

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

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

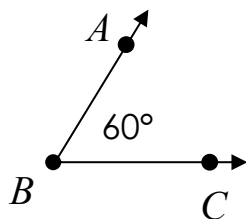
Topic: \_\_\_\_\_

Class: \_\_\_\_\_

**Main Ideas/Questions**

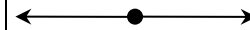
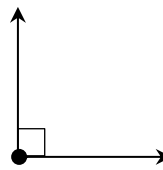
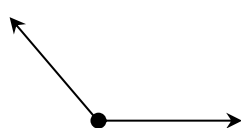
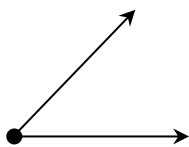
**Notes**

# Angles

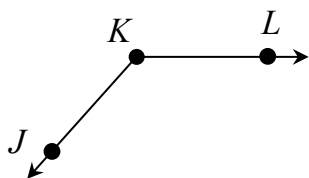


- An angle is formed by two \_\_\_\_\_ with a common endpoint.
- This common endpoint is called the \_\_\_\_\_
- The rays are called the \_\_\_\_\_.
- Name an angle using \_\_\_\_\_ letters. The middle letter must always represent the vertex!
- Use a single letter if there is only one angle located at the vertex.
- When referring to the measure of an angle, use a lowercase  $m$ .  
**Example:**  $m\angle ABC = 60^\circ$

## Types of Angles

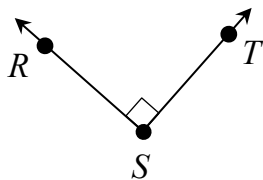


## Example 1



- Name the vertex of the angle. \_\_\_\_\_
- Name the sides of the angle. \_\_\_\_\_
- Give three ways to name the angle.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- Classify the angle. \_\_\_\_\_

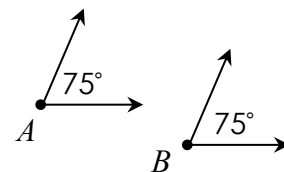
## Example 2

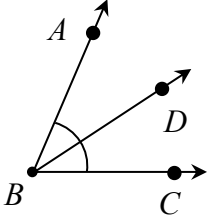
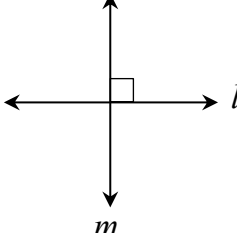
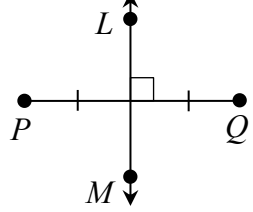
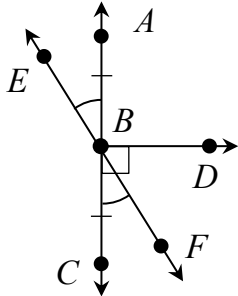
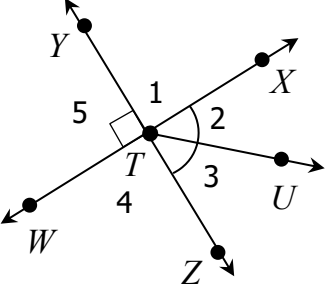


- Name the vertex of the angle. \_\_\_\_\_
- Name the sides of the angle. \_\_\_\_\_
- Give three ways to name the angle.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- Classify the angle. \_\_\_\_\_

## Congruent Angles

If \_\_\_\_\_, then the angles are congruent. This is written as \_\_\_\_\_.



<h2 style="text-align: center;">Angle Bisector</h2>	<p>A _____ that divides an angle into _____.</p> <p>In the diagram to the right, _____ is an angle bisector, therefore, _____.</p>	
<h2 style="text-align: center;">Perpendicular Lines</h2>	<p>Two lines that _____ at a _____.</p> <p>The symbol for perpendicular is _____.</p> <p>In the diagram to the right, _____.</p>	
<h2 style="text-align: center;">Perpendicular Bisector</h2>	<p>A line, segment, or ray _____ to a segment at its _____.</p> <p>In the diagram to the right, _____ is the perpendicular bisector to _____.</p>	
<h2 style="text-align: center;">Example 3</h2> 	<ol style="list-style-type: none"> <li>Write another name for <math>\angle CBF</math>. _____</li> <li>Name the sides of <math>\angle EBD</math>. _____</li> <li>Classify <math>\angle ABC</math>. _____</li> <li>Give an example of an obtuse angle. _____</li> <li>Name two congruent angles. _____</li> <li>Name a perpendicular bisector. _____</li> </ol>	
<h2 style="text-align: center;">Example 4</h2> 	<ol style="list-style-type: none"> <li>Name the vertex of <math>\angle 2</math>. _____</li> <li>Name the sides of <math>\angle 4</math>. _____</li> <li>Write another name for <math>\angle 3</math>. _____</li> <li>Write another name for <math>\angle 1</math>. _____</li> <li>Classify <math>\angle YTW</math>. _____</li> <li>Classify <math>\angle YTU</math>. _____</li> <li>Classify <math>\angle XTU</math>. _____</li> <li>Classify <math>\angle WTX</math>. _____</li> <li>Name two perpendicular lines. _____</li> <li>Name an angle bisector. _____</li> </ol>	

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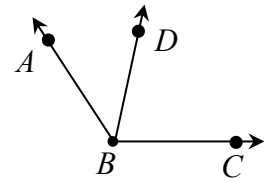
Class: \_\_\_\_\_

Main Ideas/Questions	Notes/Examples
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**ANGLE  
ADDITION  
Postulate**

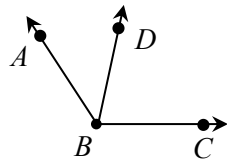
If  $D$  is in the interior of  $\angle ABC$ , then

\_\_\_\_\_



*Examples*

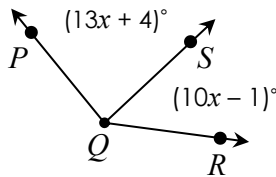
Use the diagram below to answer questions 1 and 2.



1. If  $m\angle ABD = 48^\circ$  and  $m\angle DBC = 78^\circ$ , find  $m\angle ABC$ .

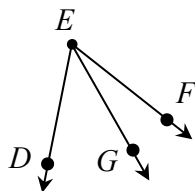
2. If  $m\angle DBC = 74^\circ$  and  $m\angle ABC = 119^\circ$ , find  $m\angle ABD$ .

3. If  $m\angle PQR = 141^\circ$ , find each measure.



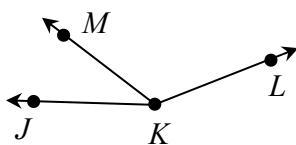
$x =$  \_\_\_\_\_  
 $m\angle PQS =$  \_\_\_\_\_  
 $m\angle SQR =$  \_\_\_\_\_

4. If  $m\angle DEF = (7x + 4)^\circ$ ,  $m\angle DEG = (5x + 1)^\circ$ , and  $m\angle GEF = 23^\circ$ , find each measure.



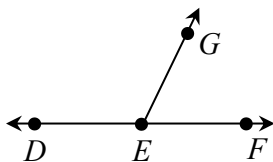
$x =$  \_\_\_\_\_  
 $m\angle DEG =$  \_\_\_\_\_  
 $m\angle DEF =$  \_\_\_\_\_

5. If  $m\angle JKM = 43^\circ$ ,  $m\angle MKL = (8x - 20)^\circ$ , and  $m\angle JKL = (10x - 11)^\circ$ , find each measure.



$x =$  \_\_\_\_\_  
 $m\angle MKL =$  \_\_\_\_\_  
 $m\angle JKL =$  \_\_\_\_\_

6. If  $\angle DEF$  is a straight angle,  $m\angle DEG = (23x - 3)^\circ$ , and  $m\angle GEF = (12x + 8)^\circ$ , find each measure.



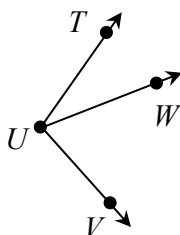
$$x = \underline{\hspace{2cm}}$$

$$m\angle DEG = \underline{\hspace{2cm}}$$

$$m\angle GEF = \underline{\hspace{2cm}}$$

$$m\angle DEF = \underline{\hspace{2cm}}$$

7. If  $m\angle TUW = (5x + 3)^\circ$ ,  $m\angle WUV = (10x - 5)^\circ$ , and  $m\angle TUV = (17x - 16)^\circ$ , find each measure.



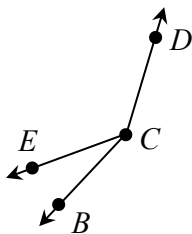
$$x = \underline{\hspace{2cm}}$$

$$m\angle TUW = \underline{\hspace{2cm}}$$

$$m\angle WUV = \underline{\hspace{2cm}}$$

$$m\angle TUV = \underline{\hspace{2cm}}$$

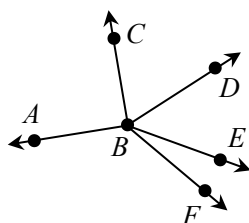
8. If  $m\angle ECD$  is six less than five times  $m\angle BCE$ , and  $m\angle BCD = 162^\circ$ , find each measure.



$$m\angle BCE = \underline{\hspace{2cm}}$$

$$m\angle ECD = \underline{\hspace{2cm}}$$

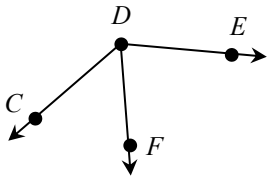
**Use the diagram to the left to answer questions 9 and 10.**



9. If  $m\angle ABF = (6x + 26)^\circ$ ,  $m\angle EBF = (2x - 9)^\circ$ , and  $m\angle ABE = (11x - 31)^\circ$ , find  $m\angle ABF$ .

10. If  $\overline{BD}$  bisects  $\angle CBE$ ,  $\overline{BC} \perp \overline{BA}$ ,  $m\angle CBD = (3x + 25)^\circ$ , and  $m\angle DBE = (7x - 19)^\circ$ , find  $m\angle ABD$ .

6. If  $m\angle CDF = (3x + 14)^\circ$ ,  $m\angle FDE = (5x - 2)^\circ$ , and  $m\angle CDE = (10x - 18)^\circ$ , find each measure.



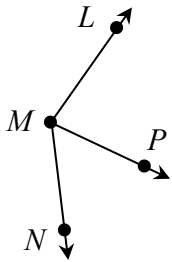
$$x = \underline{\hspace{2cm}}$$

$$m\angle CDF = \underline{\hspace{2cm}}$$

$$m\angle FDE = \underline{\hspace{2cm}}$$

$$m\angle CDE = \underline{\hspace{2cm}}$$

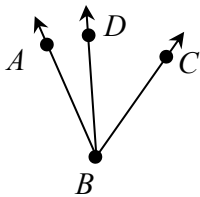
7. If  $m\angle LMP$  is 11 degrees more than  $m\angle NMP$  and  $m\angle NML = 137^\circ$ , find each measure.



$$m\angle LMP = \underline{\hspace{2cm}}$$

$$m\angle NMP = \underline{\hspace{2cm}}$$

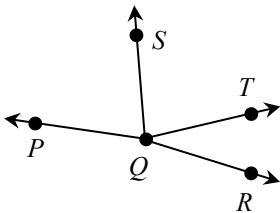
8. If  $m\angle ABC$  is one degree less than three times  $m\angle ABD$  and  $m\angle DBC = 47^\circ$ , find each measure.



$$m\angle ABD = \underline{\hspace{2cm}}$$

$$m\angle ABC = \underline{\hspace{2cm}}$$

9. If  $\overline{QS}$  bisects  $\angle PQT$ ,  $m\angle SQT = (8x - 25)^\circ$ ,  $m\angle PQT = (9x + 34)^\circ$ , and  $m\angle SQR = 112^\circ$ , find each measure.



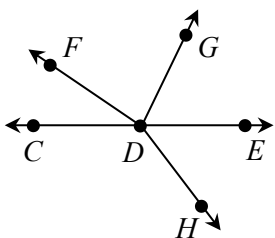
$$x = \underline{\hspace{2cm}}$$

$$m\angle PQS = \underline{\hspace{2cm}}$$

$$m\angle PQT = \underline{\hspace{2cm}}$$

$$m\angle TQR = \underline{\hspace{2cm}}$$

10. If  $\angle CDE$  is a straight angle,  $\overline{DE}$  bisects  $\angle GDH$ ,  $m\angle GDE = (8x - 1)^\circ$ ,  $m\angle EDH = (6x + 15)^\circ$ , and  $m\angle CDF = 43^\circ$ , find each measure.



$$x = \underline{\hspace{2cm}}$$

$$m\angle GDH = \underline{\hspace{2cm}}$$

$$m\angle FDH = \underline{\hspace{2cm}}$$

$$m\angle FDE = \underline{\hspace{2cm}}$$