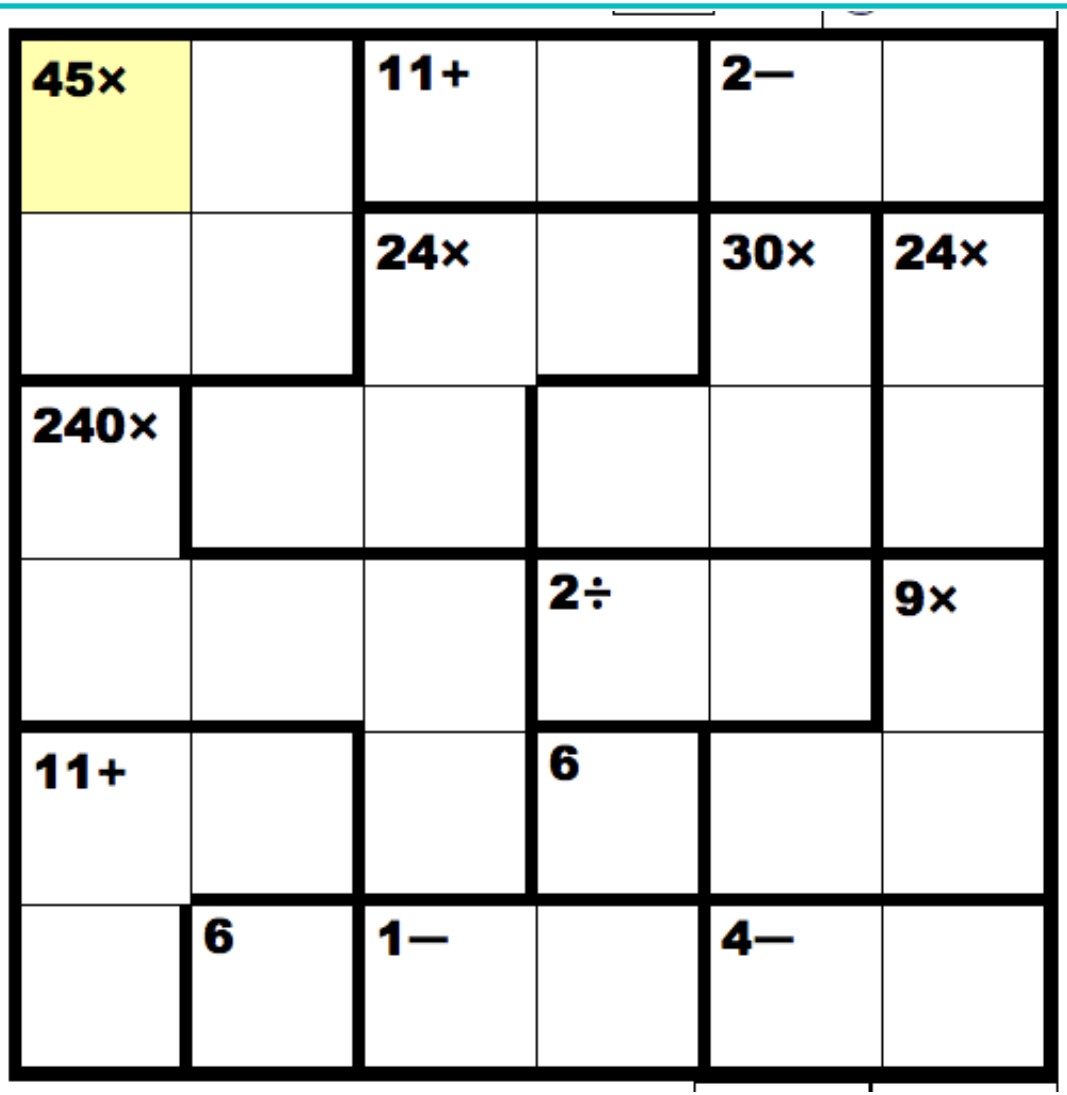
Created by Mr. Lischwe

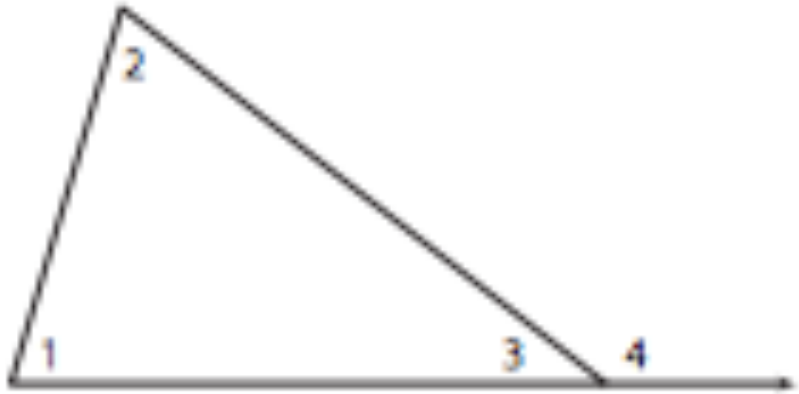
Warmup 2/(The 2nd perfect number)



Quiz Tuesday

Triangle Properties

Create a flow proof for the Exterior Angle Theore



$m\angle 1 + m\angle 2 + m\angle 3 = 180°$

Triangle Sum Theorem

$m\angle 3 + m\angle 4 = 180°$

Definition of supplementary

$m\angle 1 + m\angle 2 + m\angle 3 = m\angle 3 + m\angle 4$

Substitution Property of Equality

$m\angle 1 + m\angle 2 = m\angle 4$

Substraction Property of Equality

11. Find w to find the measure of the exterior angle.

$w = 68 + 68$

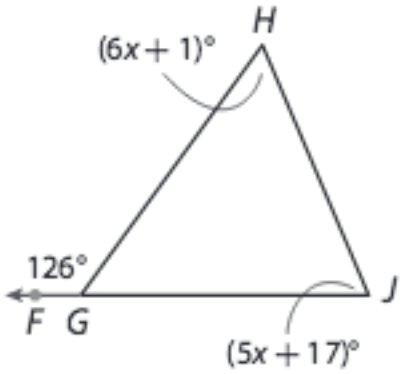
$w = 136$

12. Find x to find the measure of the remote interior angle.

$x + 46 = 134$

$x = 88$

13. Find $m\angle H$.

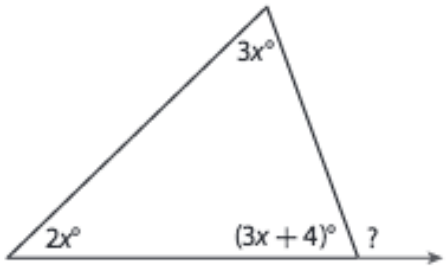


$$(6x-1)+(5x+17)=126$$

$$x=10$$

$$m\angle H=(6x-1)^\circ=\big(6(10)-1\big)^\circ=59^\circ$$

14. Determine the measure of the indicated exterior angle in the diagram.



$$180-(3x+4)=2x+3x$$

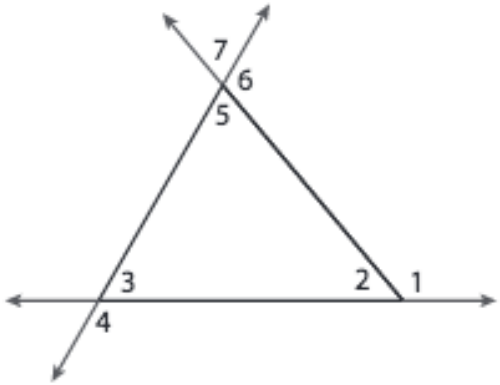
$$22=x$$

$$180-\big(3(22)+4\big)=180-(66+4)=180-70=110$$

The measure of the indicated exterior angle is 110°.

15. Match each angle with its corresponding measure, given $m\angle 1 = 130^\circ$ and $m\angle 7 = 70^\circ$. Indicate a match by writing the letter for the angle on the line in front of the corresponding angle measure.

A. $m\angle 2$	A	50°
B. $m\angle 3$	B	60°
C. $m\angle 4$	D	70°
D. $m\angle 5$	E	110°
E. $m\angle 6$	C	120°



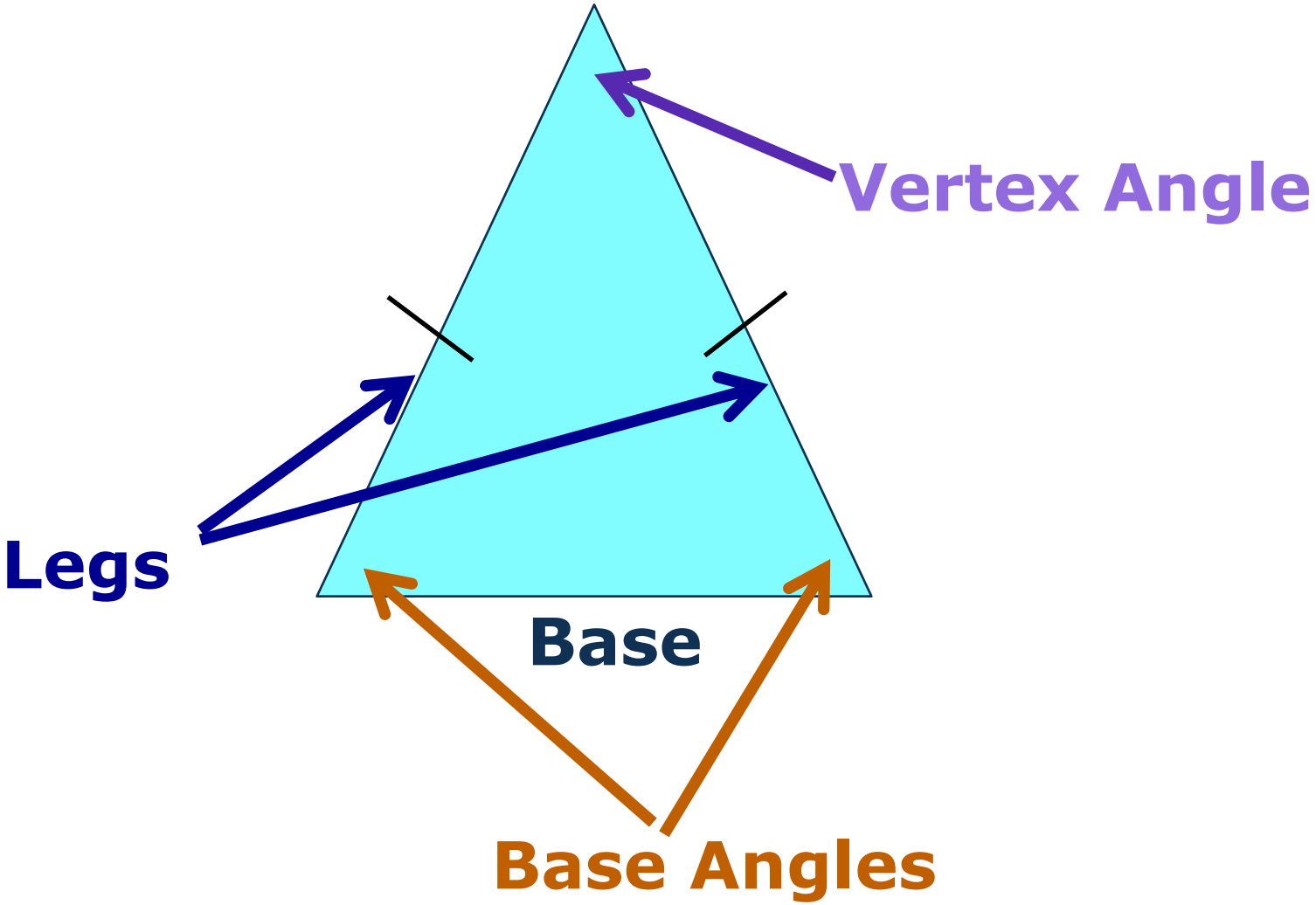
A few minutes – compare/revise answers for the "angle chasing" sheet

TABLE OF CONTENTS: 2ND SEMESTER

Objective

Explore Properties of Isosceles and Equilateral Triangles

What is an Isosceles Triangle?



Activity

- Draw an isosceles triangle using a ruler.
  - MEASURE THE SIDES!
- Measure the base angles using a protractor.
- Repeat this activity one more time.

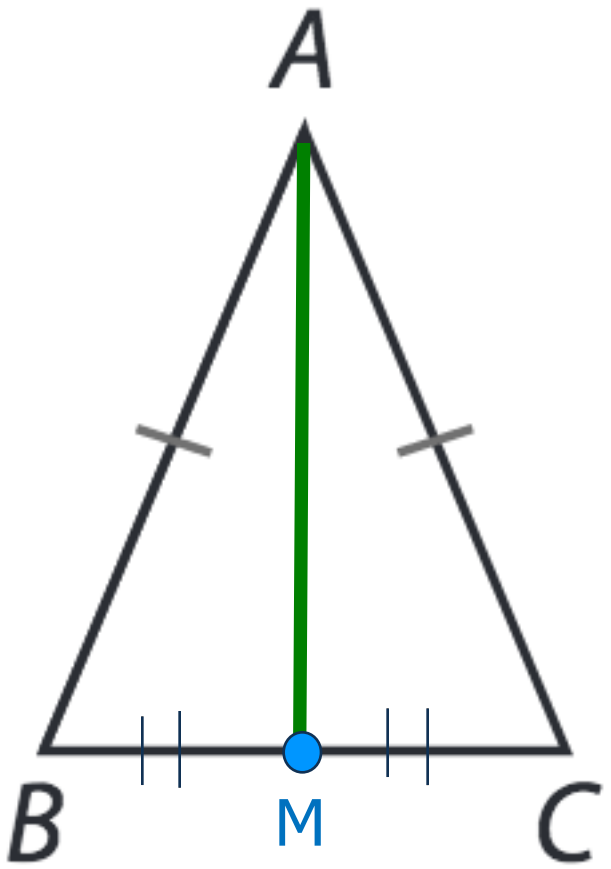
What do you notice???

Isosceles Triangle Theorem pg. 1098

- If two sides of a triangle are congruent, then the two angles opposite the sides are congruent.

- in other words: “The Base Angles of an isosceles triangle are congruent”

Let's Prove this!



What is the converse of a theorem?

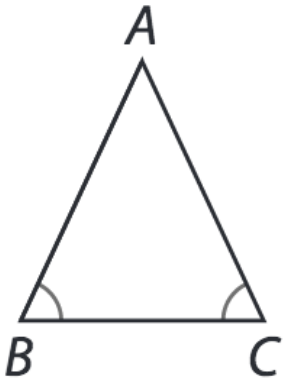
- A statement formed by interchanging what is given in a theorem and what is to be proved

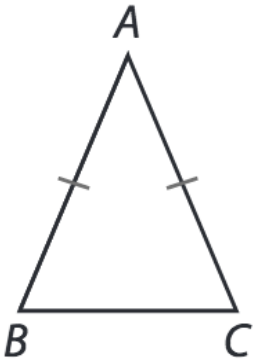
Isosceles Triangle Theorem

- If 

then 

Converse of the Isosceles Triangle Theorem

- If 

then 

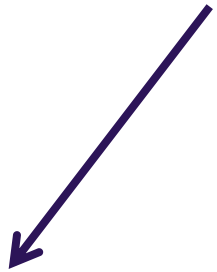
Activity #2

- Draw an equilateral triangle using a ruler.
  - MEASURE THE SIDES!
- Measure the angles using a protractor.
- Repeat this activity one more time.

What do you notice???

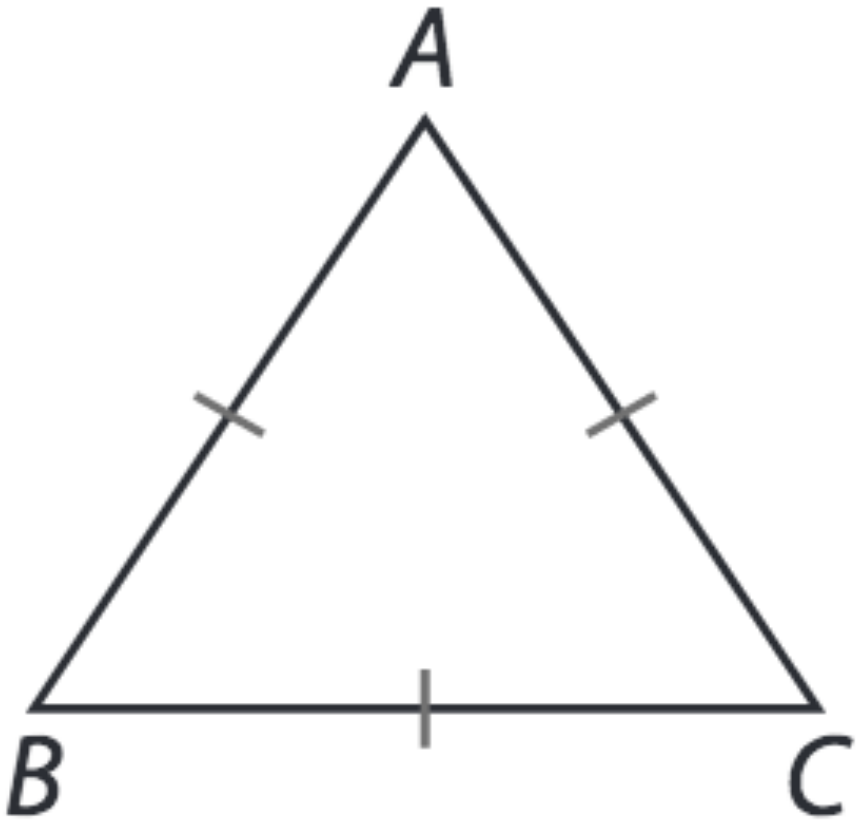
Equilateral Triangle Theorem

If a triangle is equilateral, then it is equiangular.

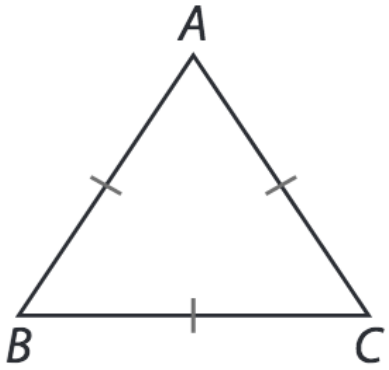


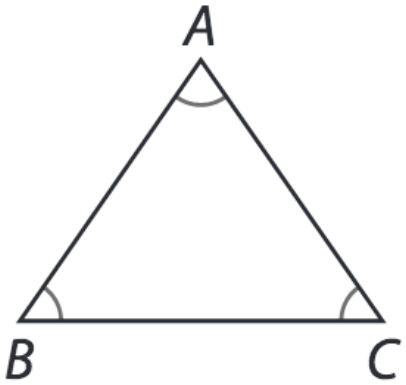
all angles have equal measures

Let's Prove this!

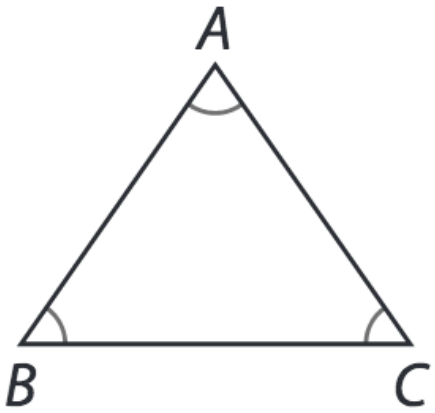


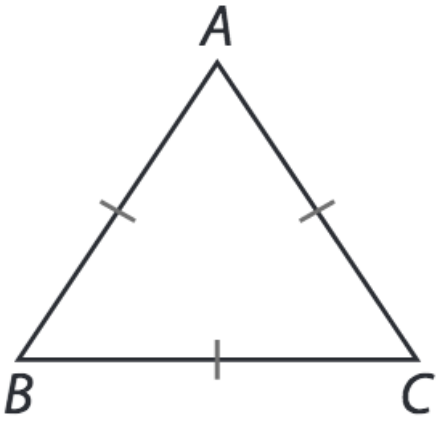
Equilateral Triangle Theorem

- If 

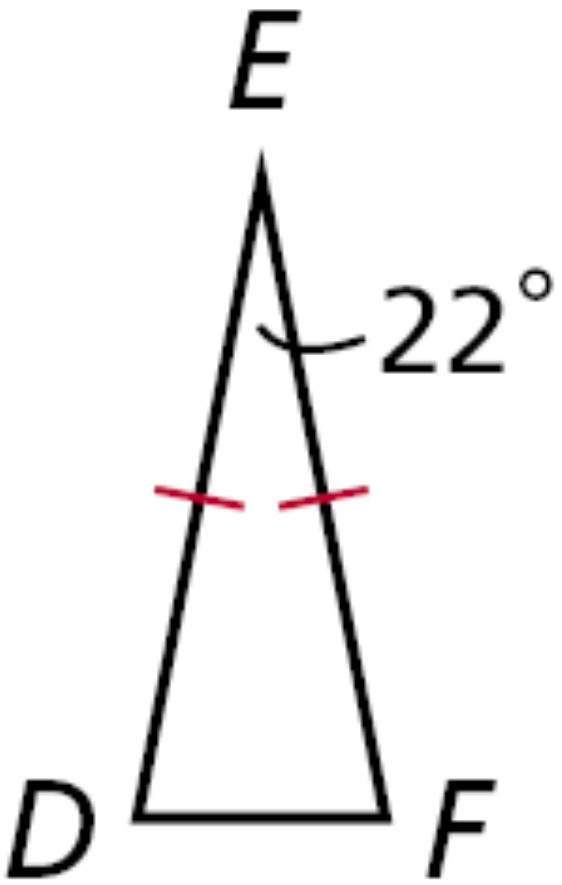
then 

Converse of the Equilateral Triangle Theorem

- If 

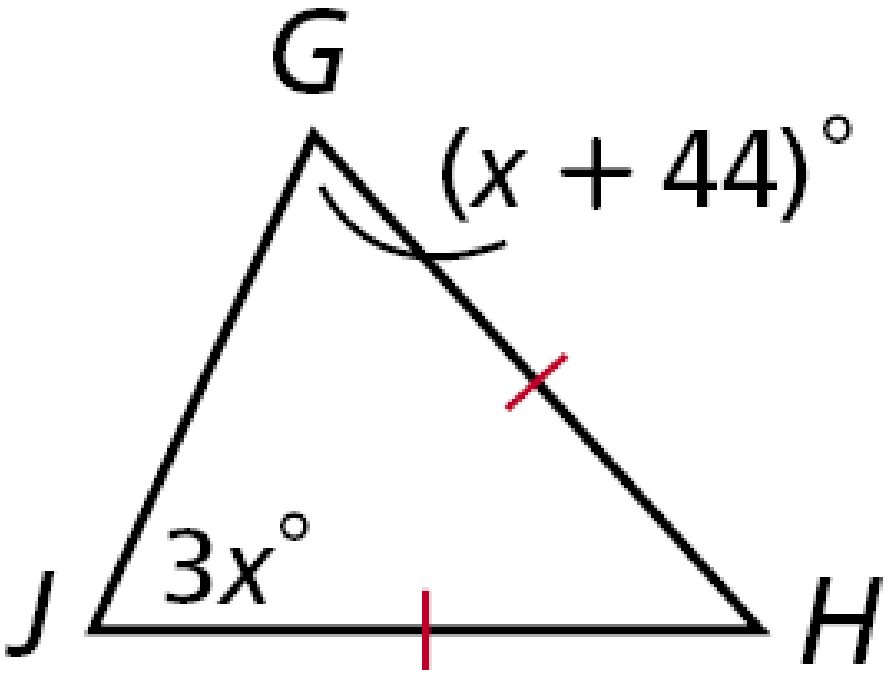
then 

Find m∠*F*.



79°

Find m∠*G*.

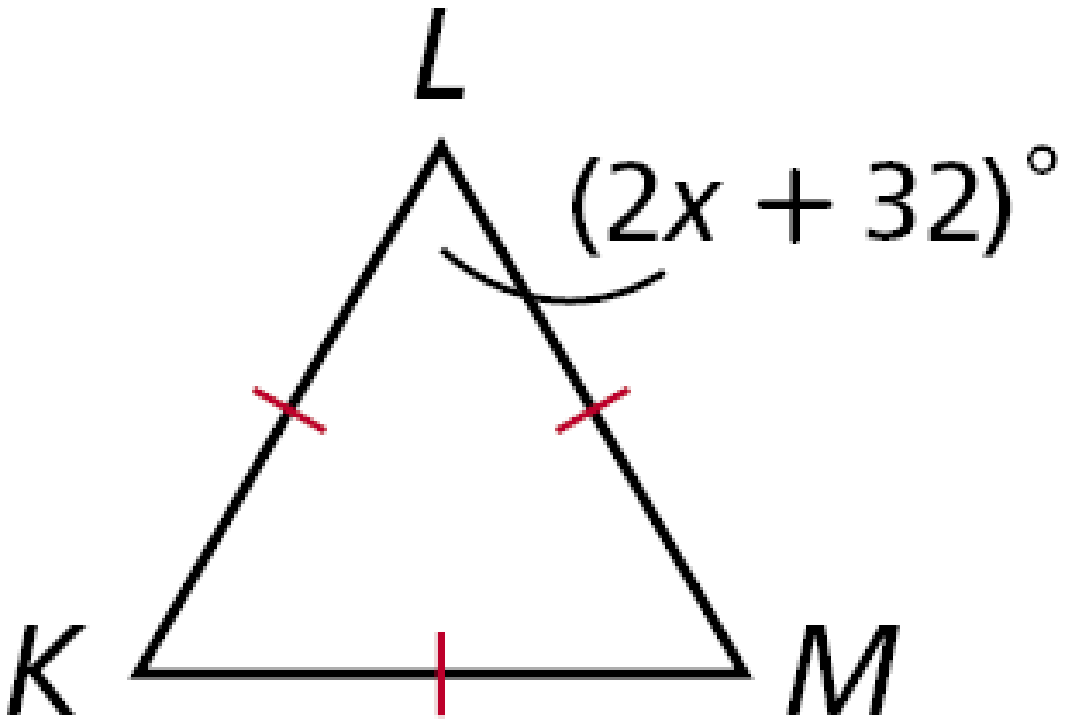


$(x + 44)° = 3x°$

$x = 22°$

Thus $m\angle G = 22° + 44° = 66°$.

Find the value of x.



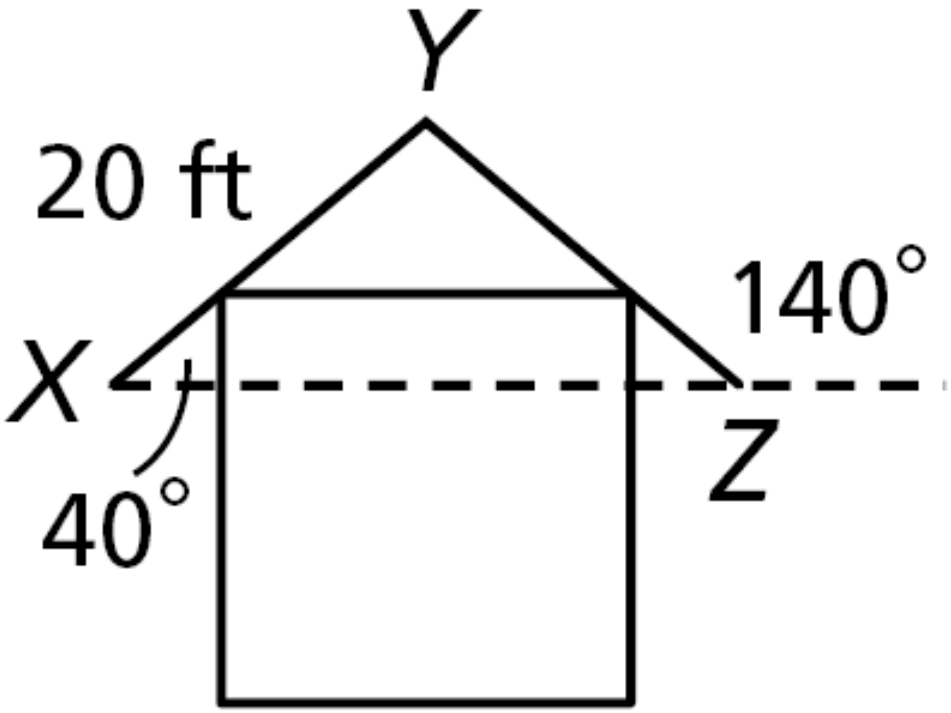
$(2x + 32)° = 60°$

$2x = 28$

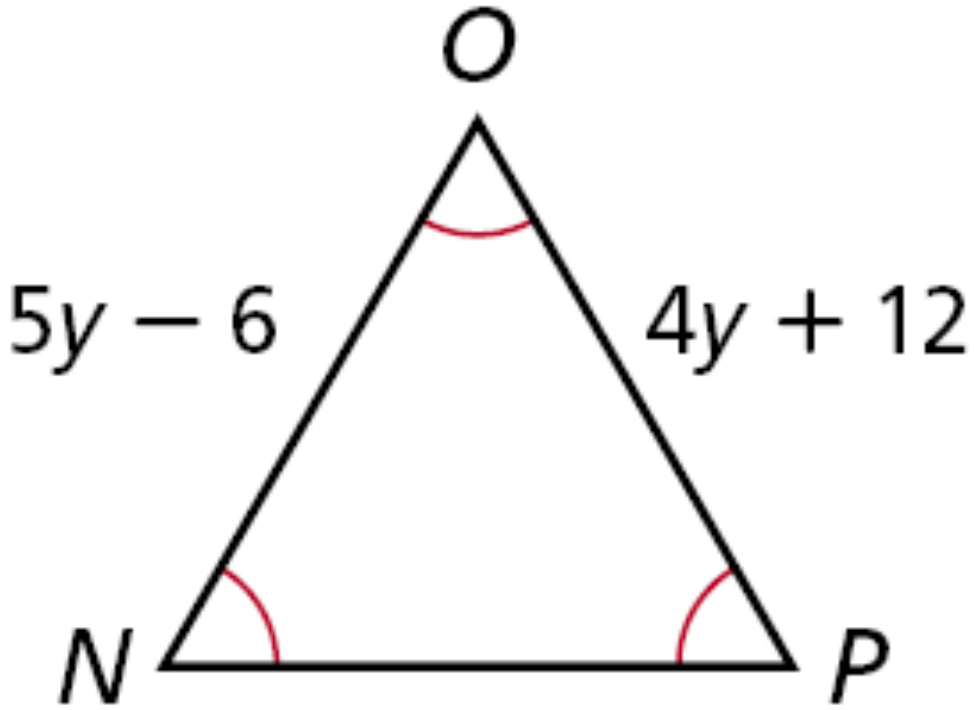
$x = 14$

The length of $\overline{YX}$ is 20 feet.

Explain why the length of $\overline{YZ}$ is the same.



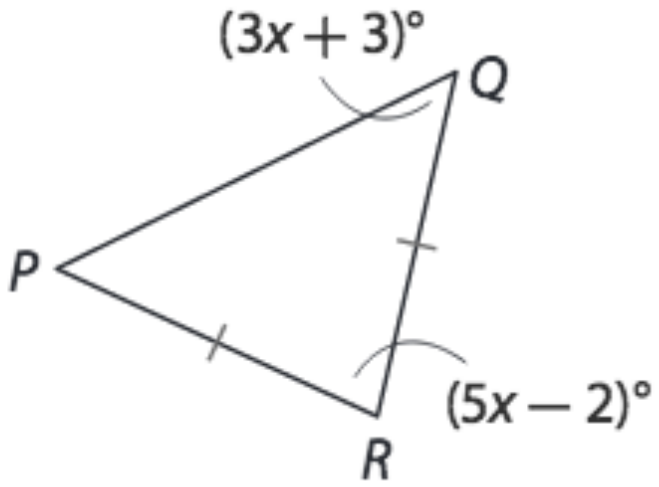
Find the value of *y*.



$y = 18$

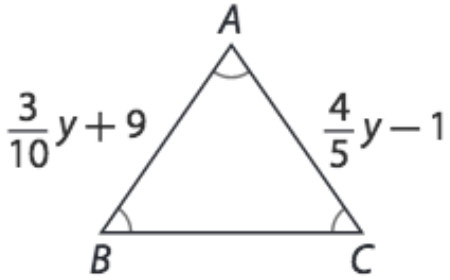
Your turn! pg. 1102 (5-8)

5. Find $m\angle P$.



$$m\angle P = m\angle Q = (3x + 3)^\circ$$
$$2(3x + 3) + (5x - 2) = 180$$
$$x = 16$$
$$m\angle P = (3x + 3)^\circ = (3(16) + 3)^\circ = 51^\circ$$

6. Katie's tutorial service is going so well that she is having shirts made with the equilateral triangle emblem. She has given the t-shirt company these dimensions. What is the length of each side of the triangle in centimeters?



$\overline{AB} \cong \overline{AC} \quad \Rightarrow \quad AB = AC$

$\frac{3}{10}y + 9 = \frac{4}{5}y - 1 \quad \Rightarrow \quad 20 = y$

Therefore, $\frac{3}{10}y + 9 = \frac{3}{10}(20) + 9 = 6 + 9 = 15$

The length of each side is 15 cm.

7. Discussion Consider the vertex and base angles of an isosceles triangle. Can they be right angles? Can they be obtuse? Explain.

The vertex angle of an isosceles triangle can be acute, right, or obtuse as long as its measure is less than 180°. The base angles of an isosceles triangle can only be acute, meaning they have a measurement less than 90°. because otherwise they would cause the sum of the base angles to be $\geq$ 180° before adding in the third angle, which contradicts the Triangle Sum Theorem.

8. **Essential Question Check-In** Discuss how the sides of an isosceles triangle relate to its angles.

The legs of an isosceles triangle are opposite from the base angles and because the base angles are congruent, the legs are also congruent because of the Converse of the Isosceles Triangle Theorem.

Homework

- pg. 1104-1108 (4-10, 12, 13, 19, 20)]

- *****You don't need to rip this one out!!! Too many pages.*****