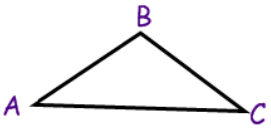
NAME:_____

3.4 Parallel Lines and Triangles

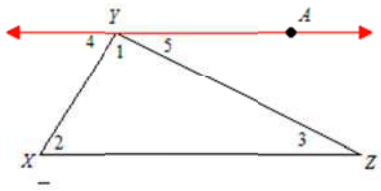
Postulate: Through a point not on a line, there is one and only one line parallel to the given line.

Triangle Sum Theorem:

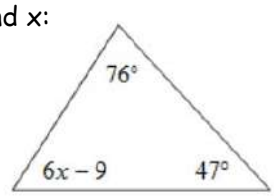


Ex: Find the missing angle.

Given: Triangle XYZ and line YA parallel to line XZ.
Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180°$

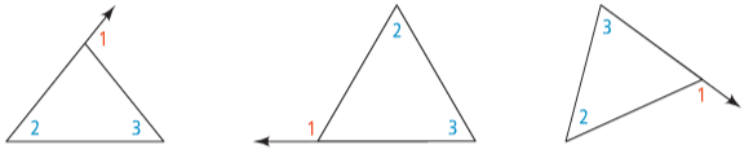


Find x:



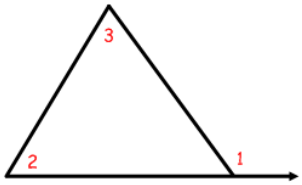
Exterior Angle of a Polygon:

Remote Interior Angles:



Triangle Exterior Angle Theorem: The measure of each exterior angle of a triangle equals the sum of its two remote interior angles.

Ex:



Try this…Find the value of all the variables in the diagram.

Try these:

Summary:

_____

_____

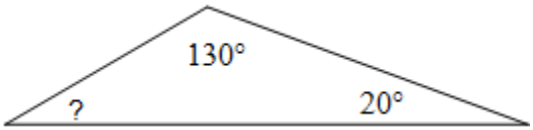
_____

_____

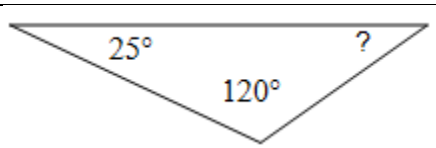
3.4 Practice Problems

Find the measure of each angle indicated.

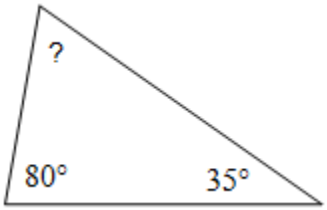
1)



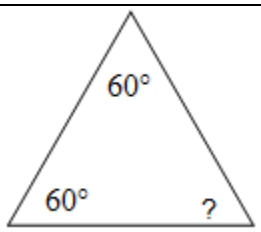
2)



3)

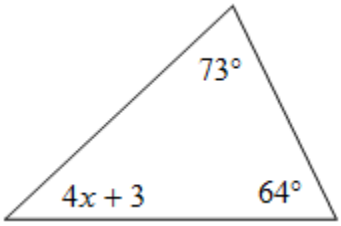


4)

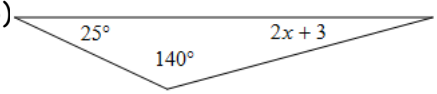


Directions:Solve for x.

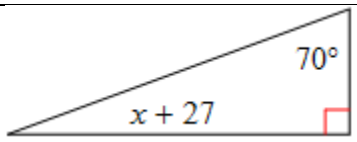
5)



6)

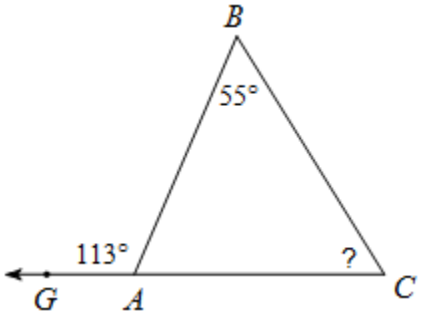


7)

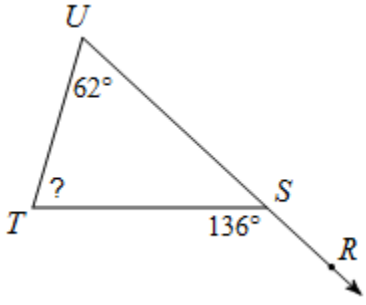


Directions: Find the measure of each angle indicated.

8)



9)



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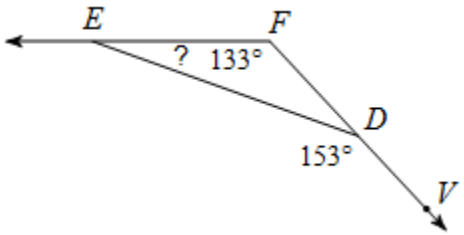
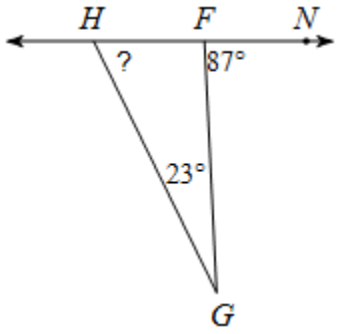
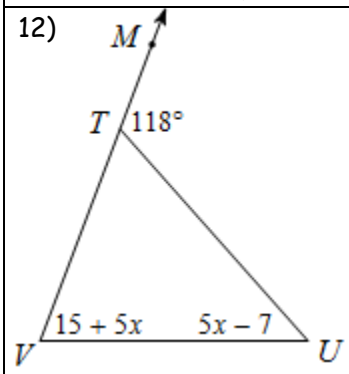


11)

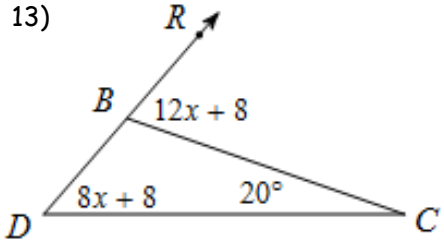


Directions: Solve for x.

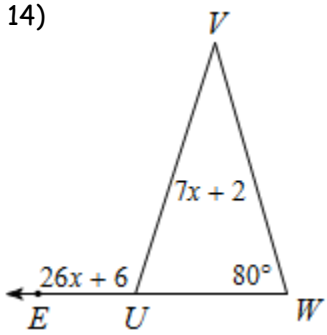
12)



13)

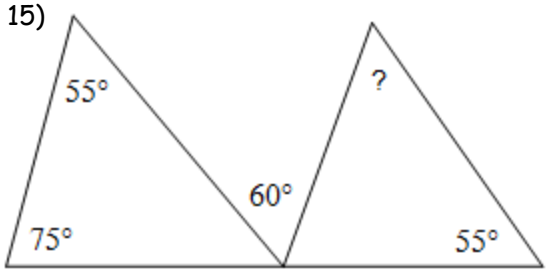


14)

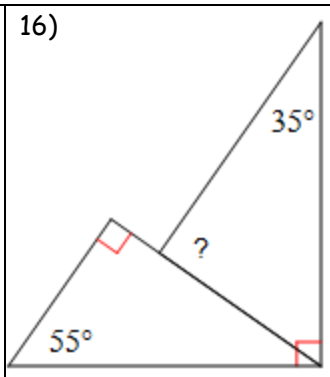


Directions:Find the measure of each angle.

15)



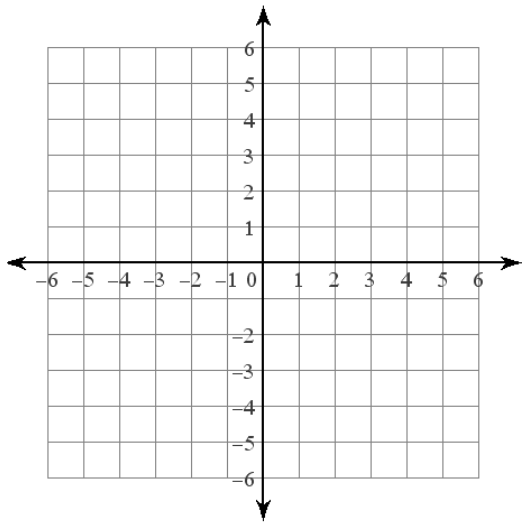
16)

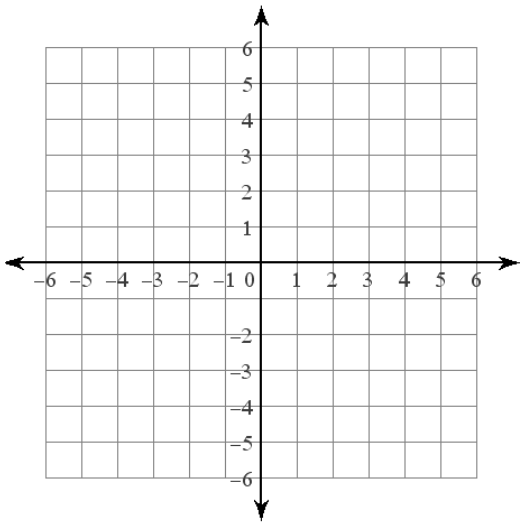


Algebra Review

Solve: $7y - 18 = -4$	Solve: 5h – 2 = 2h + 10	Multiply: $2x^2(3x^3 + 8x)$

Factor: $18x^2 - 45x$	Graph: $y = -x + 2$	Graph: $y = x$

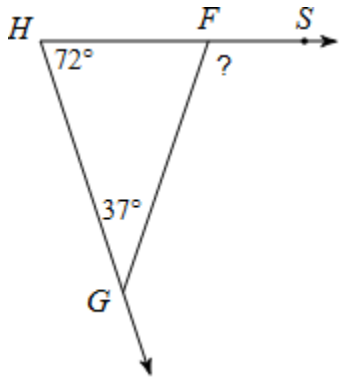




3.4 APPLICATION and EXTENSION

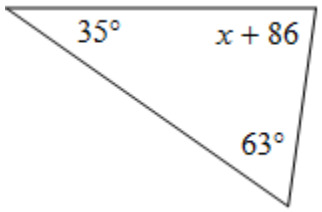
Directions: Find the indicated angle.

1)



Directions: Solve for x.

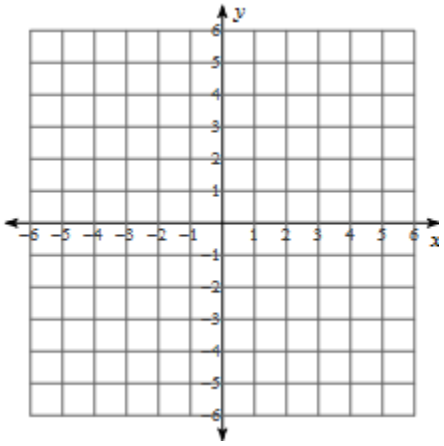
2)



3) In one triangle one of the angles is twice the measure of another and the third angle is three times as much as that angle. What are the measures of all three angles?

4) In another triangle one angle has $(x + 5)°$ and the other two angles are three times and eight times that angle. How many degrees are in each angle?

4) Graph the lines x = -4, y = -2 and y = -x +1.



a) How many degrees are in the angle formed by the lines x = -4 and y = -2?

b) If the other two angles in the triangle formed are congruent how many degrees do they have?

5)Use a two column proof to prove the following.

Given: $\angle 1$ is an exterior angle of the triangle.
Prove: $m\angle 1 = m\angle 2 + m\angle 3$