Math 8 – Mrs. Volpe

Unit 10 - Angles

2018-2019

	Date	Lesson	Topic	Homework
M	2/25	1	Complementary, Supplementary and Vertical Angles	Lesson 1- Page 6
T	2/26	2	Complementary, Supplementary and Vertical Angles	Lesson 2 – Page 10
W	2/27	3	Review	Family Connect Night
T	2/28	4	Parallel Lines Angle Relationships and Measures	Lesson 4 – Page 17
F	3/1	5	Parallel Lines Finding an Angle Algebraically	Lesson 5 – Page 22 - 23
M	3 /4		Quiz	
T	3/5	6	Triangles – Interior Angles	Lesson 6 – Page 28
W	3/6	7	Triangles – Exterior Angles	
T	3/7	8	Triangles – Exterior Angles (Day 2)	Lesson 8 – Page 35
F	3/8	9	Parallel Lines and Triangles	Lesson 9 – Page 38 - 39
M	3/11		Review	Study!
T	3/12		Test	Good Luck!

Name: _____ #_____

Unit 10 – Lesson 1

Aim: I can determine the measure of Complementary, Supplementary, & Vertical Angles.

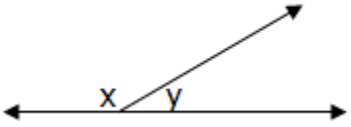
Warm Up: Answer the following questions based off your prior knowledge of grade 7-

(1) Which pairs of angles are complementary?

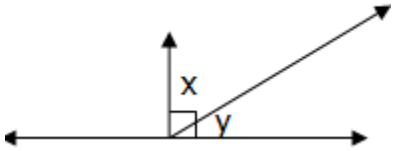
a. 42° and 58°
b. 100° and 80°
c. 38° and 52°
d. 300° and 60°

(2) If angles x and y are supplementary, which diagram below illustrates that situation?

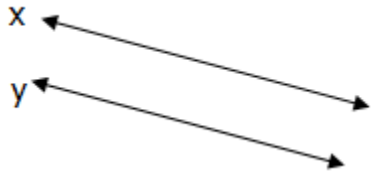
a.



b.

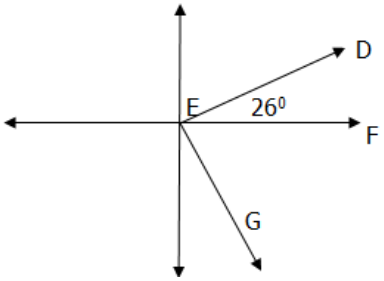


c.



(3) In the diagram below, $< DEF$ and $< FEG$ are complementary. What is the measure of $< FEG$?

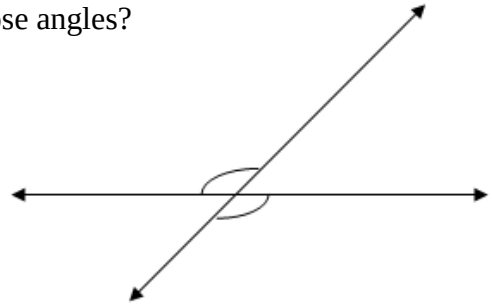
(1) 90°
(2) 26°
(3) 52°
(4) 64°



(4) Two lines that intersect to form right angles are called

a. Parallel
b. Straight
c. Obtuse
d. Perpendicular

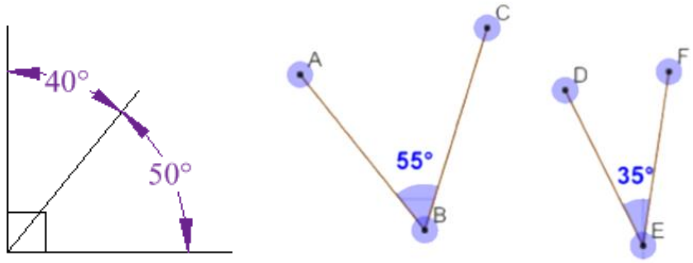
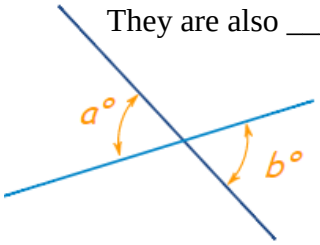
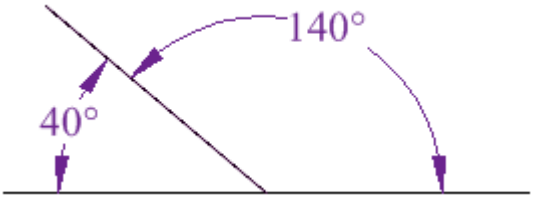
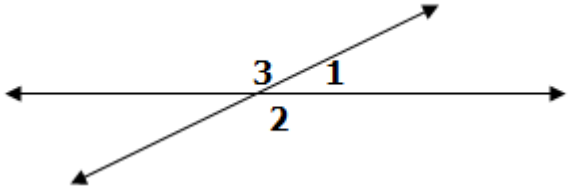
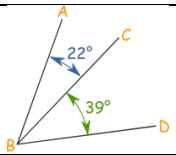
(5) Look at the diagram below. What is the pair of angles called that are marked in the diagram? What do you know to be true about those angles?



They are referred to as: _____ angles.

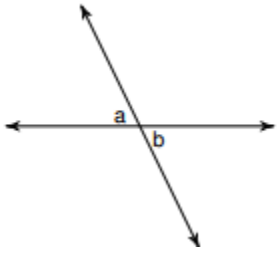
We know that these angles are _____.

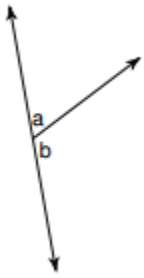
Guided Practice: Angle Relationships

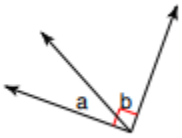
Complementary Angles	Vertical Angles
Two angles are complementary angles if they add up to _____ degrees. They do not have to be next to each other. 	When two lines intersect, four angles are created to having a point of intersection at the _____. The angles that are _____ from each other are considered to be vertical angles. They are also _____. 
Supplementary Angles	**Linear Pairs**
Two angles are supplementary angles if they add up to _____ degrees. They do not have to be next to each other. 	Adjacent supplementary angles are called linear pairs because they form a _____.  $m < 1 + m < 2 =$ _____ $m < 1 + m < 3 =$ _____
Adjacent Angles Two angles that share a common vertex and one common side. They do not overlap	

Exercise 1- Name the relationship: complementary, supplementary, vertical, or adjacent

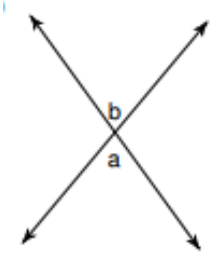
(a) _____ (b) _____ (c) _____

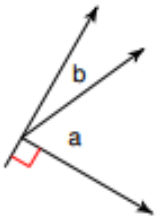


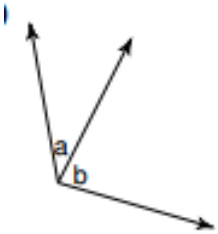




(d) _____ (e) _____ (f) _____

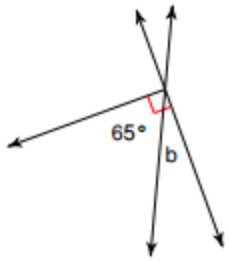




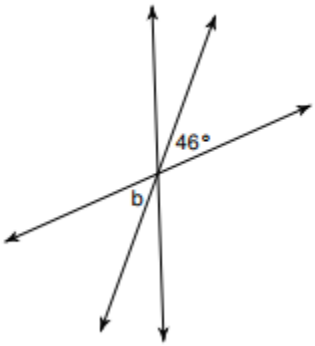


Exercise 2- given the diagram below; determine the missing value for the angles

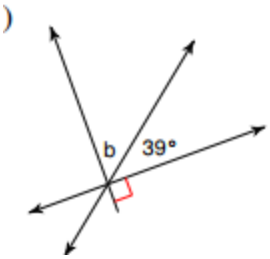
(a) _____



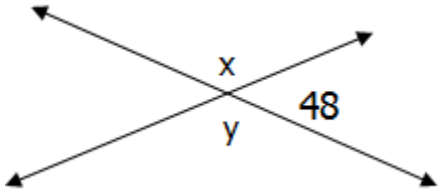
(b) _____



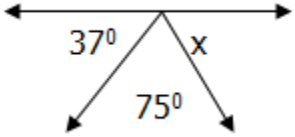
(c) _____



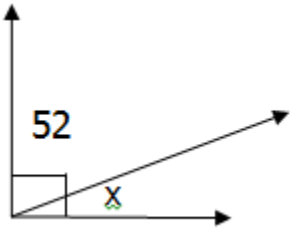
(d) _____



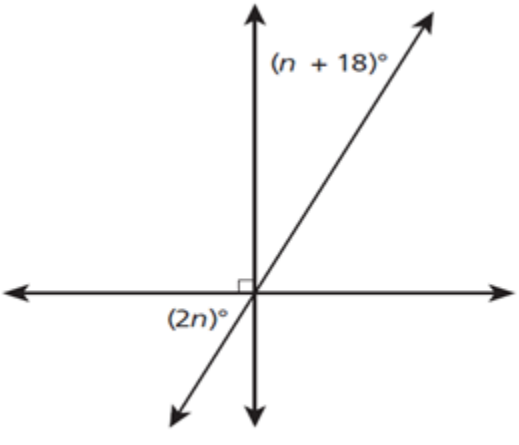
(e) _____



(f) _____



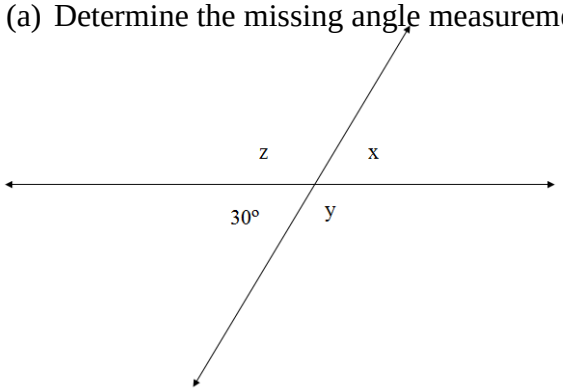
Exercise 3- What is the value of n, in the diagram below?



[not drawn to scale]

Problem Set:

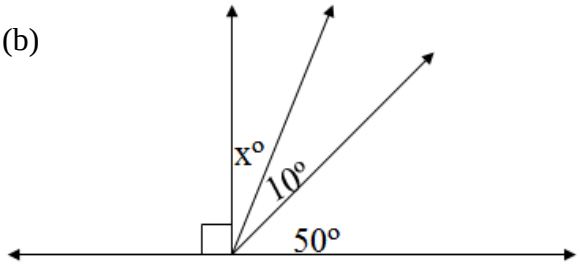
(a) Determine the missing angle measurement and explain how you arrived at your answer:



X = _____, Y= _____, Z = _____

because,

(b)



Angle x = _____, because

1. Given the diagram below, determine the missing angles:

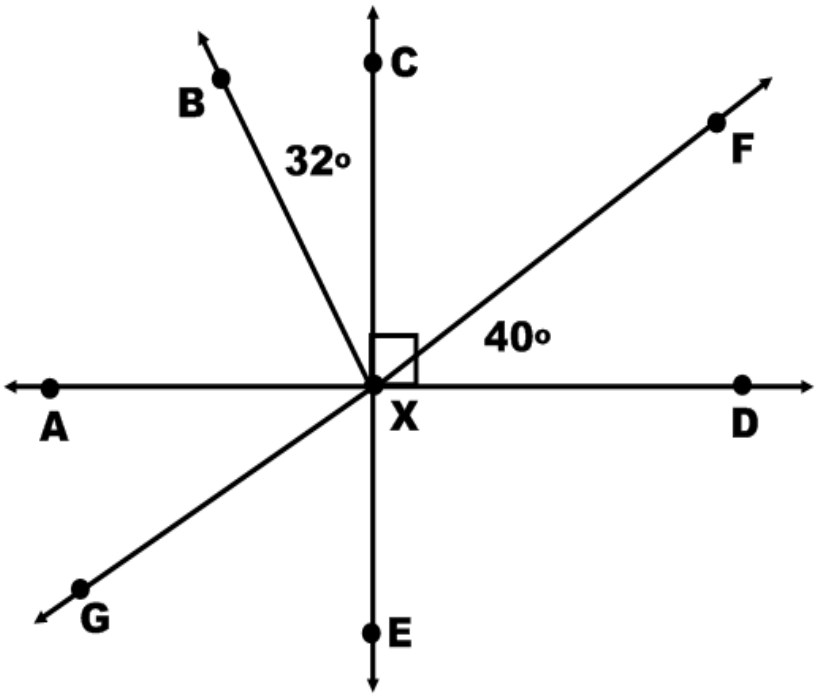
(a) m$\angle CXF$ =

(b) m$\angle BXA$ =

(c) m$\angle AXG$ =

(d) m$\angle GXE$ =

(e) m$\angle EXD$ =



Unit 10 – Lesson 1 Homework

1. Complete the statement: Two parallel lines . . .

a) meet at 3 points
b) meet at 2 points
c) meet at 1 point
d) never meet

2. Find the complement of each angle:

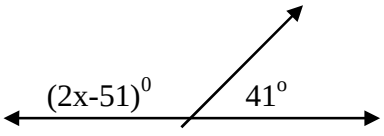
a) 45° _____ b) 30° _____ c) 89° _____

3. Find the supplement of each angle:

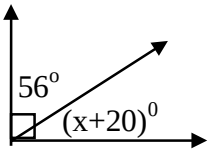
a) 120° _____ b) 25° _____ c) 90° _____

Directions: Determine the number that represents x, y, or z in each diagram below. Show all work to receive full credit for your homework! (Setting up an equation will help)

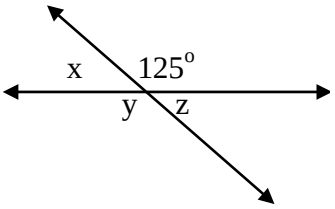
4)



5)



6)



Unit 10 – Lesson 2

Aim: I can determine the measure of Complementary, Supplementary, & Vertical Angles.

Warm Up: fill in the following blanks-

- Vertical angles are _____
- Angles that share a common vertex and a common side are _____ angles
- The measure of a complementary angle is _____
- The measure of a supplementary angle is _____
- Two adjacent angles that make a straight line are called _____

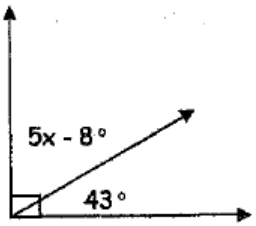
Guided Practice:

Exercise 1- Given the information provided below, fill in the table:

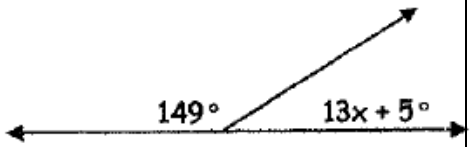
Angle	Complement	Supplement	Vertical
43°			
	51°		
		162°	
			13°

Exercise 2- given the information below, solve for x

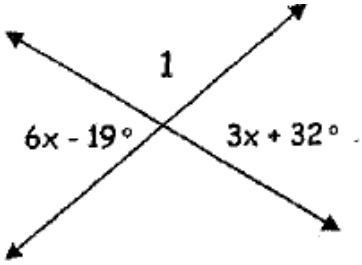
(a)



(b)



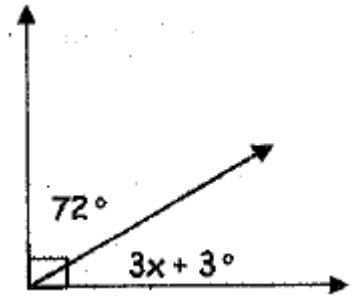
(c)



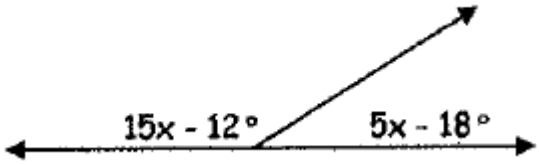
Problem Set:

1. Solve for x, given the diagram:

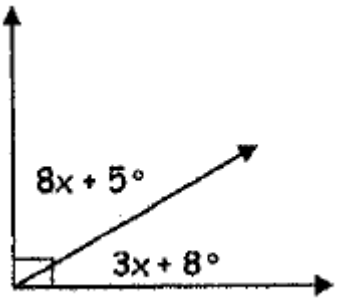
(a)



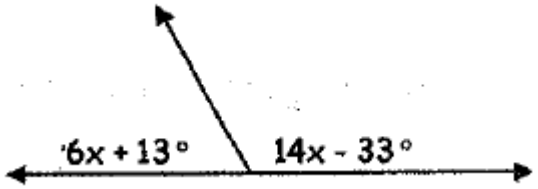
(b)



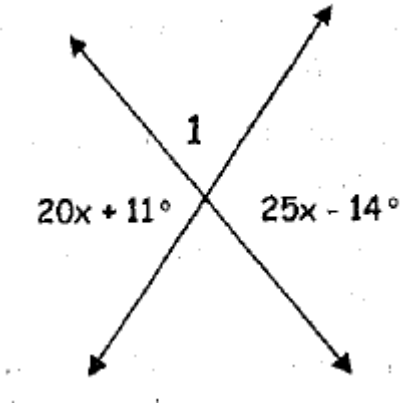
(c)



(d)

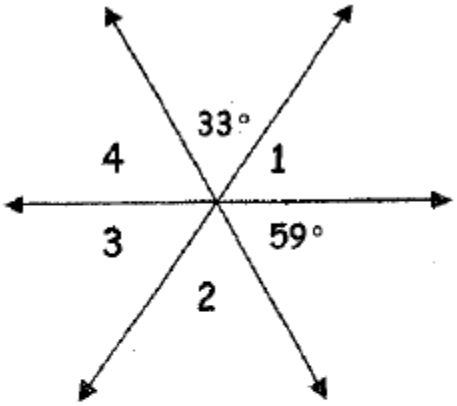


(e)



2. Solve for the missing angle values:

(a)



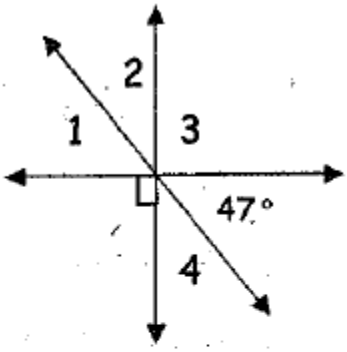
$m\angle 1 =$ _____

$m\angle 2 =$ _____

$m\angle 3 =$ _____

$m\angle 4 =$ _____

(b)



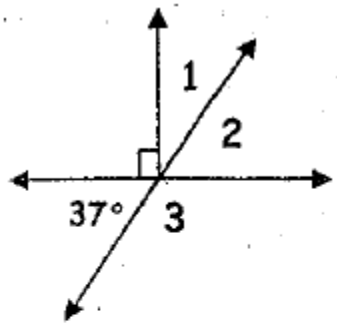
$m\angle 1 =$ _____

$m\angle 2 =$ _____

$m\angle 3 =$ _____

$m\angle 4 =$ _____

(c)

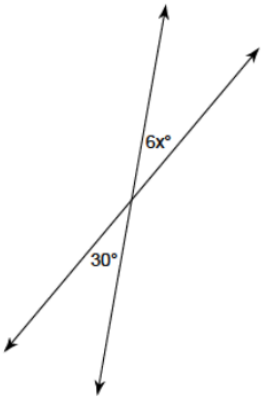


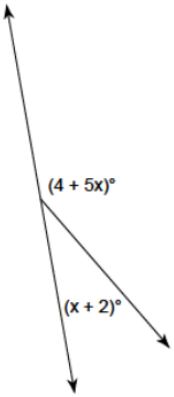
$m\angle 1 =$ _____

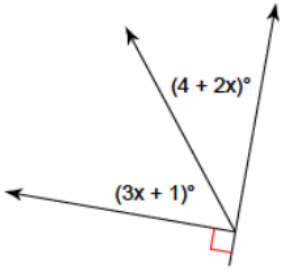
$m\angle 2 =$ _____

$m\angle 3 =$ _____

3. Solve for x:





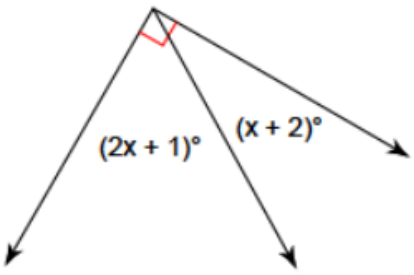


Unit 10 – Lesson 2 Homework - Think

4. The $m\angle A$ is complementary to the $m\angle B$. The $m\angle C$ is complementary to the $m\angle B$. If $m\angle A = 62°$, what is the m$\angle B$ and the m$\angle C$?

5. The $m\angle D$ is supplementary to the $m\angle E$. The $m\angle F$ is supplementary to the $m\angle E$. If $m\angle F = 113°$, what is the m$\angle D$ and the m$\angle E$?

6. Mrs. Volpe gave her students the following problem. Below is the response from one of her students. Do you agree or disagree? **Explain.**



$2x + 1 + x + 2 = 180$

$3x + 3 = 180$

$-3 = -3$

$3x = 177$

$\frac{3}{3} \quad \frac{177}{3}$

$x = 59$

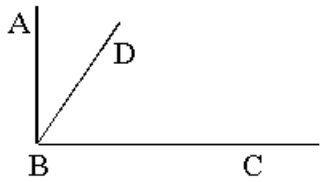
Unit 10 – Lesson 3

Aim: I can determine the measure of Complementary, Supplementary, & Vertical Angles.

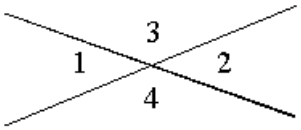
1) What is the supplement of a 42º angle? _____

2) What is the complement of a 83º angle? _____

3) An angle measures 57º, what does a angle vertical to it measure? _____

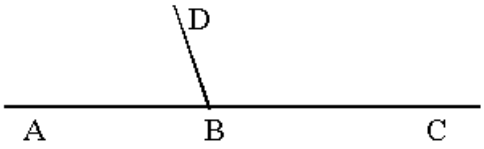


4) If $m < ABD = 35º$, what is the $m < CBD$?



5) If angle 3 measures 122º, what does angle 4 measure?

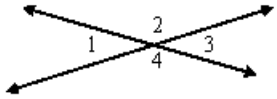
6) If angle 3 measures 122º, what does angle 1 measure?



7) If angle DBC measures 108º, what does angle DBA measure?

---

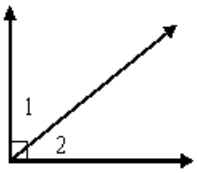
8)



< 1 = 4x – 25
< 3 = 2x + 13
Find the measure of <1

---

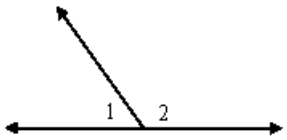
9)



< 1 = 2x – 7
< 2 = 3x – 8.
Find the measure of < 2

---

10)

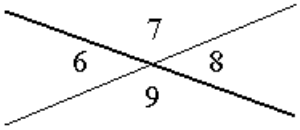


< 1 = 2x – 7
< 2 = 3x – 8
Find the $m < 1$.

< A = 42º	< B = 116º	< C = 64º	< D = 48º

11) Which two angles are complementary? _____

12) Which two angles are supplementary? _____



13) Name a pair of congruent angles. _____

14) Name a pair of supplementary angles. _____

---

15) If 2 angles are complementary and one angle is 89º, find its complement. _____

16) If 2 angles are complementary and one angle is 5xº, find its complement. _____

17) If 2 angles are supplementary and one angle is 89º, find its supplement. _____

18) If 2 angles are supplementary and one angle is 5xº, find its supplement._____

---

19) Two complementary angles are in a ratio of 4:11. Find each angle.

---

20) Two supplementary angles are in a 2:7 ratio. Find the larger angle.

---

21) Two vertical angles measure 8x + 6 and 4x + 22. Solve for x

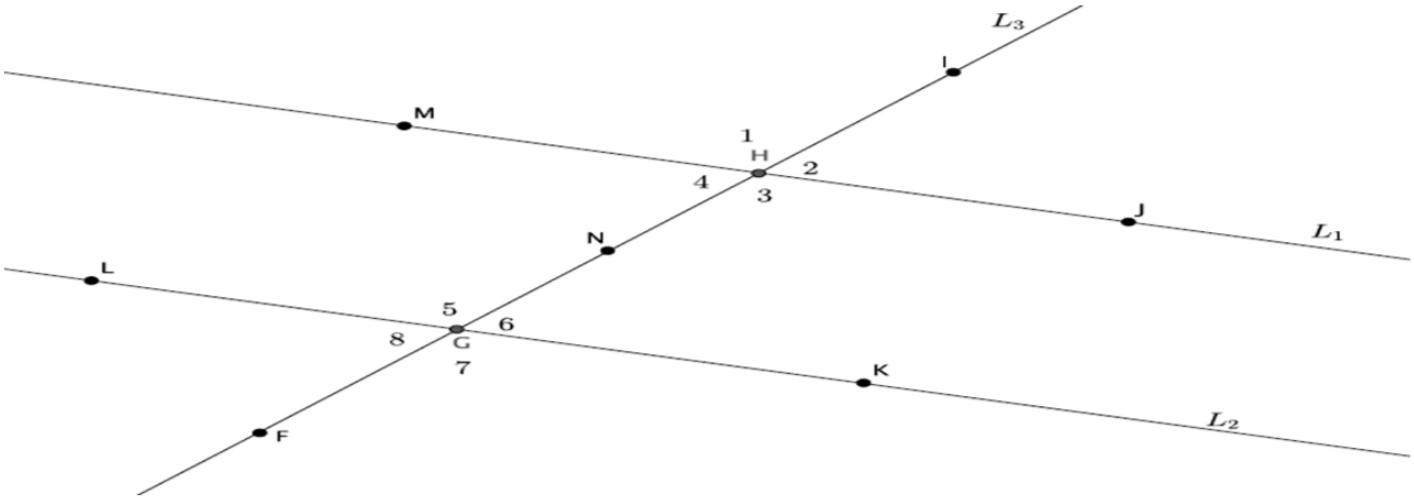
Unit 10 – Lesson 4

Aim: I can determine what angle relationships exist when a parallel line is cut by a transversal.

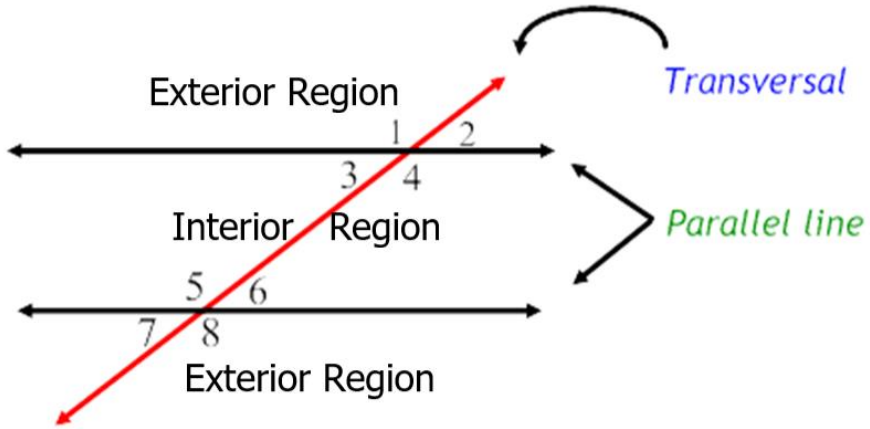
Warm Up: Use the diagram below to list all the pairs of vertical angles. Use the angle numbers (1-8) to list of the vertical angles. If the measure of <1 = $125^0$and the measure of <6 = 55^0, then find the measure of all the other six(6) angles. Write angle measures directly in diagram.

Pairs of Vertical Angles are: < _____ and <_____ ; < _____ and < _____

< _____ and <_____ ; < _____ and <_____



Guided Practice: Angle Pairs formed by parallel lines being cut by a transversal



Exercise 1- If m<1 = 130^0, find measure of the following angles:

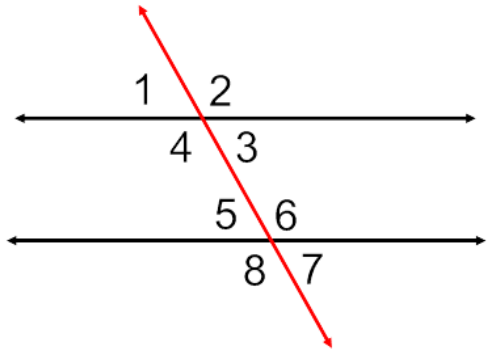
m<2 _____

m<3 _____

m<4 _____

Corresponding Angles:

These angles are **congruent angles** located on the **same side of the transversal**. **One is in interior region and one is in exterior region at different vertices**.



List all pairs of **corresponding angles** below:

_____ _____

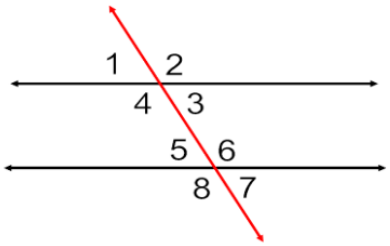
_____ _____

Alternate Interior Angles:

These angles are **congruent angles** located **between the parallel lines in the interior region** and **on opposite sides of the transversal** & at different vertices.

List all pairs of **alternate interior angles** in the diagram:

_____ _____

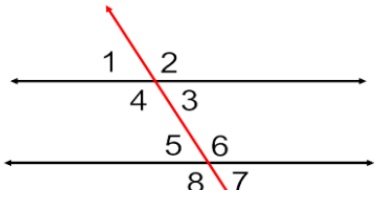


Alternate Exterior Angles:

These angles are **congruent angles** located in the **exterior region** and on **opposite sides of the transversal** & at **different vertices.**

List all pairs of **alternate exterior angles** in the diagram:

_____ _____



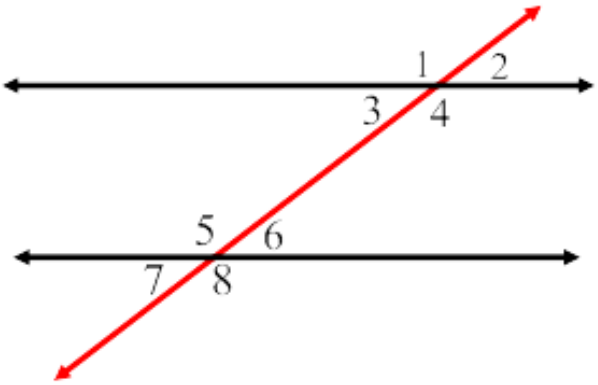
Exercise 2- Name the following relationship between each of the following angle pairs:

a) 1 and 8 b) 5 and 8

c) 2 and 6 d) 3 and 6

e) 4 and 5 f) 3 and 7

g) 4 and 8 h) 1 and 2



Problem Set:

1. If the m<1 = 60^0, find the measure of each of the other angles in the diagram below? Name the angle relationship to <1 that may have been used to determine each angle measurement.

m<2 = _____ b/c they are _____

m<3 = _____ b/c they are _____

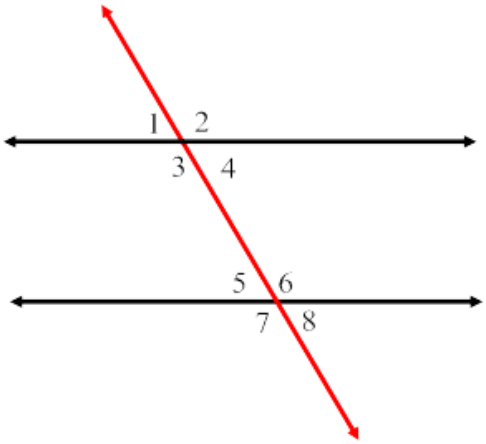
m<4 = _____ b/c they are _____

m<5 = _____ b/c they are _____

m<6 = _____ b/c they are _____

m<7 = _____ b/c they are _____

m<8 = _____ b/c they are _____



2. Classify each of the angle pairs in the figure as alternate interior, alternate exterior, corresponding, vertical, or supplementary.

<2 and <8 _____

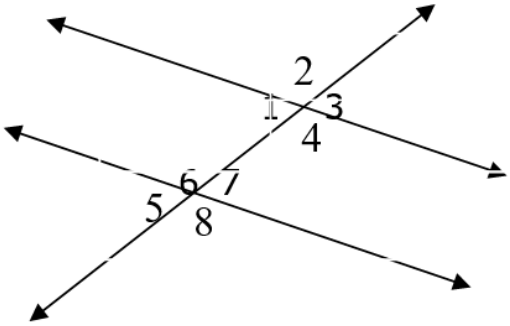
<1 and <5 _____

<4 and <6 _____

<5 and <7 _____

<3 and <4 _____

<3 and <7 _____

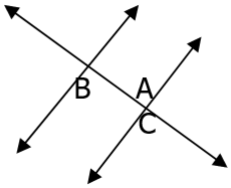


3. Which of the following is true when parallel lines are cut by a transversal?

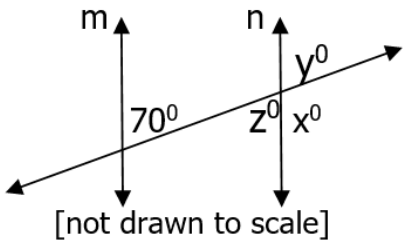
(1) Vertical angles are supplementary?
(2) Alternate exterior angles are supplementary
(3) Alternate interior angles are complementary
(4) Corresponding angles have the same measure.

4. Which statement is **not true** concerning angles A,B, and C in the diagram shown.

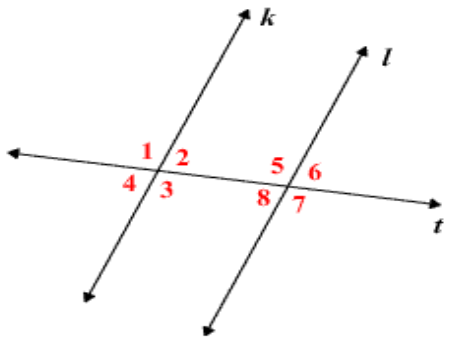
(1) angle B and angle C are alternate exterior angles
(2) angle A and angle C are vertical angles
(3) angle A and angle B are alternate interior angles
(4) angle B and angle C are corresponding angles



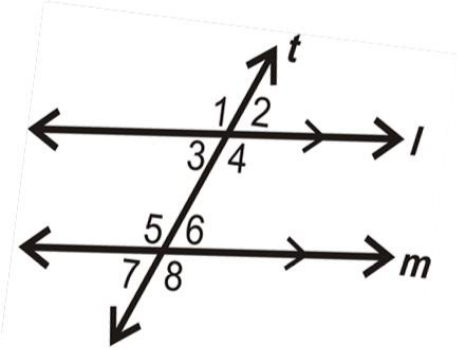
5. Lines m and n are parallel in the figure below. What is the measure of angle x? <u>Explain</u> how you arrived at your answer.



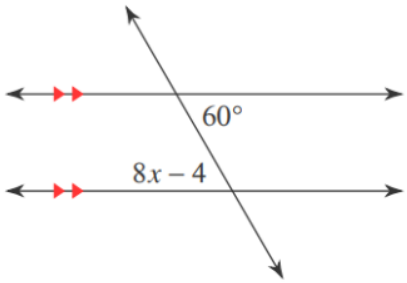
6. In the diagram below, lines k and l are parallel and line t is the transversal. State all the angles that must be congruent to angle 1. Explain your reasoning.



7. Lines *l* and *m* are parallel and cut by transversal t. The m<8=115^0. Find the measure of the other angles in diagram.



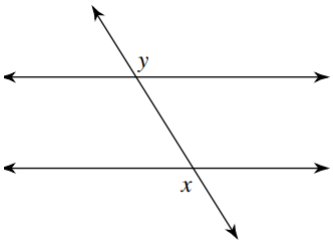
8. Challenge: Solve for *x*



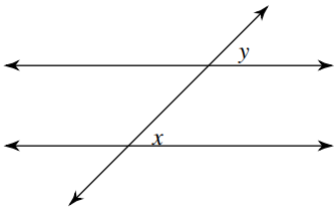
Unit 10 – Lesson 4 Homework

Identify each pair of angles as corresponding, alternate interior, or alternate exterior.

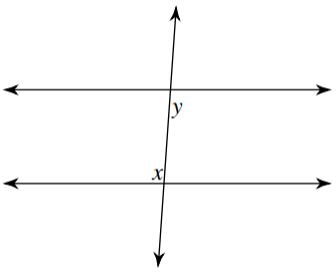
1)



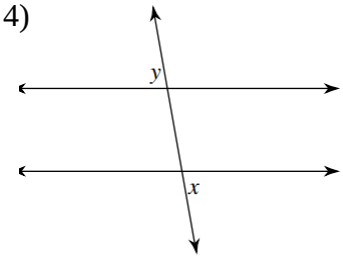
2)



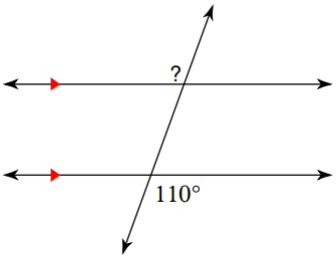
3)

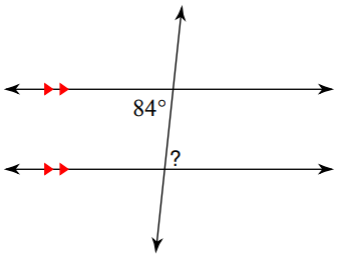


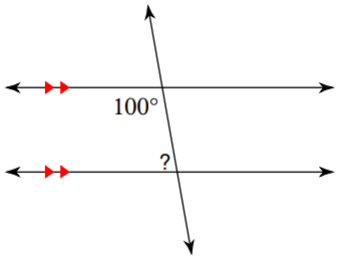
4)

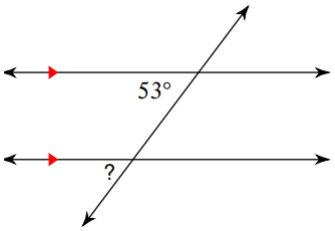


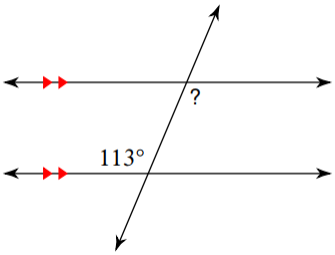
Find the measure of each of the indicated angles:

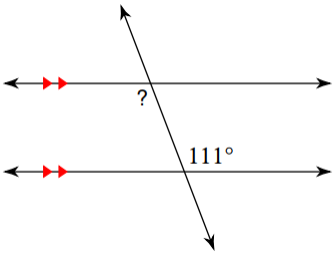








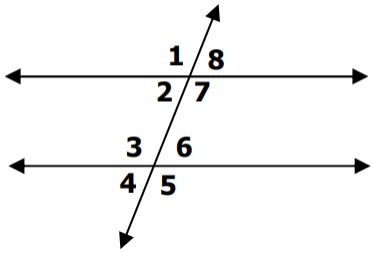




Unit 10 – Lesson 5

Aim: I can use properties of angle pairs to determine missing angles.

Warm Up: Given the diagram below,



If $m\angle 7 = 100°$, then $m\angle 3$ = _____

If $m\angle 7 = 175°$, then $m\angle 6$ = _____

If $m\angle 7 = 120°$, then $m\angle 5$ = _____

If $m\angle 4 = 20°$, then $m\angle 7$ = _____

If $m\angle 3 = 140°$, then $m\angle 8$ = _____

If $m\angle 4 = 30°$, then $m\angle 1$ = _____

If $m\angle 4 = 40°$, then $m\angle 2$ = _____

If $m\angle 7 = 125°$, then $m\angle 4$ = _____

Guided Practice:

When looking for the value of x or an angle measurement that consists of algebraic expressions in a diagram such as the ones you see on this page, you must set up an equation to answer the problem. To do this, you must know the angle relationship between the angles that you are working with.

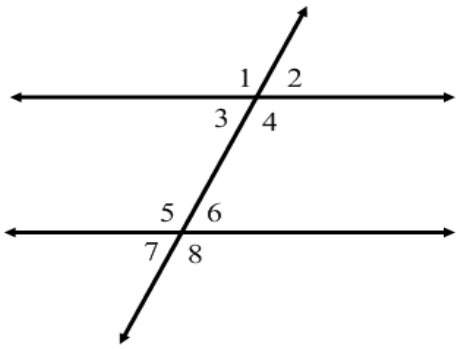
- Are they supplementary (sum to 180^0) OR complementary(sum to 90^0)?
- Are they congruent to each other? vertical, alternate interior, alternate exterior, or corresponding angles.

If you know the relationship, then you can set up an equation to find the value of x.

Exercise 1- Based off the diagram below, answer the following questions:

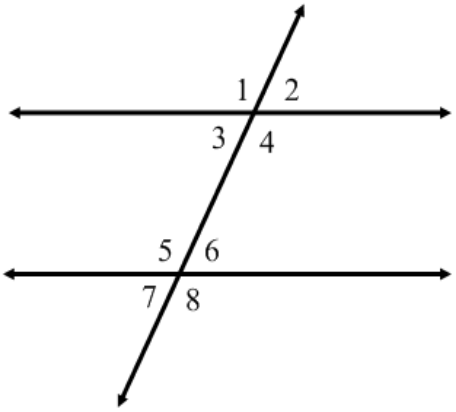
What is the angle relationship between < 4 and < 5?

The m<4 = $5x-10$ and the m<5 = $3x + 40$. Find the m<5.



Not Drawn to Scale

Exercise 2- Based off the diagram below, answer the following questions

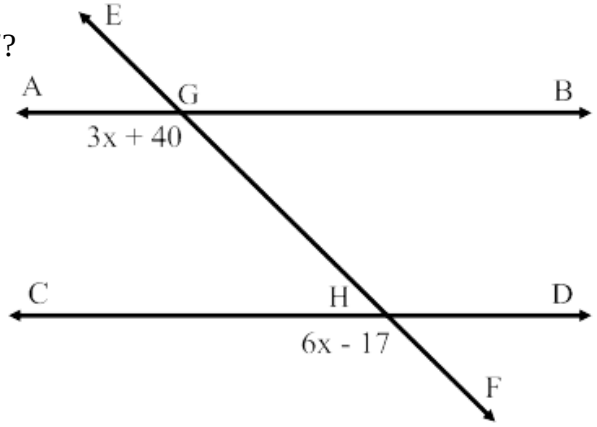


a) What is the name of the relationship between Angle 2 and Angle 7?

b) The m<2 = 6x and the m<7 = 2x + 40. Find m<7

c) What is m<5? _____

Exercise 3- In the figure below, $\overleftrightarrow{EF}$ intersects parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ at G and H.



Not Drawn to Scale

a) What is the name of the relationship of $\angle AGH$ and $\angle CHF$?

b) What is the value of x?

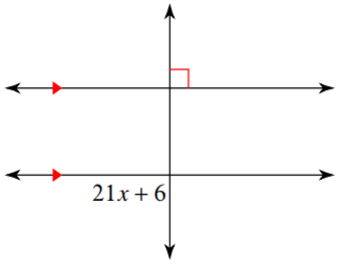
c) What is the $\angle CHF$?

d) Find the measure of all the other angle?

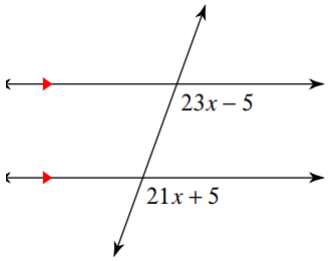
Problem Set:

1. Given the problems below, solve for x:

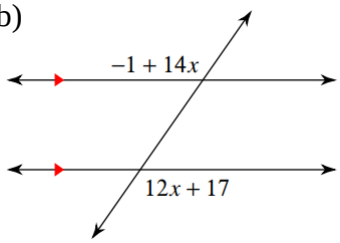
(a)



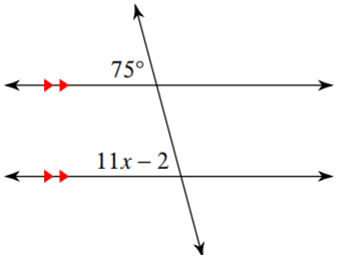
(c)



(b)



(d)



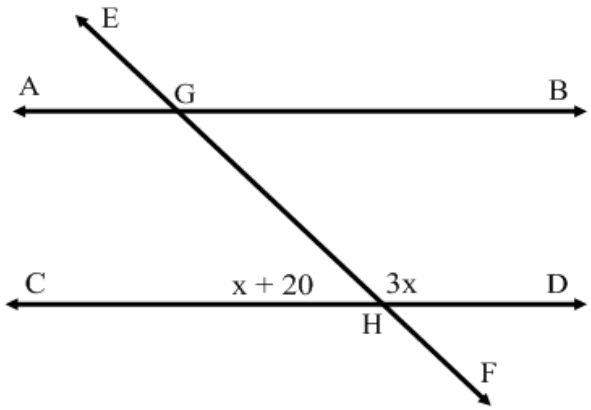
2. In the accompanying diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected $\overleftrightarrow{EF}$ by at G and H. respectively. $m < CHG = x + 20$ and $m < DHG = 3x$.

a) $m < CHG =$ _____

b) $m < DHG =$ _____

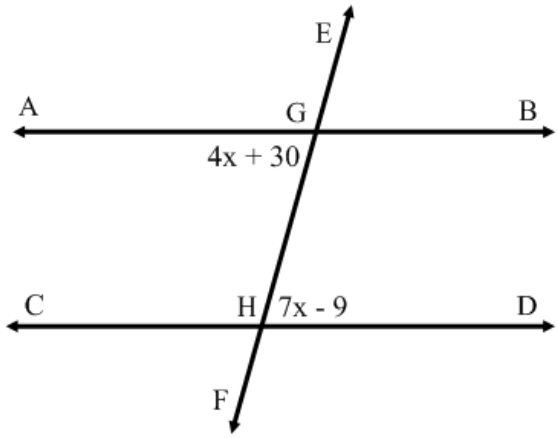
c) $m < AGH =$ _____

d) $m < FHD =$ _____



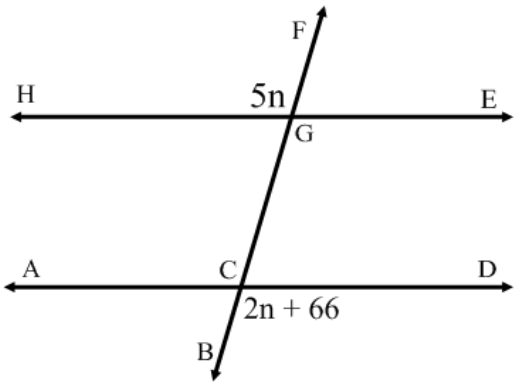
Not Drawn to Scale

3. In the accompanying diagram, parallel lines $\overline{AB}$ and $\overline{CD}$ are intersected by transversal $\overline{EF}$ at G and H, respectively. If $m < AGH$ = 4x + 30 and $m < GHD$ = 7x − 9, what is the value of x?



Not Drawn to Scale

4. In the accompanying diagram, parallel lines $\overline{HE}$ and $\overline{AD}$ are intersected by transversal $\overline{BF}$ at G and C, respectively. If $m < HGF$ = $5n$ and $m < BCD$ = $2n + 66$, what is $m < HGF$ and $m < FGE$?



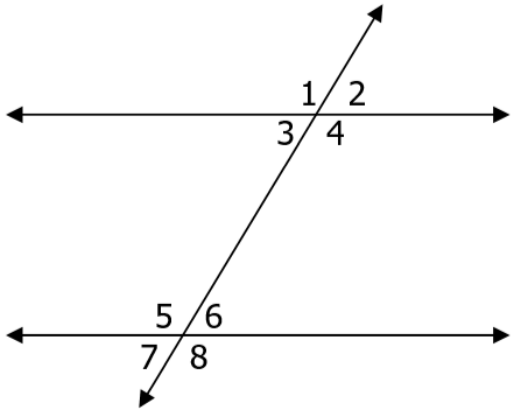
Not Drawn to Scale

Unit 10 – Lesson 5 Homework

Directions: Answer all questions and be sure to show your work to receive credit.

1. Given: $m < 3 = 3x + 30$ and $m < 7 = 5x$
   a) The relationship is:

   b) The equation is:



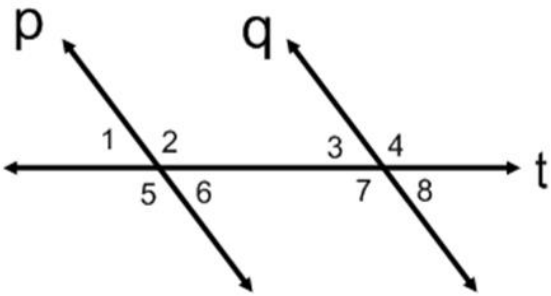
Not Drawn To Scale

   X = _____

   c) The measure of angle 3 =

2. If the $m < 5 = 5x + 15$ and the $m < 4 = 6x - 10$.
   a) The relationship is:

   b) The equation is



   X = _____

   c) The measure of angle 6 =

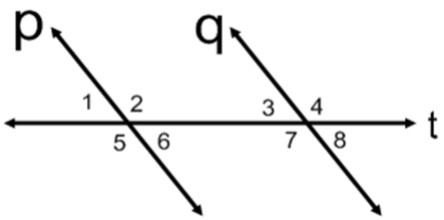
3. In the diagram below, lines p and q are parallel. Which angles must be congruent to <3?

(1) 8 only

(2) 1, 6 and 8 only

(3) 1, 2, 4 and 8 only

(4) 2, 6, 7, and 8 only



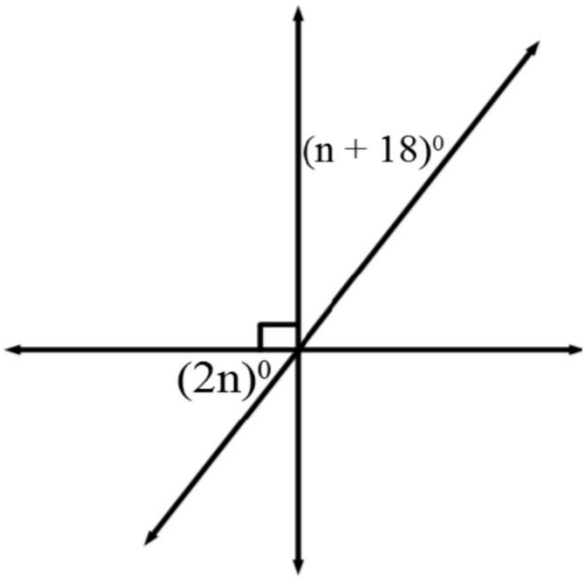
4.What is the value of n in the diagram below? Show all work.

(1) 18

(2) 24

(3) 42

(4) 48



<u>Review:</u> Show all work.

5. Without solving, determine how many solutions for each equation below. Show needed work. If there is **one solution**, **solve the equation completely** and state the solution.

a.) **7x + 3 = 2x + 3**

b.) **8(w – 4) = 2(4w – 16)**

6. Simplify the following:

$$\frac{x^5x^3}{x^2}$$

Unit 10 –Lesson 6

Aim: I can find interior angles

Warm Up: Which of the following is true when parallel lines are cut by a transversal?

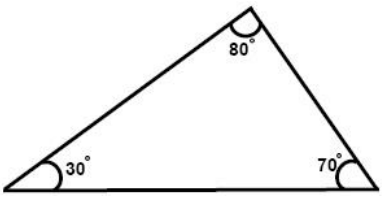
(1) Vertical angles are supplementary?
(2) Alternate exterior angles are supplementary
(3) Alternate interior angles are complementary
(4) Corresponding angles have the same measure.

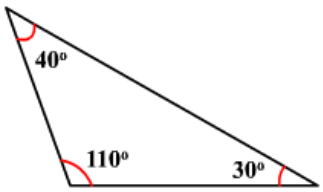
Guided Practice:

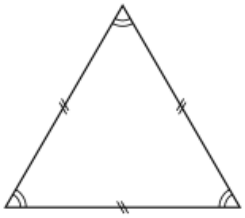
There are many different types of triangles that you may have already learned about.

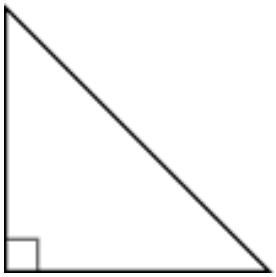
Types of Triangles		
Name of Triangle	**Definition**	**Picture**
Equilateral Triangle		
Isosceles Triangle		
Scalene Triangle		
Acute Triangle		
Right Triangle		
Obtuse Triangle		

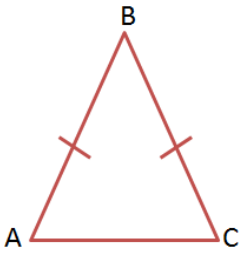
Exercise 1- Classify each triangle below using the vocabulary from the first page of this handout.

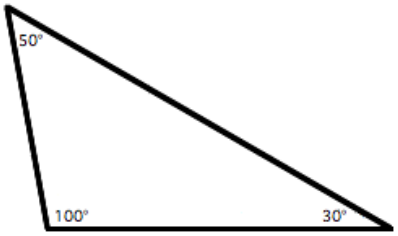






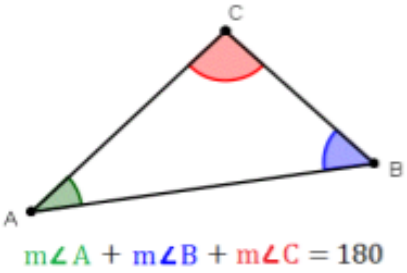


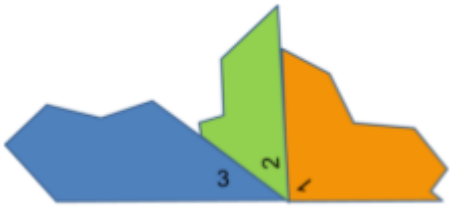




Angles in a Triangle

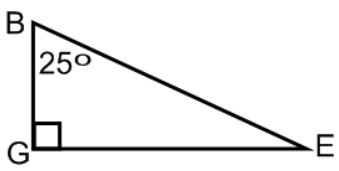
The angles in a triangle add up to _____ degrees.



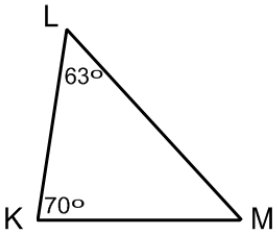


Exercise 1- Show all your work, for the following problems.

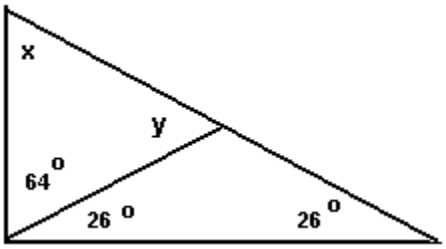
(a) Given the measure of $m < EBG = 25$, determine the $m < BEG$..

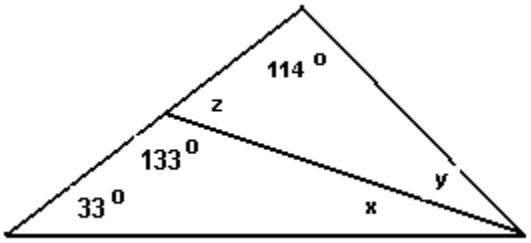


(b) What is the $m < LMK$?

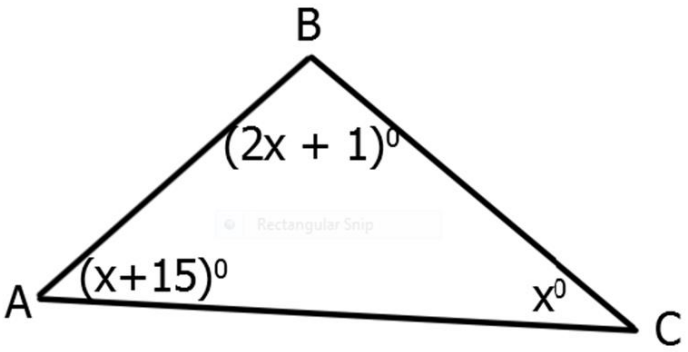


Exercise 2- Solve for all missing angles





Exercise 3- Find the measure of each angle in triangle ABC. Show all work.

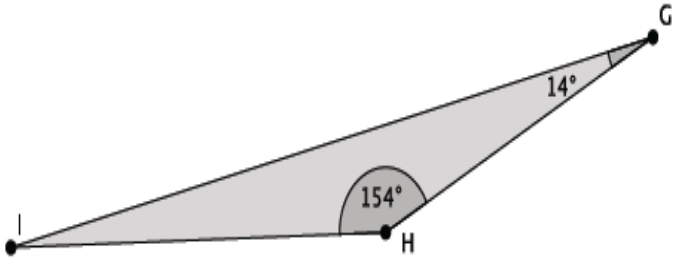


Exercise 4- The measures, in degrees, of the three angles of a triangle are x, x+10, and 2x−6. Find the measure of each angle.

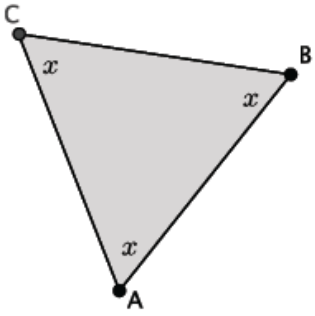
Exercise 5- In ΔBED, the measure of $< E$ is 21 $\boldsymbol{less\ than}$ $four\ times\ the\ m < \boldsymbol{B}$, and the measure of $< D$ is 1 $\boldsymbol{more\ than}$ $five\ times\ the\ measure\ of\ < \boldsymbol{B}$. Find the measure, in degrees, of each angle of ΔBED.

Problem Set:

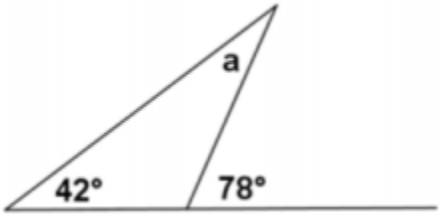
1. Find the measure of $< HIG$

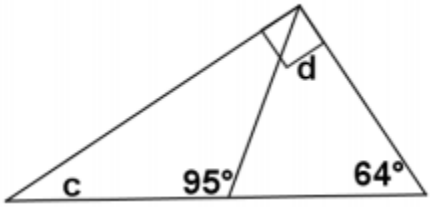


2. What is the measure of $\angle ABC$?

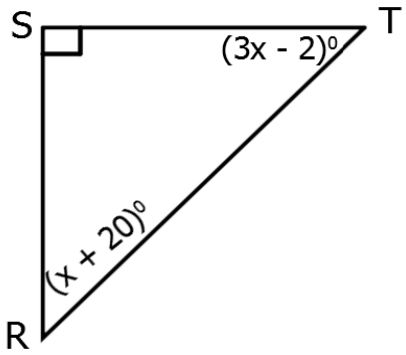


3. Determine the value of the missing angles:





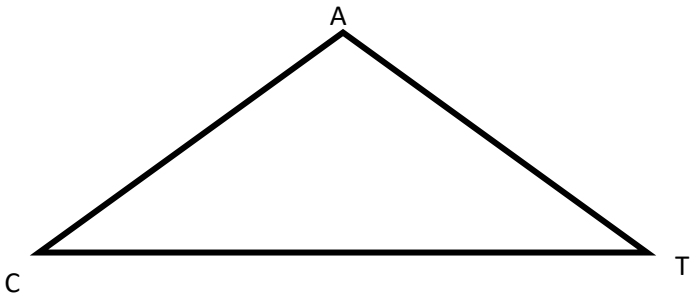
4. Given ΔTSR is a right triangle, with $\angle T = 3x - 2, \angle R = x + 20$. Determine the $m\angle R$ and $m\angle T$.



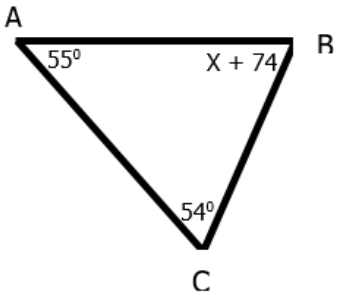
Unit 10 – Lesson 6 Homework

Exercise 1- Given right triangle ABC, with $m\angle CAB = 34°$, what is the measure of $\angle BCA$

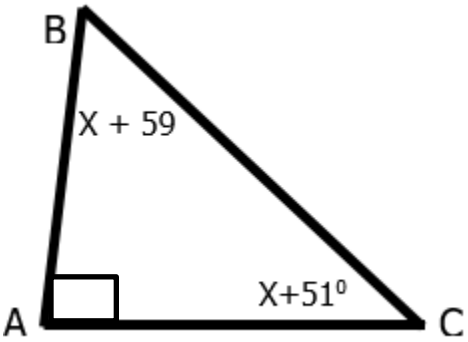
Exercise 2- The triangle below is an isosceles triangle. What is the measure of angle C and angle T if the measure of angle A is 110°?



Exercise 3- Find the value of x in the triangle below. Then find the measure of angle R



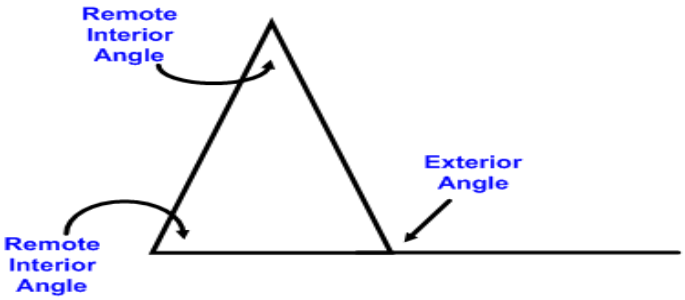
Exercise 5- Find the value of x in the triangle below. Then find the measure of angles B and C.



Unit 10 – Lesson 7

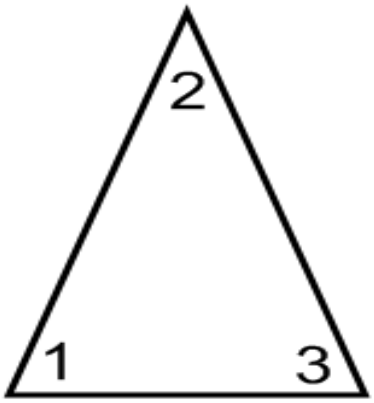
Aim: I can determine what relationship exists between the measure of an exterior angle and the measure of its two remote interior angles.

Discovery: An **interior angle** of a triangle is formed by two sides of the triangle. An **exterior angle** of a triangle is formed by one side of the triangle and the extension of an adjacent side. Each exterior angle has **two *remote interior angles***. A **remote interior angle** is an interior angle that is not **adjacent (next)** to the exterior angle.



There is a special relationship between the measure of an exterior angle and the measures of its two remote interior angles.

1) Extend the base of the triangle to the right and label the exterior angle as < 4.



2) The **Triangle Sum Theorem** states:

   $\boldsymbol{m < 1 + m < 2 + m < 3}$ = _____

3) $< \mathbf{3}$ and $< \mathbf{4}$ are _____ angles.

   Therefore $\boldsymbol{m < 3 + m < 4}$ = _____.

4) Use the equations in step 2 and step 3 to complete the following equation:

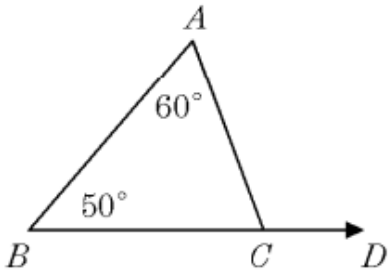
   m<1 + m<2 + _____ = _____ + m<4

   What conclusions can you come up with?

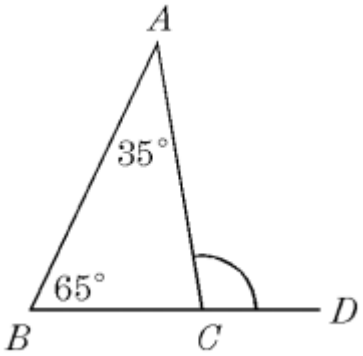
Guided Practice:

The *Exterior Angle Theorem* states that the _____ of the two remote _____ angles will equal the _____ angle.

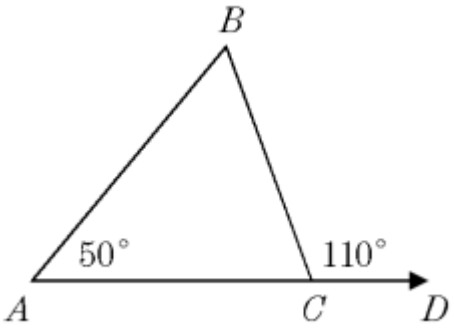
Exercise 1- In the accompanying diagram, $\angle ACD$ is an exterior angle of ΔABC. If $m\angle A = 60$ and $m\angle B = 50$, find $m\angle ACD$.



Exercise 2- In the accompanying diagram, $\angle ACD$ is an exterior angle of ΔABC. If $m\angle A = 35$ and $m\angle B = 65$, find $m\angle ACD$



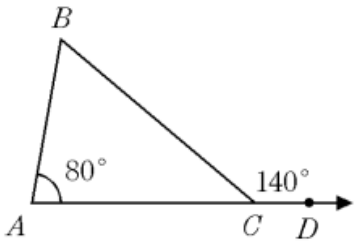
Exercise 3- In the accompanying diagram of ΔABC, the measure of exterior angle BCD is 110 and $m\angle BAC = 50$. Find $m\angle ABC$



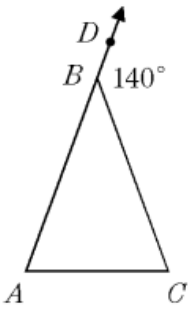
Exercise 4- Given triangle ABC, with $\overrightarrow{BC}$ extended to D, $m\angle A = 20,\ m\angle ACD = 70$, what is the $m\angle B$?

Problem Set:

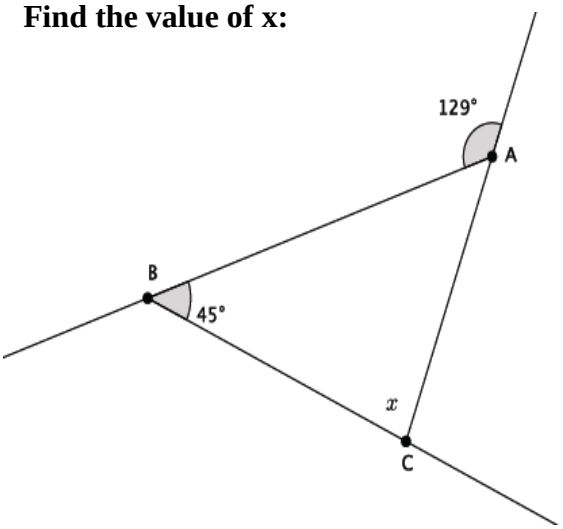
1. In the diagram shown, $m\angle BCD = 140$ and $m\angle BAC = 80$. Find $m\angle ABC$.



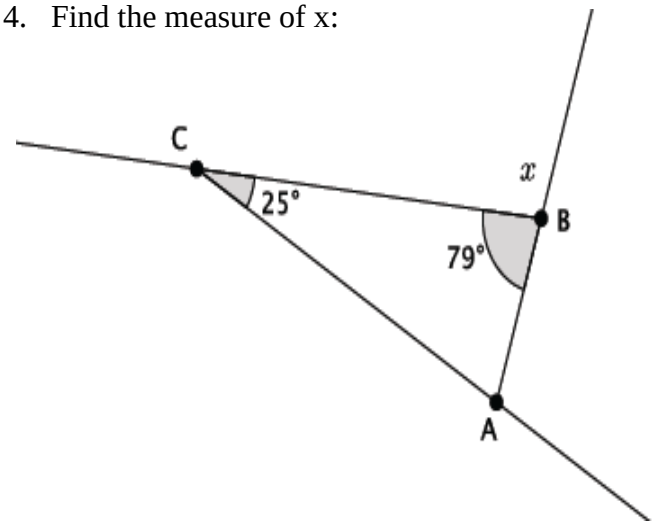
2. In the accompanying diagram of isosceles triangle ABC, $\overline{AB} \cong \overline{CB}$, point D is on $\overline{AB}$, and $m\angle CBD = 140$. Find $m\angle A$.



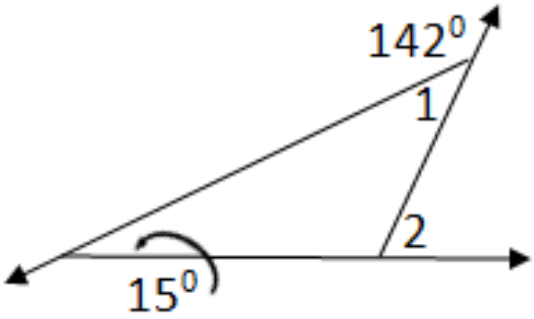
3. **Find the value of x:**



4. Find the measure of x:



5. Given the diagram below, find the measure of angle 1 and angle 2:



Unit 10 – Lesson 8

Aim: I can determine what relationship exists between the measure of an exterior angle and the measure of its two remote interior angles.

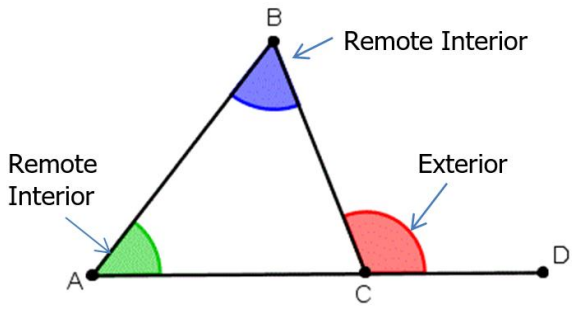
Warm Up: Given triangle DOG, with $\overrightarrow{OG}$ extended to S, $m\angle D = 25,\ m\angle DGS = 68$, what is the $m\angle O$?

Guided Practice:

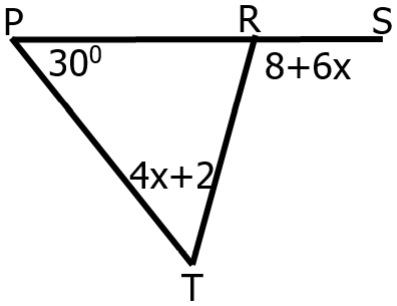
Remember!!!

Exterior Angle Theorem states the sum of the two remote interior angles equals the exterior angle.

m<A + m<B = m<BCD



Exercise 1- State the angles, using three letter notation then use algebra to solve for x and find the measure of the missing angles.



Remote Angles _____ & _____

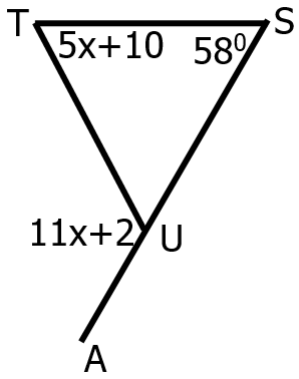
Exterior Angle _____

X = _____

$m < PTR =$_____

$m < SRT =$_____

Exercise 2- State the angles, using three letter notation then use algebra to solve for x and find the measure of the missing angles.



Remote Angles _____ & _____

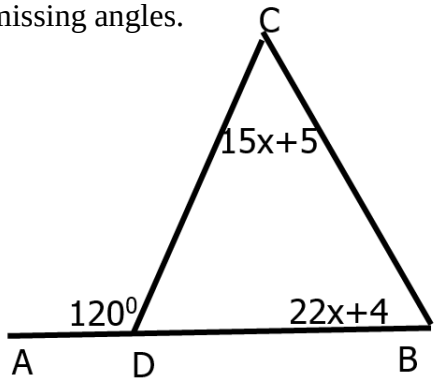
Exterior Angle _____

X = _____

$m < STU =$_____

$m < TUA =$_____

Exercise 3- State the angles, using three letter notation then use algebra to solve for x and find the measure of the missing angles.



Remote Angles _____ & _____

Exterior Angle _____

X = _____

$m < DCB =$_____

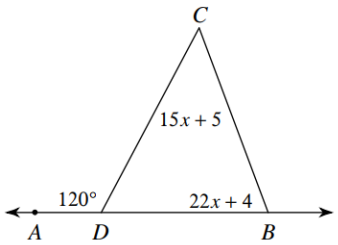
$m < CBD =$_____

Explain, in words, how you are able to determine the measure of angle CDB.

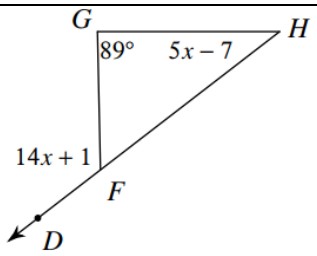
Problem Set:

Solve for x, and all the angles in the diagram represented by an expression.

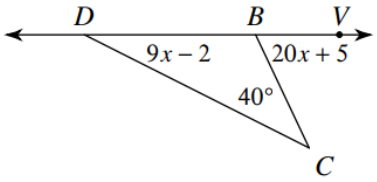
1.



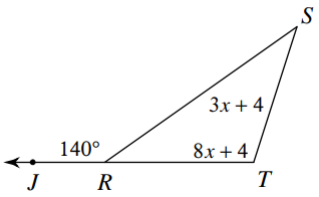
2.



3.

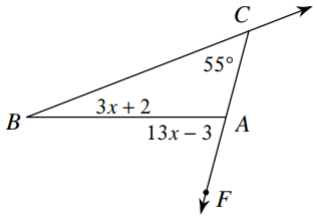


4.

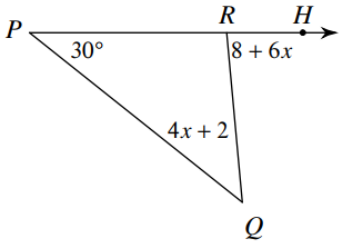


Unit 10 – Lesson 8 Homework

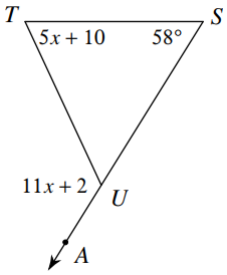
1.



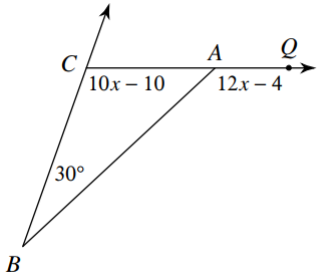
2.



3.



4.

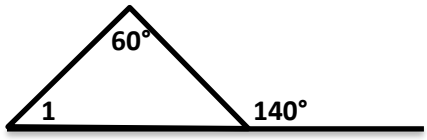


Unit 10 - Lesson 9

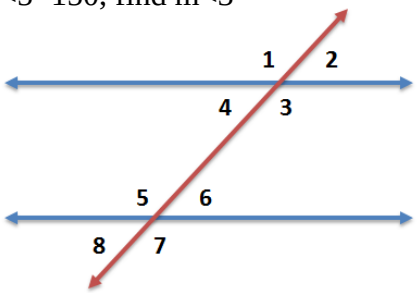
Aim: I can solve problems using properties of parallel lines and triangles

Warm up:
Using properties of Parallel Lines and Triangles

1. Find the measure of <1:



2. If m<5=150, find m<3

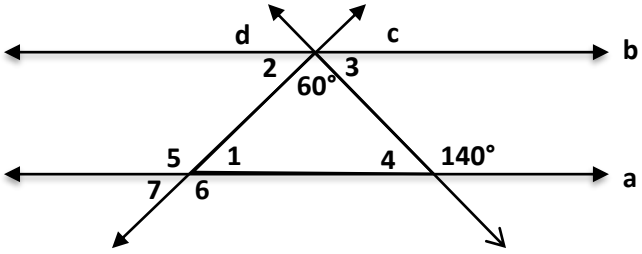


3) The sum of the interior angles of a triangle is _____ degrees.

4) The sum of two supplementary angles is _____ degrees.

Guided Practice:

5) Line a is parallel to line b, find the following:



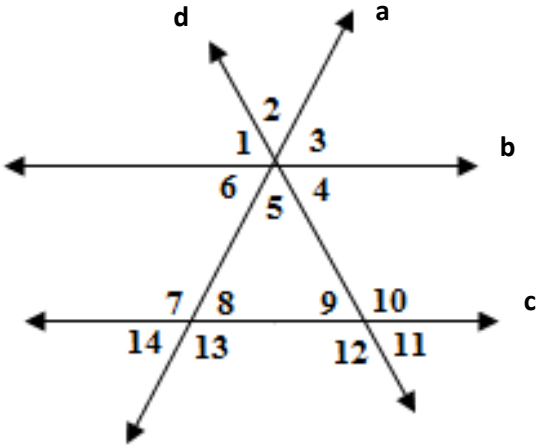
m<1 = _____ *m<5* = _____

m<2 = _____ *m<6* = _____

m<3 = _____ *m<7* = _____

m<4 =_____

6) Line b is parallel to line c, if $m\angle 1 = 60^{\circ}$ and $m\angle 3 = 50^{\circ}$, then:



$m\angle 1$ = _____ $m\angle 8$ = _____

$m\angle 2$ = _____ $m\angle 9$ = _____

$m\angle 3$ = _____ $m\angle 10$ =_____

$m\angle 4$ = _____ $m\angle 11$ =_____

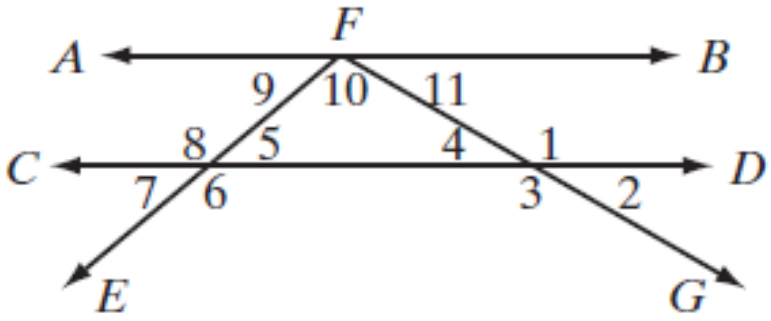
$m\angle 5$ = _____ $m\angle 12$=_____

$m\angle 6$ = _____ $m\angle 13$ =_____

$m\angle 7$ = _____ $m\angle 14$ = _____

Problem Set:

7) If Line AB is parallel to line CD, m<5 = 40 and m<4 = 30, find the measures of the other angles in the figure.



$m\angle 1$ = _____ $m\angle 8$ = _____

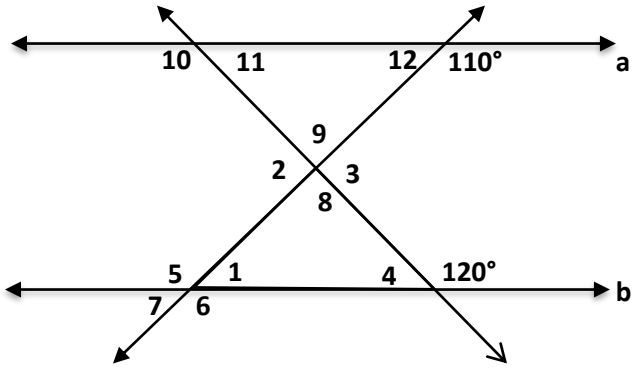
$m\angle 2$ = _____ $m\angle 9$ = _____

$m\angle 3$ = _____ $m\angle 10$ =_____

$m\angle 6$ = _____ $m\angle 11$ =_____

$m\angle 7$ = _____

8) Given line a is parallel to line b:
Find the measures of the following angles:



$m\angle 1$ = _____ $m\angle 7$ = _____

$m\angle 2$ = _____ $m\angle 8$ = _____

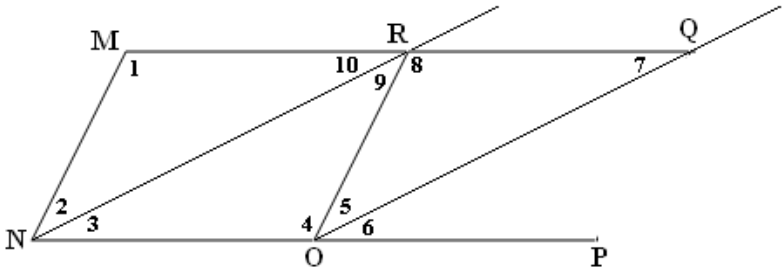
$m\angle 3$ = _____ $m\angle 9$ =_____

$m\angle 4$ = _____ $m\angle 10$ =_____

$m\angle 5$ = _____ $m\angle 11$=_____

$m\angle 6$ = _____ $m\angle 12$ = _____

9) Given parallelogram *MNOR*, if $m\angle 1 = 80^{\circ}$, and $m\angle 2 = 60^{\circ}$, find the measures of all of the other angles if line NR is parallel to line OQ. (Remember opposite angles in a parallelogram are congruent)



$m\angle 3$ = _____ $m\angle 7$ = _____

$m\angle 4$ = _____ $m\angle 8$ = _____

$m\angle 5$ = _____ $m\angle 9$ =_____

$m\angle 6$ = _____ $m\angle 10$ =_____

Unit 10- Lesson 9 Homework

1) If $m\angle 1 = 70^o$ and $m\angle 6 = 80^o$, then:

$m\angle 1 =$ _70 º_ $m\angle 11 =$ _30 º_

$m\angle 2 =$ _____ $m\angle 12 =$ _____

$m\angle 3 =$ _____ $m\angle 13 =$_____

$m\angle 4 =$ _____ $m\angle 14 =$_____

$m\angle 5 =$ _____ $m\angle 15 =$_____

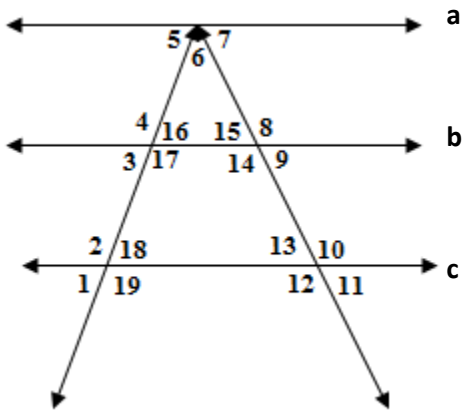
$m\angle 6 =$ _80º_ $m\angle 16 =$_____

$m\angle 7 =$ _____ $m\angle 17 =$ _____

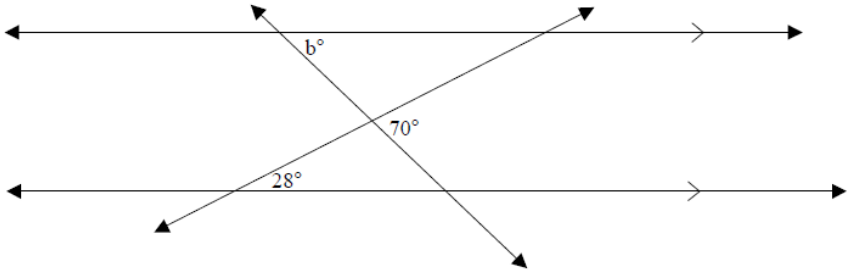
$m\angle 8 =$ _____ $m\angle 18 =$ _____

$m\angle 9 =$ _____ $m\angle 19 =$ _____

$m\angle 10 =$ _____

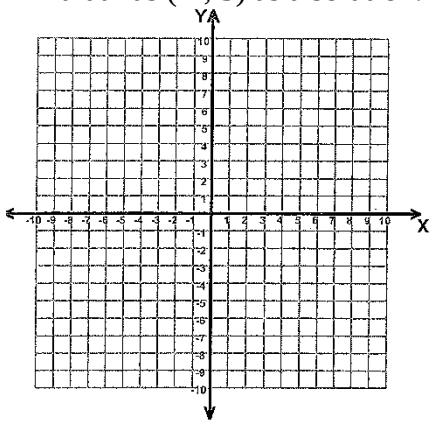


2) Find the measure of angle b:

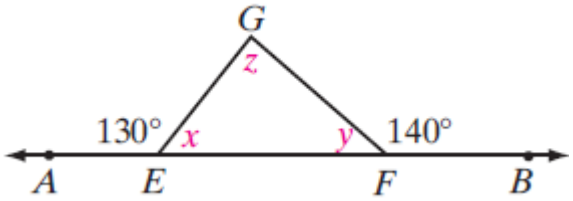


b = _____

3) Draw a system of equations that has (-2, 3) as a solution.

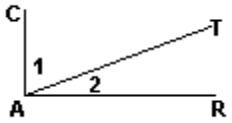


4) Find the measure of angles x, y and z.



Review - Unit 10 Angles

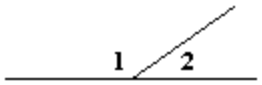
Given: $\overline{CA} \perp \overline{AR}$



1) $m\angle 1 = 56^\circ$, find $m\angle 2$.

2) $m\angle 1 : m\angle 2 = 7:2$, find $m\angle 2$.

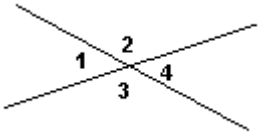
3) $m\angle 1 = 3x + 15$ and $m\angle 2 = x + 5$, find $m\angle 1$.



5) $m\angle 2 = 56^\circ$, find $m\angle 1$.

6) $m\angle 1 : m\angle 2 = 4:2$, find $m\angle 2$.

7) $m\angle 1 = x + 30$ and $m\angle 2 = 2x + 30$, find $m\angle 1$.

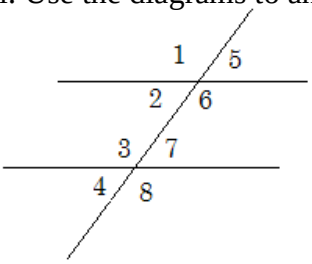


9) $m\angle 1 = 56^\circ$, find angles 2, 3, and 4.

10) $m\angle 1 = 3x - 20$ and $m\angle 4 = x + 10$, find $m\angle 1$.

11) $m\angle 2 = 6x + 10$ and $m\angle 3 = x + 30$, find $m\angle 3$.

The following two lines are parallel. Use the diagrams to answer the following questions.



12) $\angle 2 = 70^\circ$, *find* $\angle 7$ _____

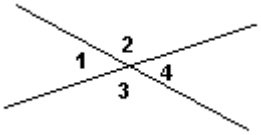
13) $\angle 8 = 105^\circ$ *find* $\angle 3$

14) $\angle 6 = 145^\circ$, *find* $\angle 7$

Name the relationship _____ _____ _____

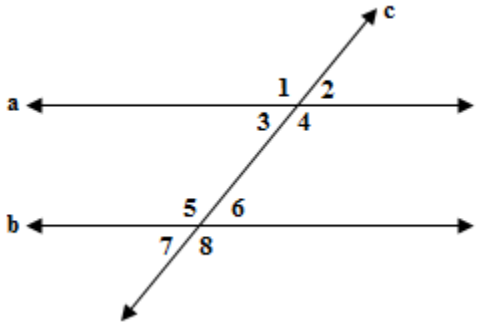
15) Name all the angles that are supplementary to $\angle 2$. _____

16. Write the equation would you use to solve for x if <2 = 3x + 10 and <4 = 2x + 3?



Use the diagram below to answer the following questions 17 – 19 if $a \parallel b$.

17) If $m\angle 3 = 3x - 10$ and $m\angle 6 = x + 80$, find x.



18) If $m\angle 2 = 5x$ and $m\angle 6 = x + 20$, find $m\angle 2$.

19) If $m\angle 3 = 3x - 10$ and $m\angle 5 = 2x + 40$, find $m\angle 5$.

20) Which of the following represents a linear equation?

A) $y = x^2 - 2x - 8$ B) $y = 3x^2 - 6x - 8$ C) $y = 9x^2 - 2$ D) $y = 2x - 8$

21) What is the image of the point (2, 5) under the translation that shifts (x,y) to (x+3, y-2)?

A) (3,5) B) (-1, 3) C) (5, 2) D) (5,3)

22) What is the slope for the given points: A (6, -5), B (3, -7)?

A) $-\frac{2}{3}$ B) $-\frac{3}{2}$ C) $\frac{3}{2}$ D) $\frac{2}{3}$

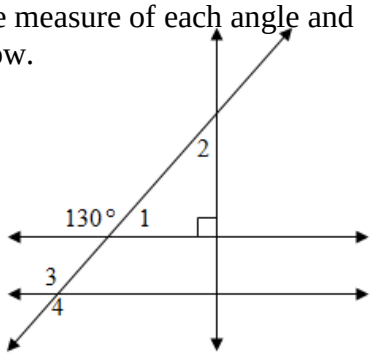
23) The slope of the line y = 3 is

A) Zero Slope B) No Slope C) Positive Slope D) Negative Slope

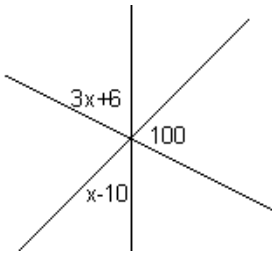
24) Which equation is the same as 2x + y = 5

A) y = 2x + 5 B) y = 2x - 5 C) y = -2x + 5 D) y = -2x – 5

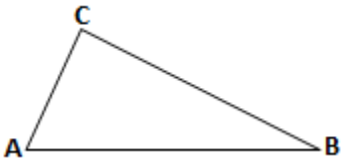
25. In the figure on the right, the horizontal lines are parallel. Find the measure of each angle and explain how you know.



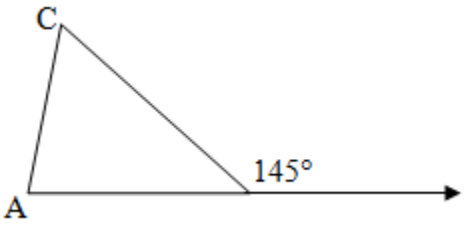
26. Using the diagram to find the value of *x*.



27. Solve for *x* if $m\angle C = (x + 10)°$, $m\angle A = (2x – 30)°$, and $m\angle B = x°$



28. What is the measure of angle A if $m\angle C = 75°$?

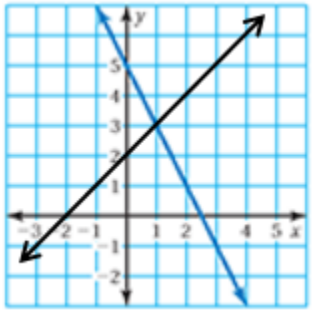


29. Use the system to the right:

A. Determine the number of solutions.

B. State the solution to the system.

C. Write the equation of each line.



D. Using your answers from part **C**, solve the system algebraically to prove your answer to part **B**.