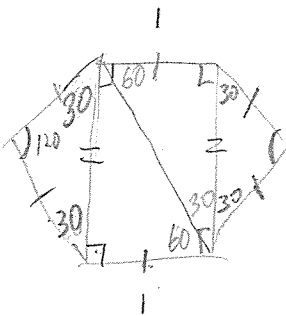


$$\frac{(6-2)180}{6}$$

Answer: $\sqrt{3}$



Proof of 30-60-90 \Rightarrow



$$\begin{array}{r} 360 \\ 240 \\ \hline 120 \end{array}$$

