

UNIT I DICTIONARY: GEOMETRY BASICS

Points, Lines, & Planes	Definition	Example or Visual
POINT	<hr/> <hr/> <hr/>	
LINE	<hr/> <hr/> <hr/>	
PLANE	<hr/> <hr/> <hr/>	
COLLINEAR	<hr/> <hr/> <hr/>	
COPLANAR	<hr/> <hr/> <hr/>	
LINE SEGMENT	<hr/> <hr/> <hr/>	
DISTANCE FORMULA	<hr/> <hr/> <hr/>	
CONGRUENT SEGMENTS	<hr/> <hr/> <hr/>	

**MIDPOINT
FORMULA**

**SEGMENT
BISECTOR**

RAY

Angles	Definition	Example or Visual
--------	------------	----------------------

ANGLE

VERTEX

**RIGHT
ANGLE**

**ACUTE
ANGLE**

**OBTUSE
ANGLE**

**CONGRUENT
ANGLES**

**ADJACENT
ANGLES**

**VERTICAL
ANGLES**

**COMPLEMENTARY
ANGLES**

**SUPPLEMENTARY
ANGLES**

**LINEAR
PAIR**

PERPENDICULAR

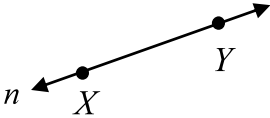
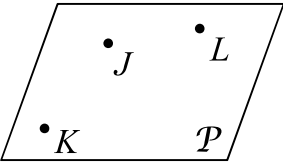
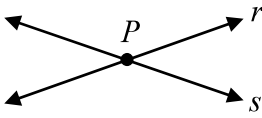
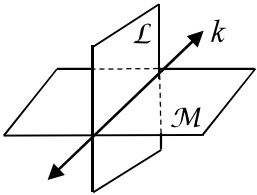
**ANGLE
BISECTOR**

Name: _____

Date: _____

Topic: _____

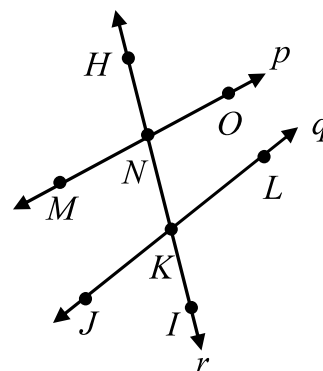
Class: _____

Main Ideas/Questions	Notes
<p style="text-align: center;">POINT</p> <p style="text-align: center;">• <i>A</i></p>	<ul style="list-style-type: none"> A point is a _____. It has no _____ or _____. Always use a <u>CAPITAL LETTER</u> to name a point. <p>Example: _____</p>
<p style="text-align: center;">LINE</p> 	<ul style="list-style-type: none"> A line is made up of _____. Any _____ points form a line. A line has no _____ or _____. Name a line by any <u>two</u> points on the line, or a lowercase script letter. <p>Example: _____</p> <ul style="list-style-type: none"> • COLLINEAR POINTS: Points that lie on the same line. • NON-COLLINEAR POINTS: Points that do NOT lie on the same line. (Must be at least three points!)
<p style="text-align: center;">PLANE</p> 	<ul style="list-style-type: none"> A plane is a _____ made up of points. Any _____ points make up a plane. A plane extends indefinitely in all directions. Name a plane by any <u>three</u> non-collinear points on the plane, or an uppercase script letter. <p>Example: _____</p> <ul style="list-style-type: none"> • COPLANAR POINTS: Points that line on the same plane. • NON-COPLANAR POINTS: Points that do NOT lie on the same plane. (Must be at least four points!)
<p style="text-align: center;"><i>Intersecting</i> LINES & PLANES</p>	 <p style="text-align: right;">Two lines intersect at a _____!</p>  <p style="text-align: right;">Two planes intersect at a _____!</p>

Naming points, Lines, and Planes: Practice!

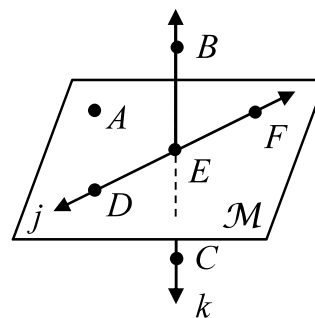
1. Use the diagram to the right to name the following.

- Four collinear points. _____
- A line that contains point M . _____
- A line that contains points H and K . _____
- Another name for line q . _____
- The intersection of lines p and r . _____



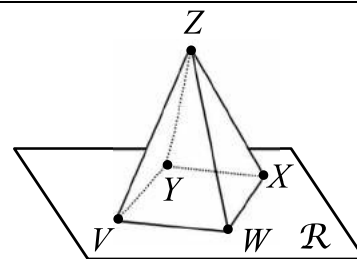
2. Use the diagram to the right to name the following.

- A line containing point F . _____
- Another name for line k . _____
- A plane containing point A . _____
- An example of three non-collinear points. _____
- The intersection of plane M and line k . _____



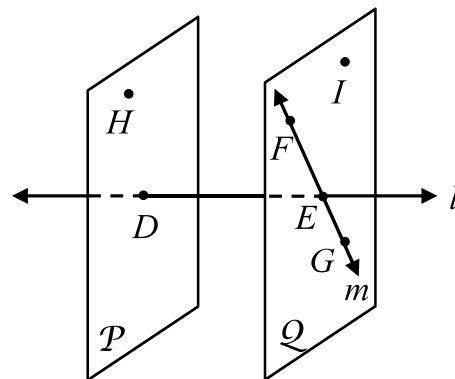
3. Use the diagram to the right to name the following.

- Three coplanar points. _____
- A plane containing point X . _____
- The intersection of plane R and plane ZVY . _____
- How many planes appear in the figure? _____
- How many planes contain point W ? _____



4. Use the diagram to the right to name the following.

- The intersection of lines l and m . _____
- Another name for plane Q . _____
- Are points D and E collinear or coplanar? _____
- How many times do planes P and Q intersect? _____

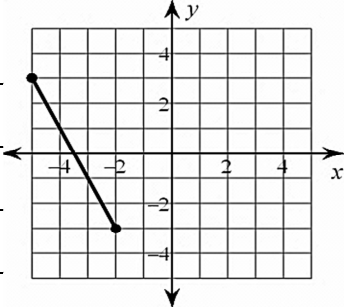


Name:

Class:

Topic:

Date:

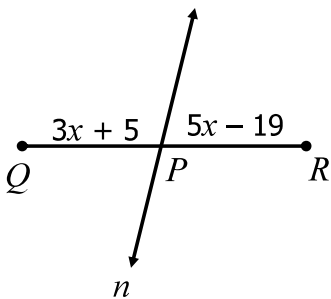
Main Ideas/Questions	Notes
<h3>Distance Formula</h3>	<p>Used to find the distance between two points (x_1, y_1) and (x_2, y_2)</p> <p>Formula:</p>
<p>EXAMPLES:</p> <p>1. Find the distance between the two points on the graph.</p> <p>2. Find AB when $A(-4, 1)$ and $B(3, -1)$</p> <p>3. Find EF when $E(-7, -2)$ and $F(11, 3)$</p>	<p>1.</p> <div style="text-align: center;">  </div> <p>2. "Find AB" means: Find the distance between A and B.</p> <p>3.</p>
<h3>Midpoint Formula</h3>	<p>Used to find the midpoint between two points (x_1, y_1) and (x_2, y_2)</p> <p>Formula:</p>
<p>1. Find the midpoint of \overline{GH} given: $G(7, -5)$ and $H(9, -1)$</p> <p>2. Find the midpoint of \overline{AB} given: $A(-7, 4)$ and $B(3, -4)$</p>	<p>1.</p> <p>2.</p>

Finding a Missing Endpoint

- 1) Find the coordinates of A if $M(-1, 2)$ is the midpoint of \overline{AB} and B has coordinates of $(3, -5)$.
- 2) Find the coordinates of J if $K(-5, 10)$ is the midpoint of \overline{JL} and L has coordinates of $(-8, 6)$.
- 3) Find the coordinates of R if $Q(-1, 3)$ is the midpoint of \overline{PR} and P has coordinates of $(5, 6)$.

More Midpoint Examples

- 4) If P is the midpoint of \overline{XY} , $XP = 8x - 2$ and $PY = 12x - 30$, find the value of x .
- 5) If G is the midpoint of \overline{FH} , $FG = 14x + 25$ and $GH = 73 - 2x$, find FH .
- 6) Using the diagram to the left, if line n bisects \overline{QR} , find QP .



Name:

Date:

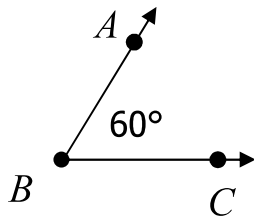
Topic:

Class:

Main Ideas/Questions

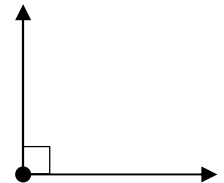
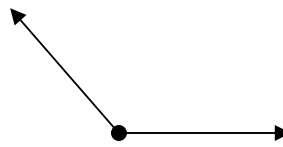
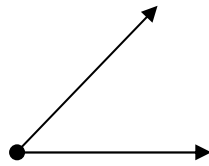
Notes

ANGLES

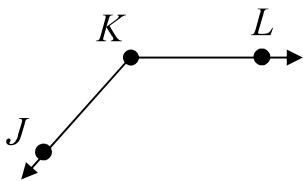


- An angle is formed by two _____ with a common endpoint.
- This common endpoint is called the _____.
- The rays are called the _____.
- Name an angle using _____ letters. The middle letter must always represent the vertex!
- Use a single letter if there is only one angle located at the vertex.
- When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

Types of Angles

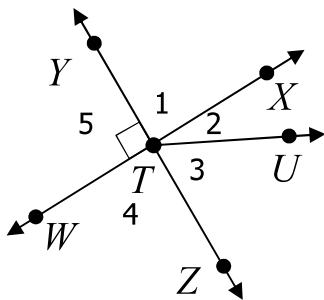


Example 1



- 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 $\angle 2$. _____
- Name the sides of $\angle 4$. _____
- Write another name for $\angle 3$. _____
- Write another name for $\angle 1$. _____
- Name the sides of $\angle 5$. _____
- Classify $\angle YTW$. _____
- Classify $\angle YTU$. _____
- Classify $\angle XTU$. _____
- Classify $\angle WTU$. _____

VERTICAL ANGLES
Two angles **across** from each other on intersecting lines. They are always **congruent!**
Example:

ADJACENT ANGLES
Two angles that are **next to** each other and share a common side.
Example:

ANGLE Relationships

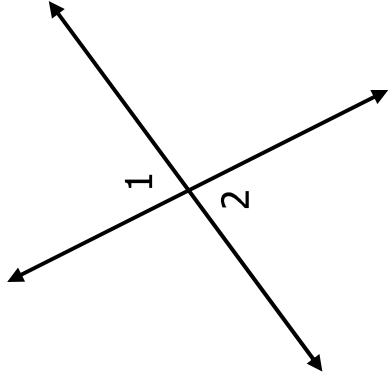
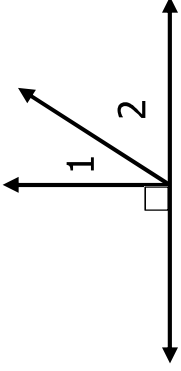
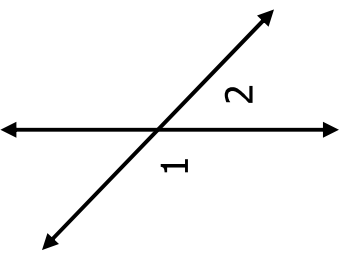
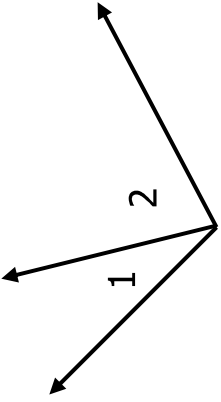
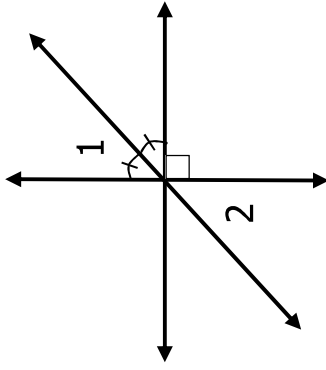
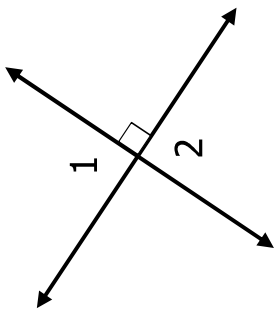
LINEAR PAIR
Two angles that are **adjacent** and **supplementary**. They form a **straight line!**
Example:

COMPLEMENTARY ANGLES
Any two angles whose **sum is 90°**
Example:

SUPPLEMENTARY ANGLES
Any two angles whose **sum is 180°**
Example:

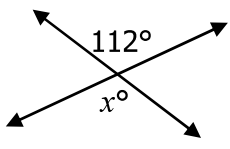
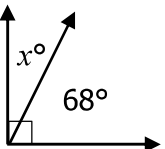
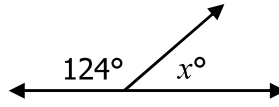
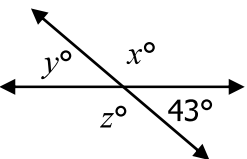
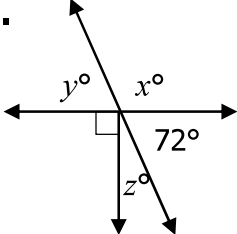
Identifying Types of Angles:

Check all relationships between $\angle 1$ and $\angle 2$.

<p>1</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>	<p>2</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>
<p>3</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>	<p>4</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>
<p>5</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>	<p>6</p>  <p> <input type="checkbox"/> Adjacent <input type="checkbox"/> Vertical <input type="checkbox"/> Complementary <input type="checkbox"/> Supplementary <input type="checkbox"/> Linear Pair </p>

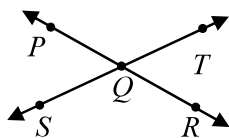
Finding Angle Measures

Directions: Find the missing measures in each figure. Keep the angle relationships in mind.

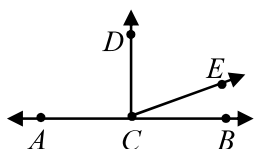
<p>1.</p> 	<p>2.</p> 	<p>3.</p> 
<p>4.</p> 	<p>5.</p> 	
<p>6. $\angle 1$ and $\angle 2$ are vertical angles. If the measure of $\angle 2$ is 105°, find the measure of $\angle 1$.</p>	<p>7. $\angle A$ and $\angle B$ are complementary angles. If the measure of $\angle A$ is 42°, find the measure of $\angle B$.</p>	
<p>8. $\angle P$ and $\angle Q$ are supplementary angles. If the measure of $\angle Q$ is 64°, find the measure of $\angle P$.</p>	<p>9. $\angle 1$ and $\angle 2$ form a linear pair. If the measure of $\angle 1$ is 113°, find the measure of $\angle 2$.</p>	

Using Algebra to Solve for Missing Measures

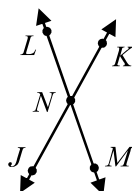
10. If $m\angle PQT = 3x + 47$ and $m\angle SQR = 6x - 25$, find the measure of $\angle SQR$.



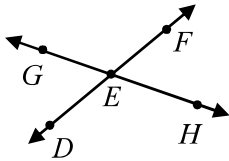
11. If $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$, $m\angle DCE = 7x + 2$ and $m\angle ECB = x + 8$, find the measure of $\angle DCE$.



12. If $m\angle KNM = 8x - 5$ and $m\angle MNJ = 4x - 19$, find the measure of $\angle KNM$.



13. If $m\angle DEG = 5x - 4$, $m\angle GEF = 7x - 8$, $m\angle DEH = 9y + 5$, find the values of x and y .



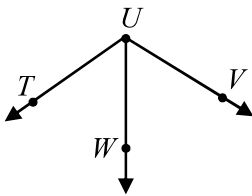
14. $\angle R$ and $\angle S$ are complementary angles. If the $m\angle R = 12x - 3$ and $m\angle S = 7x - 2$, find $m\angle R$.

15. $\angle P$ and $\angle Q$ are supplementary angles. If the $m\angle P = 4x + 1$ and $m\angle Q = 9x - 3$, find $m\angle Q$.

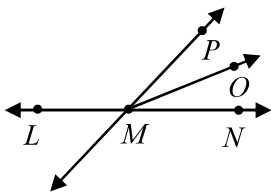
16. $\angle 1$ and $\angle 2$ form a linear pair. The measure of $\angle 2$ is six more than twice the measure of $\angle 1$. Find $m\angle 2$.

17. $\angle J$ and $\angle K$ are complementary angles. The measure of $\angle J$ is 18 less than the measure of $\angle K$. Find the measures of both angles.

18. If \overrightarrow{UW} bisects $\angle TUV$, $m\angle TUW = 13x - 5$ and $m\angle WUV = 7x + 31$, find the value of x .



19. If \overrightarrow{MO} bisects $\angle PMN$, $m\angle PMN = 74^\circ$ and $m\angle OMN = 2x + 7$, find the value of x .



20. If \overrightarrow{EF} bisects $\angle CEB$, $m\angle CEF = 7x + 21$ and $m\angle FEB = 10x - 3$, find the measure of $\angle DEB$.

