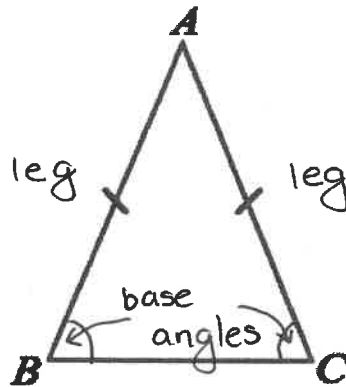


Isosceles Triangle

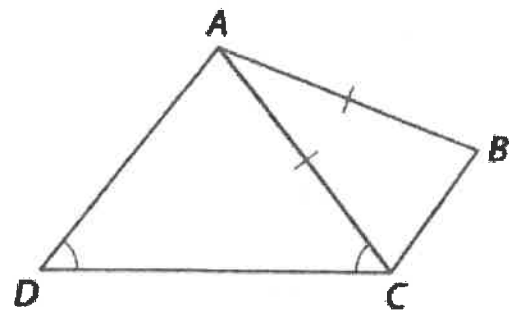


<p>Isosceles Triangle Theorem</p>	<p>If two sides of a triangle are congruent, then the angles opposite those sides are congruent.</p>	
<p>Converse of Isosceles Triangle Theorem</p>	<p>If two angles of a triangle are congruent, then the sides opposite to those angles are congruent.</p>	

1. Use the diagram below to answer the following questions:

a. Name two unmarked congruent angles.

$$\angle C \cong \angle B$$



b. Name two unmarked congruent sides.

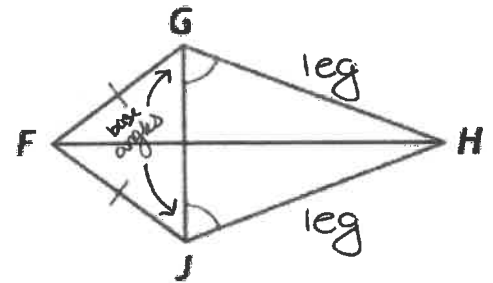
$$\overline{AD} \cong \overline{AC}$$

4.6 Isosceles and Equilateral Triangles

2. Use the diagram below to answer the following questions:

a. Name two unmarked congruent angles.

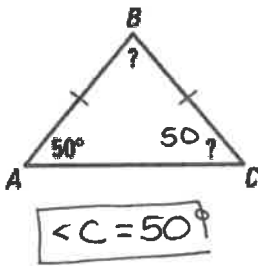
$$\angle FGJ \cong \angle FJG$$



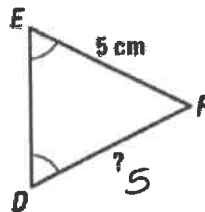
b. Name two unmarked congruent sides.

$$\overline{GH} \cong \overline{JH}$$

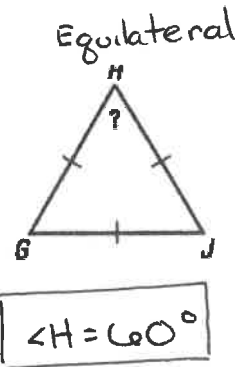
3. Solve for x and y



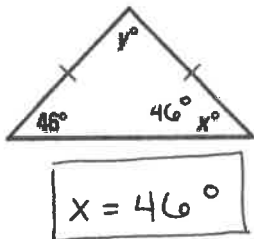
$$\begin{aligned} 50 + 50 + \angle B &= 180^\circ \\ 100 + \angle B &= 180 \\ -100 & \quad -100 \\ \angle B &= 80^\circ \end{aligned}$$



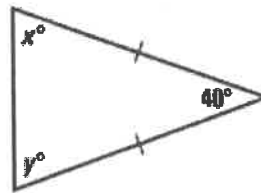
$$\overline{DF} = 5$$



4. Solve for x and y:



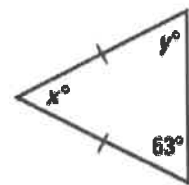
$$\begin{aligned} 46 + 46 + y &= 180 \\ 92 + y &= 180 \\ -92 & \quad -92 \\ y &= 88 \end{aligned}$$



$$180 - 40 = 140^\circ$$

$$\frac{140}{2} = 70$$

$$70^\circ = x = y$$



$$y = 63^\circ$$

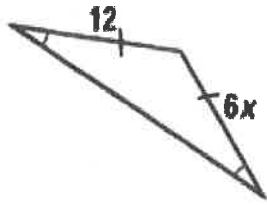
$$\begin{aligned} 63 + 63 + x &= 180 \\ 126 + x &= 180 \end{aligned}$$

$$x = 54$$

4.6 Isosceles and Equilateral Triangles

5. Solve for x and y.

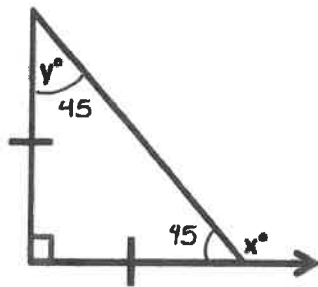
a.



$$\frac{12}{6} = \frac{6x}{6}$$

$$\boxed{2 = x}$$

b.



$$180 = 90 + y + y$$

$$180 - 45 = x$$

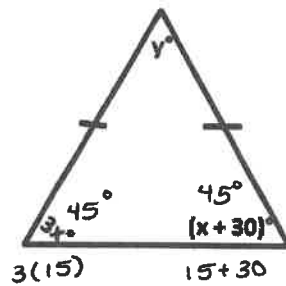
$$180 = 90 + 2y$$

$$\boxed{135^\circ = x}$$

$$90 = 2y$$

$$\boxed{45 = y}$$

c.



$$3x = x + 30$$

$$45 + 45 + y = 180$$

$$-x \quad -x$$

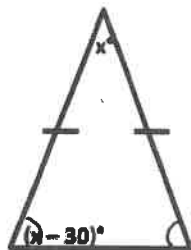
$$90 + y = 180$$

$$\frac{2x}{2} = \frac{30}{2}$$

$$\boxed{y = 90}$$

$$\boxed{x = 15}$$

d.



$$(x - 30) + (x - 30) + x = 180$$

$$3x - 60 = 180$$

$$+60 \quad +60$$

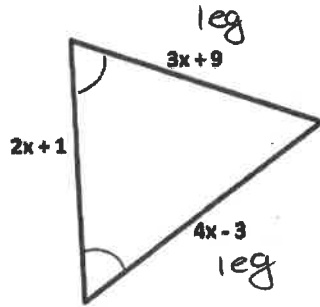
$$\frac{3x}{3} = \frac{240}{3}$$

$$\boxed{x = 80}$$

4.6 Isosceles and Equilateral Triangles

legs are congruent

4. Solve for x



$$3x + 9 = 4x - 3$$

$$-3x \quad -3x$$

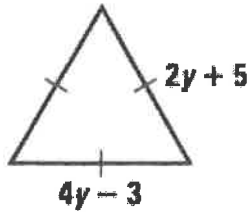
$$9 = x - 3$$

$$+3 \quad +3$$

$$12 = x$$

Equilateral Triangle Corollaries		
	A triangle is equilateral if and only if it is equiangular.	
	Each angle of an equilateral triangle is 60°	

6. Solve for the missing variables.

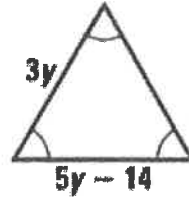


$$4y - 3 = 2y + 5$$

$$\begin{array}{r} -2y \quad -2y \\ 2y - 3 = 5 \\ \quad +3 \quad +3 \end{array}$$

$$\frac{2y}{2} = \frac{8}{2}$$

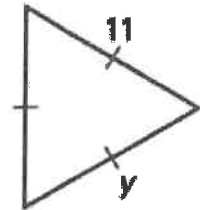
$$y = 4$$



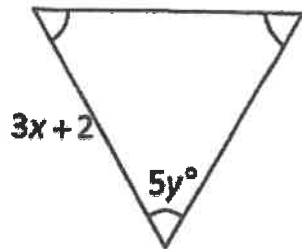
$$5y - 14 = 3y$$

$$\begin{array}{r} -5y \quad -5y \\ -14 = -2y \\ \quad -2 \quad -2 \end{array}$$

$$7 = y$$



$$y = 11$$



$$\frac{5y}{5} = \frac{60}{5}$$

$$3x + 2 = 5x - 6$$

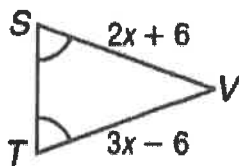
$$\begin{array}{r} -3x \quad -3x \\ 2 = 2x - 6 \\ \quad +6 \quad +6 \end{array}$$

$$y = 12$$

$$2 = 2x - 6$$

$$\begin{array}{r} +6 \quad +6 \\ 8 = 2x \\ \quad \frac{8}{2} = \frac{2x}{2} \end{array}$$

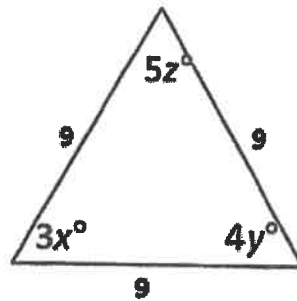
$$4 = x$$



$$2x + 6 = 3x - 6$$

$$6 = x - 6$$

$$12 = x$$

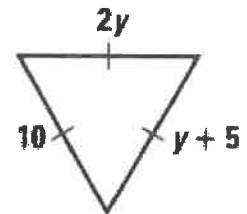


$$3x = 60 \quad 4y = 60$$

$$x = 20 \quad y = 15$$

$$5z = 60$$

$$z = 12$$



$$2y = 10$$

$$y = 5$$

