

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**UNIT 1B**

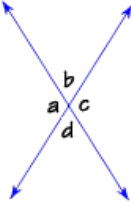
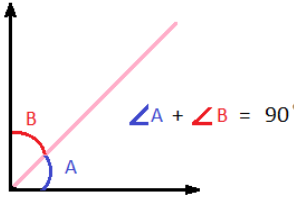
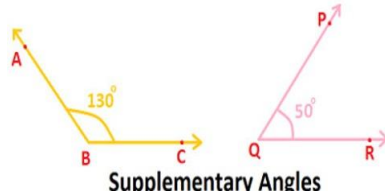
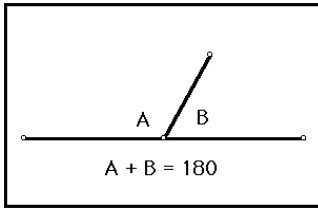
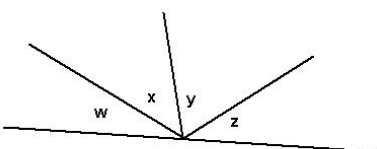
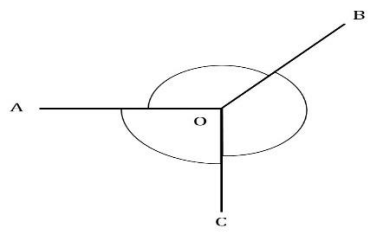
**LESSON 11**

**AIM: HOW DO WE SOLVE FOR UNKNOWN ANGLES?**

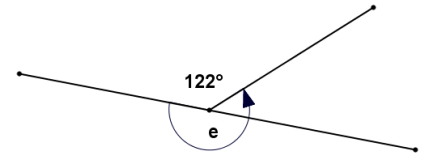
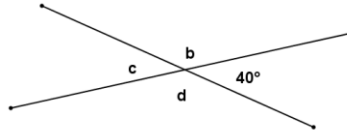
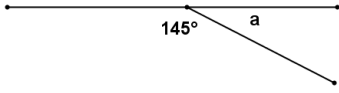
*Do Now:* Solve the following algebraically.

$3x - 20 + x = 180$	$7x - 9 + 4x = 90$	$x + 16 = 4x - 5$
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**ANGLE RELATIONSHIPS:**

TERM	DIAGRAM	FACTS	ALGEBRAIC OPERATION
Vertical Angles	 <p style="margin-left: 150px;"> <math>\angle b \cong \angle d</math>  <math>\angle a \cong \angle c</math> </p>		
Complementary Angles	 <p style="margin-left: 150px;"><math>\angle A + \angle B = 90^\circ</math></p> <p style="text-align: center;">Adjacent Complementary Angles</p>		
Supplementary Angles	 <p style="text-align: center;">Supplementary Angles</p>		
Linear Pairs	 <p style="text-align: center;"><math>A + B = 180</math></p>		
Adjacent Angles on a Line	 <p style="text-align: center;"><math>w + x + y + z = 180 \text{ degrees.}</math></p>		
Angles Around a Point			

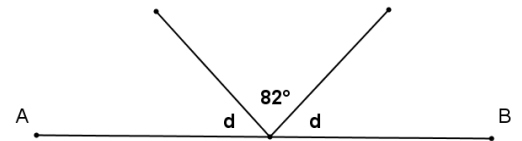
1. Find the measures of each labeled angle. Give a reason for your solution.



Angle	Angle measure	Reason
$\angle a$		
$\angle b$		
$\angle c$		
$\angle d$		
$\angle e$		

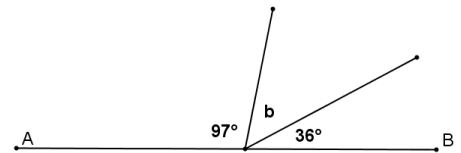
Directions: For Exercises 8-11, use the figure at the below. In the figures below,  $\overline{AB}$ ,  $\overline{CD}$ , and  $\overline{EF}$  are straight line segments. Find the measure of each marked angle or find the unknown numbers labeled by the variables in the diagrams. Give reasons for your calculations. Show all the steps to your solution.

2.



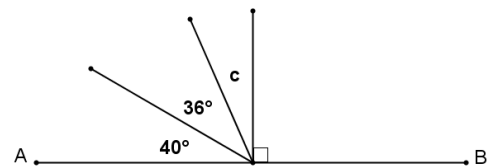
Reason \_\_\_\_\_

3.



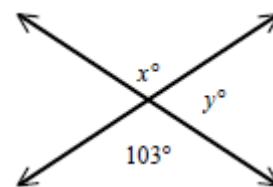
Reason \_\_\_\_\_

4.



Reason \_\_\_\_\_

5. Solve for  $x$  &  $y$ .



Reason \_\_\_\_\_

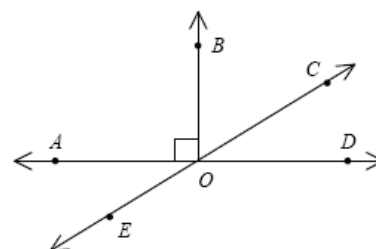
Directions: For Exercises 12-15. Name an angle or angles in the diagram described by each of the following.

6. Complementary to  $\angle BOC$  \_\_\_\_\_

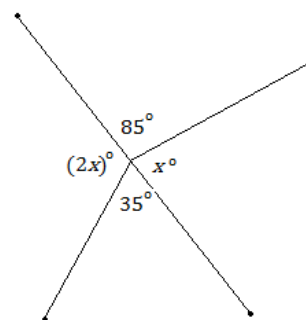
7. Supplementary to  $\angle DOE$  \_\_\_\_\_

8. Adjacent and supplementary to  $\angle AOC$  \_\_\_\_\_

9. Vertical angle to  $\angle COD$  \_\_\_\_\_

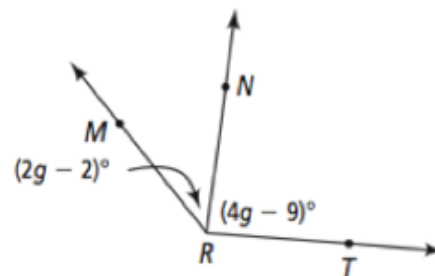


10. Solve for each missing angle.



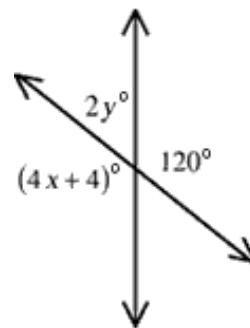
Reason \_\_\_\_\_

11. If  $m\angle MRT = 133$ , what is the  $m\angle MRN$ ?



Reason \_\_\_\_\_

12. Solve for  $x$  &  $y$ .



Reason \_\_\_\_\_

13.  $\angle ABC$  and  $\angle EBF$  are a pair of vertical angles;  $m\angle ABC = 3x + 8$  and  $m\angle EBF = 2x + 48$ . What are the measurements of all four angles?

Reason \_\_\_\_\_

14.  $\angle CDE$  and  $\angle FDE$  are supplementary. If  $m\angle CDE = 3x + 10$  and the  $m\angle FDE = 6x + 8$ , what is the  $m\angle FDE$  ?

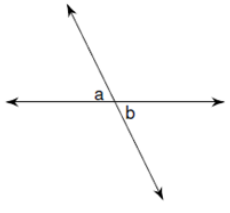
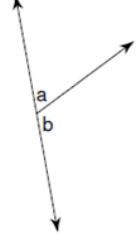
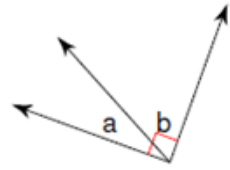
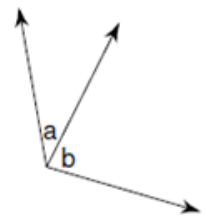
Reason \_\_\_\_\_

**UNIT 1B**

**LESSON 11**

**HOMEWORK**

Directions- **For exercises 1-4.** Name the relationship of the following angles. Using these terms: complementary, supplementary, vertical, or adjacent.

<p>1.</p> 	<p>2.</p> 	<p>3.</p> 	<p>4.</p> 

Directions- **For exercises 5-7, use the diagram to the right.**

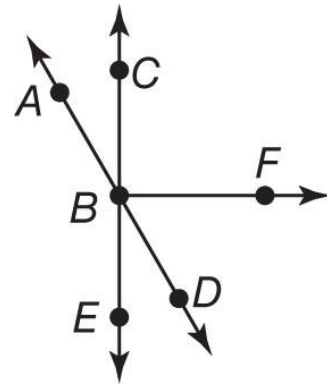
5. Which pair of angles is supplementary?

- a)  $\angle ABE, \angle CBD$     b)  $\angle ABC, \angle ABD$
- c)  $\angle ABC, \angle CBD$     d)  $\angle ABC, \angle EBD$

6. Which pair of angles is complementary?

- a)  $\angle ABF, \angle CBD$     b)  $\angle ABC, \angle CBF$
- c)  $\angle ABE, \angle CBD$     d)  $\angle FBD, \angle EBD$

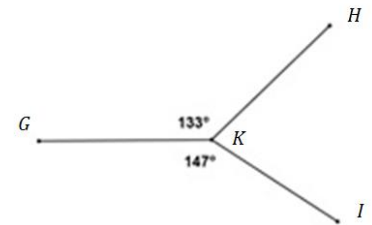
7. Which angle is a vertical angle to  $\angle ABE$ ? \_\_\_\_\_



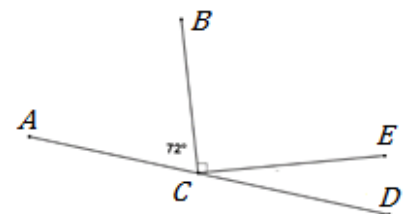
8. Directions- Given the diagram below answer the following questions.

(a) What the total measure of adjacent angles around a point  $K$ ? \_\_\_\_\_

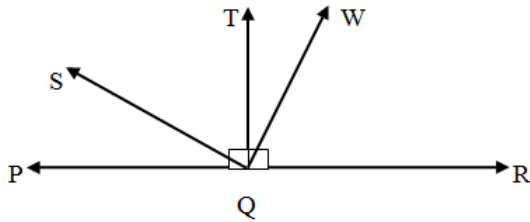
(b) What is the measure of  $\angle HKI$ ? \_\_\_\_\_



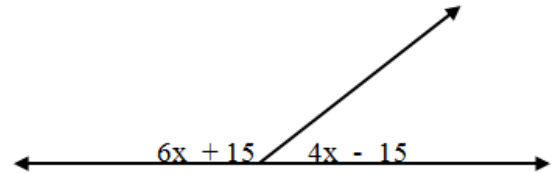
9. In the figure, line segment  $AB$  is drawn. What is the measure of  $\angle DCE$ ?



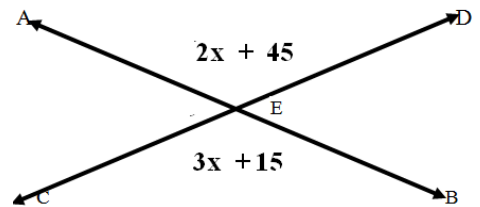
10. In the accompanying diagram,  $QT \perp PQR$  at  $Q$ .  $QW \perp QS$  at  $Q$ . and  $m\angle SQP = 25^\circ$ . Find each measurement.



11. Find the value of each angle.



12. Find the value of each angle.



13. If  $\overleftrightarrow{ABC}$  and  $\overleftrightarrow{DBE}$  intersect at  $B$ ,  $\angle ABD$  and  $\angle CBE$  are
- |                                    |                                    |
|------------------------------------|------------------------------------|
| (1) congruent vertical angles.     | (3) congruent adjacent angles.     |
| (2) supplementary vertical angles. | (4) supplementary adjacent angles. |

14.  $\angle LMN$  and  $\angle NMP$  form a linear pair of angles. Which of the following statements is false?
- (1)  $m\angle LMN + m\angle NMP = 180$
  - (2)  $\angle LMN$  and  $\angle NMP$  are supplementary angles.
  - (3)  $\overrightarrow{ML}$  and  $\overrightarrow{MP}$  are opposite rays.
  - (4)  $\overrightarrow{ML}$  and  $\overrightarrow{MN}$  are opposite rays.