CHAPTER 1
ESSENTIALS OF GEOMETRY

1.1

Identify Points, Lines, and Planes

Point

- _____
- Represented _____

Line

- _____
- Represented by a _____
- Extends _____
- Through _____ there is _____

Plane

- _____
- Represented by _____
  _____
- Extends _____
- Through any _____ not on the
  _____ there is _____
  _____

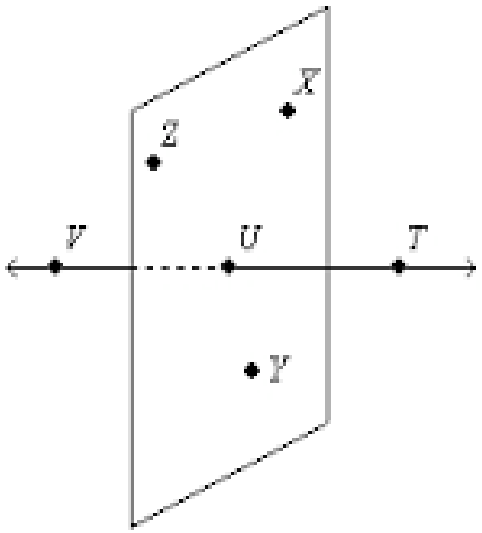
Types of Points

- Collinear _____

  _____

- Coplanar_____

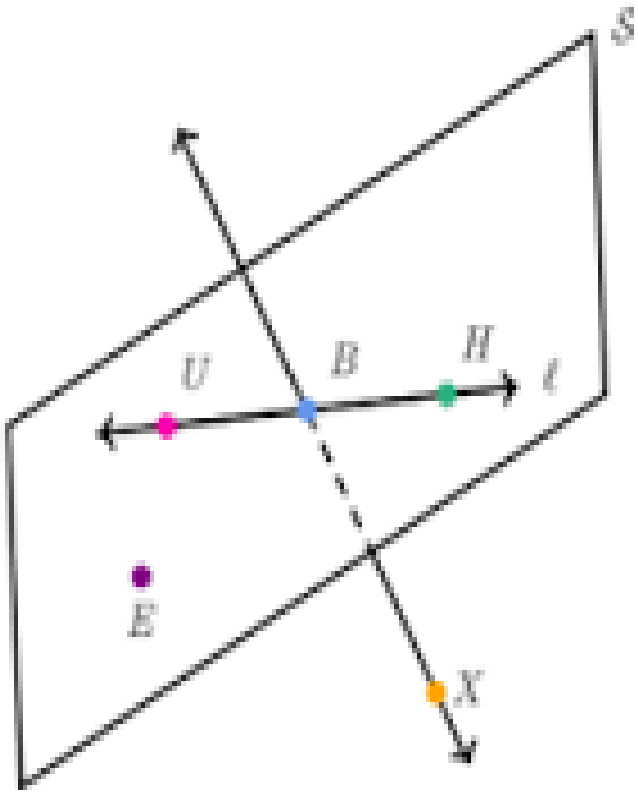
  _____



EX:

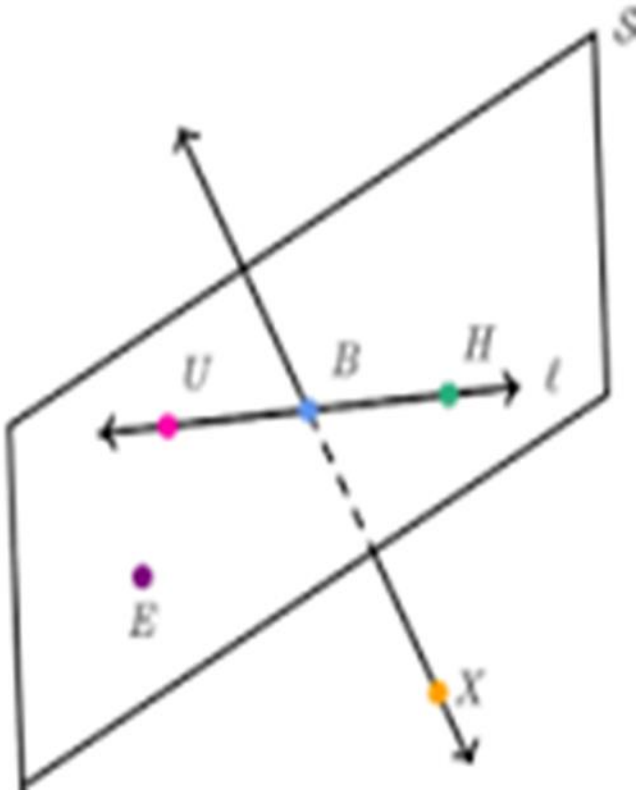
- Give two other names for line UB

- Give two other names for plane S



EX:

- Name three points that are collinear
- Name four points that are coplanar
- Name a point that is not coplanar with points U, H, and X



Segment

- A _____ that consists of _____ and _____ in between those _____

Ray

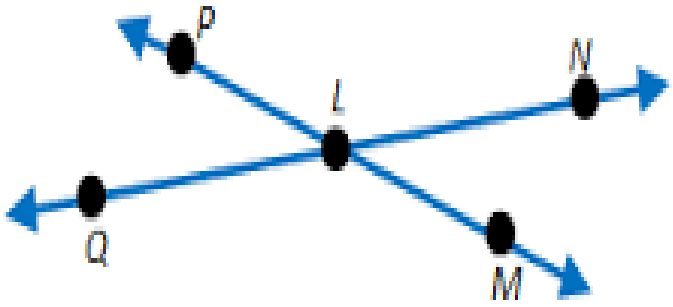
- A _____ that consists of _____ and _____ to _____

- Opposite Rays have _____ but point in _____

EX:

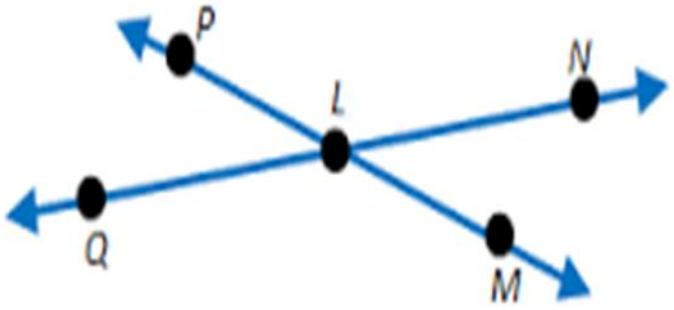
- Give another name for segment QN

- Name all rays with endpoint L. Which of these are opposite rays?



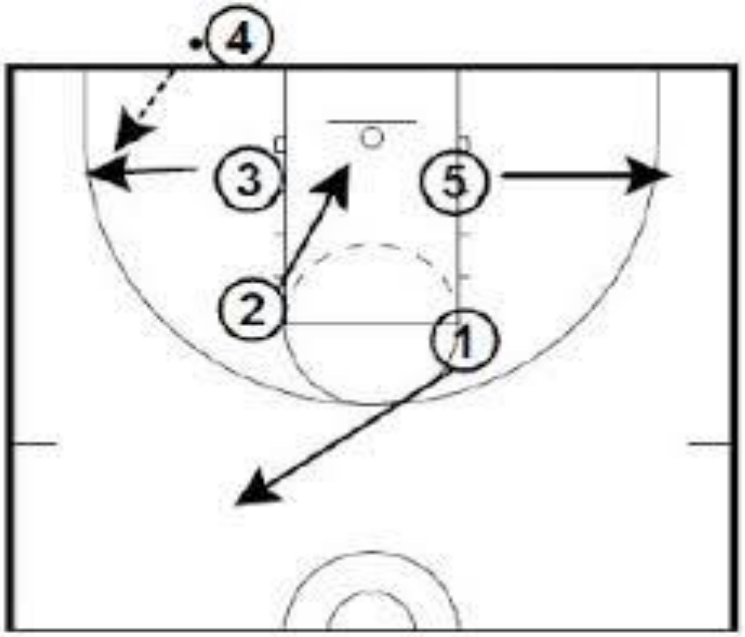
EX:

- Are ray LN and ray NL the same ray? Explain.



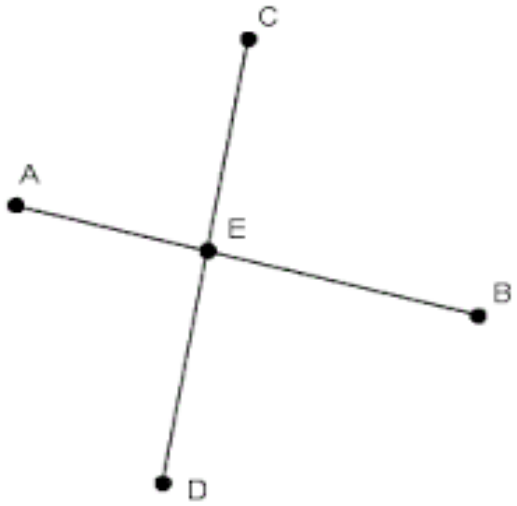
- Are ray PL and ray PM the same ray? Explain.

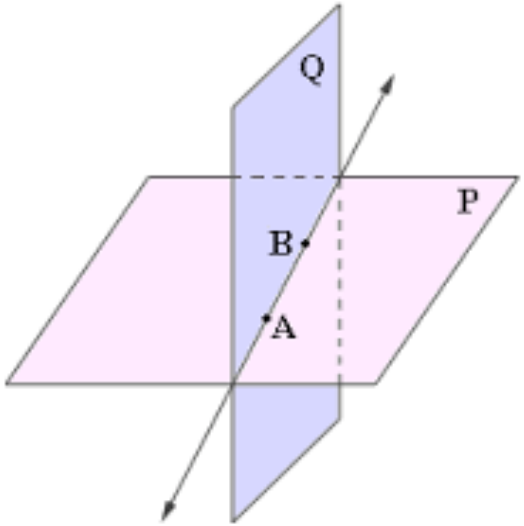
Real Life Examples: Points, Lines, Planes, Segments, Rays



Intersection

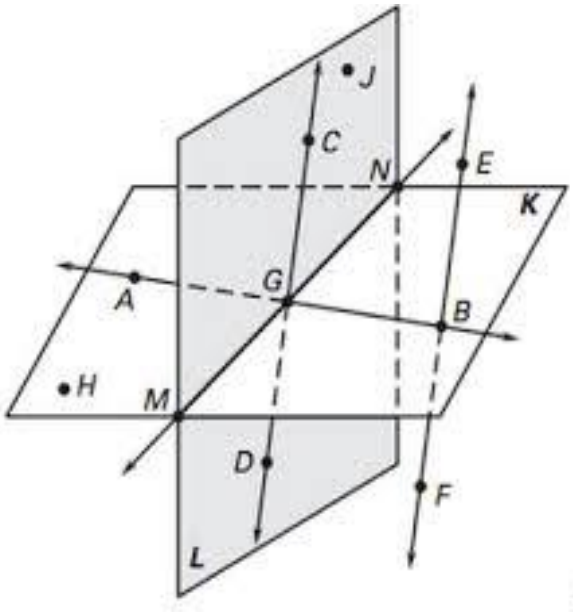
- The _____ that figures have _____





EX:

- Name the intersection of line AB and line EF
- Name the intersection of plane L and plane K
- Name the intersection of line MN and plane K



EX: Sketch each situation.

- A plane and a line that is in the plane.

- A plane and a line that intersects the plane at a point.

Cont.

- A plane and two intersecting lines that intersect the plane at separate points.

- Two planes that intersect in a line.

1.2

Use Segments and Congruence

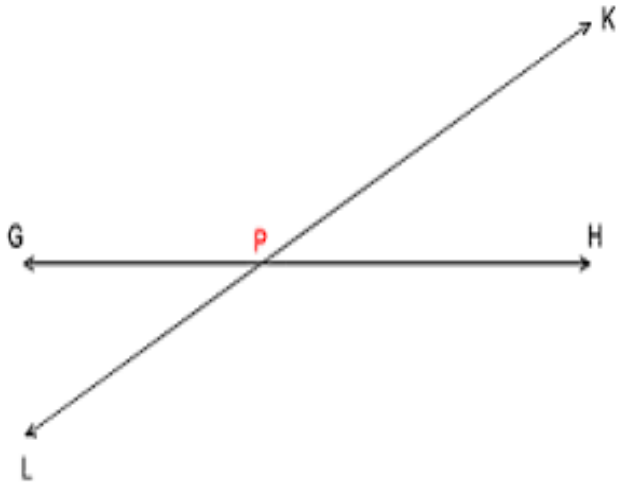
Postulate or Axiom

- A rule that is _____
- **POSTULATE #2: Segment Addition Postulate**
  - If points A, B, and C are _____, and point B is _____ A and C, then _____

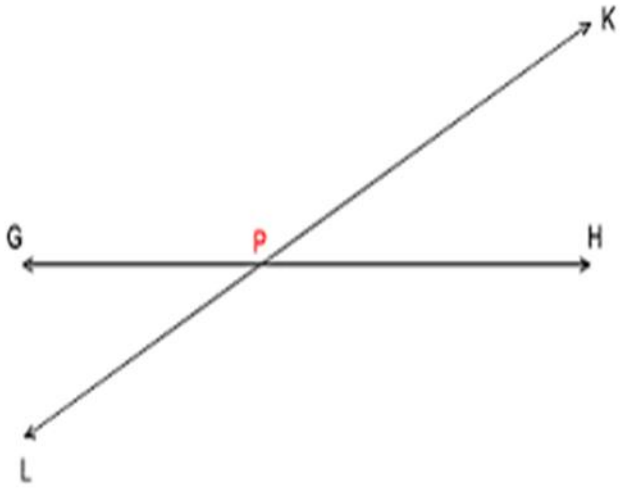
EX: Use the diagram to answer the following questions.

- Use the SAP to find LK.

- Use the SAP to write and solve an equation to find PH.



- With the given information, can you use the SAP to find the distance between points L and H? Explain.



Congruent Segments

- Line segments that have the _____.
- Symbol: _____.

EX:

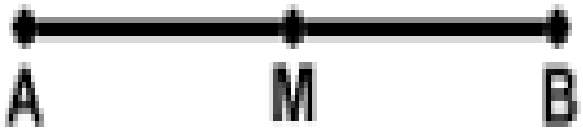
- Graph the points X(-2, -5), Y(-2, 3), W(-4, 3), and Z(4, 3) in a coordinate plane. Are segment XY and segment WZ congruent?

1.3

Use Midpoint and Distance Formulas

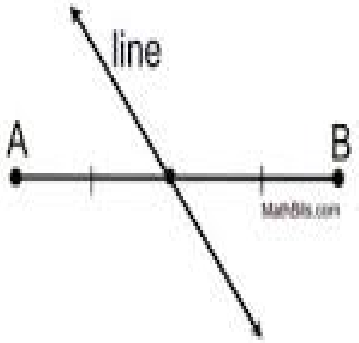
Midpoint

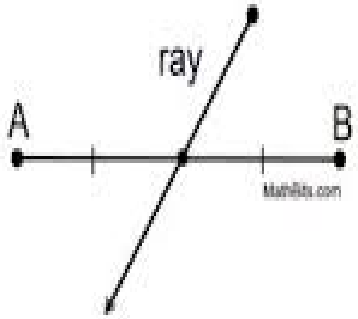
- The point that _____ a _____ into _____.

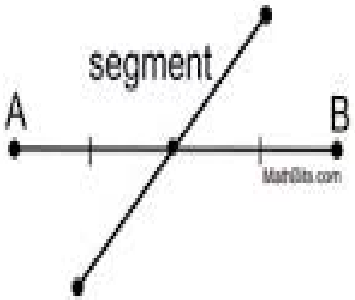


Segment Bisector

- A _____ that _____ a _____ at is _____.
- Divides the segment into _____.

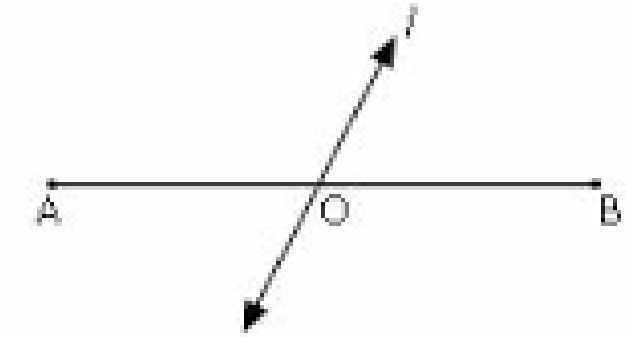






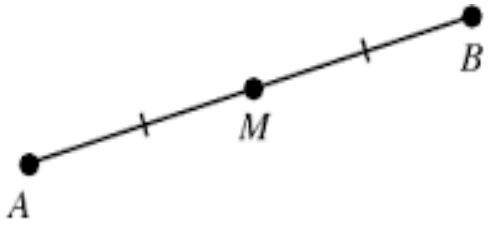
EX:

- Line l bisects the segment. Find the indicated length.
  - Find AO if OB = $1\frac{7}{8}$
  - Find AB is AO = 23 mm



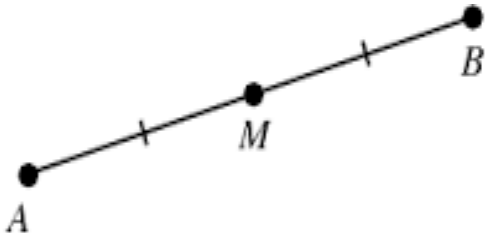
EX:

- M is the midpoint of the segment. Find the indicated length.
- Find AB.



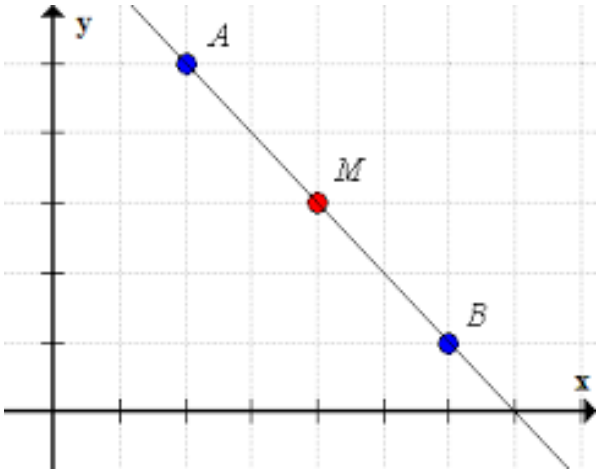
EX:

- Find AM.



Midpoint Formula

- The _____ of the _____ of a segment are the _____ of the _____ and of the _____ of the _____.



EX:

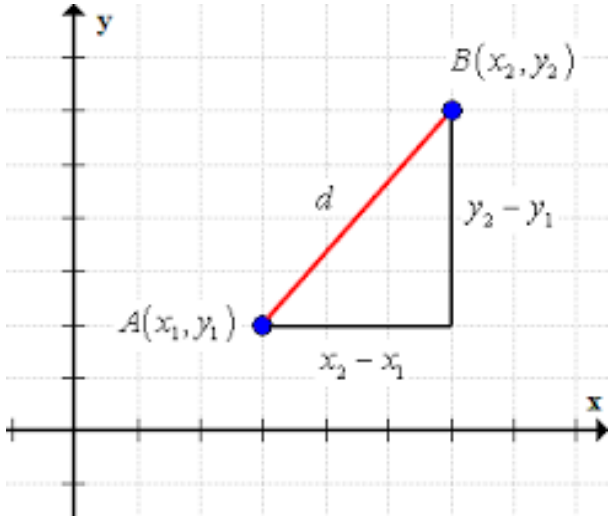
- Find the coordinates of the midpoint of the segment with the given endpoints.
- R(1, -3) and S(4, 2)

EX:

- Use the given endpoint R and midpoint M of segment RS to find the coordinates of the other endpoint S.
- M(5, 8) and R(2, -3)

Distance Formula

- If _____ and _____ are points in a coordinate plane, then the _____between _____ is:

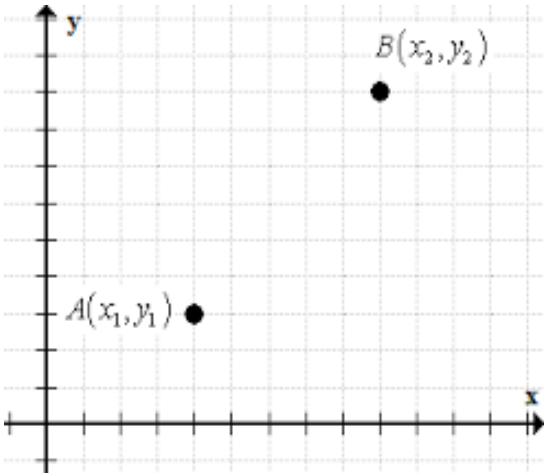


EX:

- What is the approximate length of segment AB, with endpoints A(-3, 2) and B(1, -4)?

EX:

- Find the length of the segment. Round to the nearest tenth of a unit, if necessary.



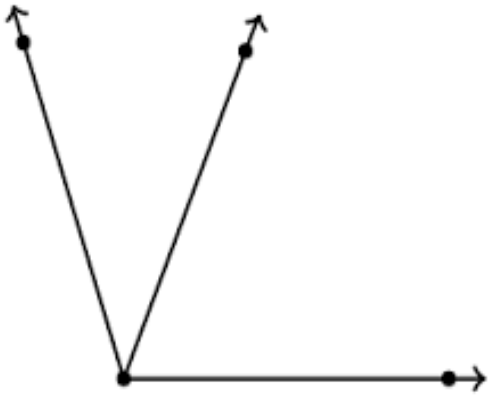
1.4

Measure and Classify Angles

Angle

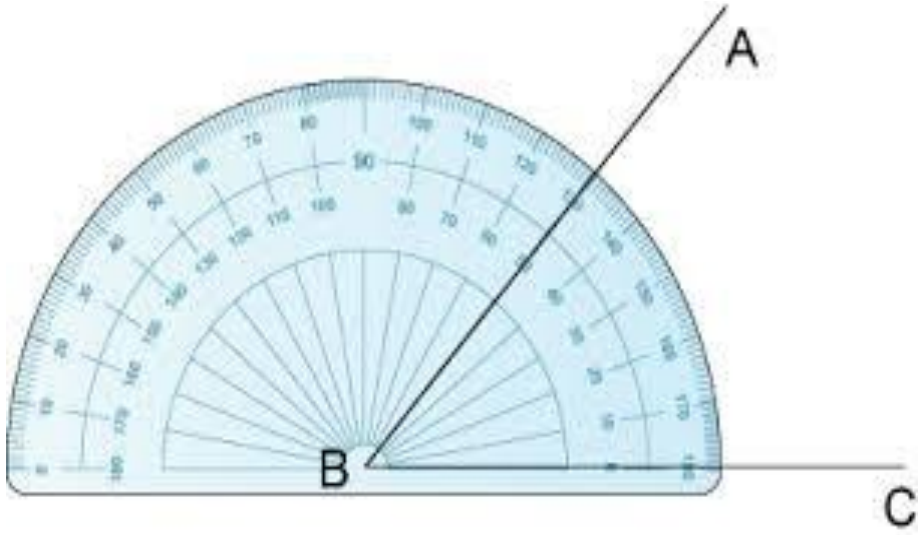
- Two _____ with the _____
- Rays: _____
- Endpoint: _____

EX: Name all the angles.

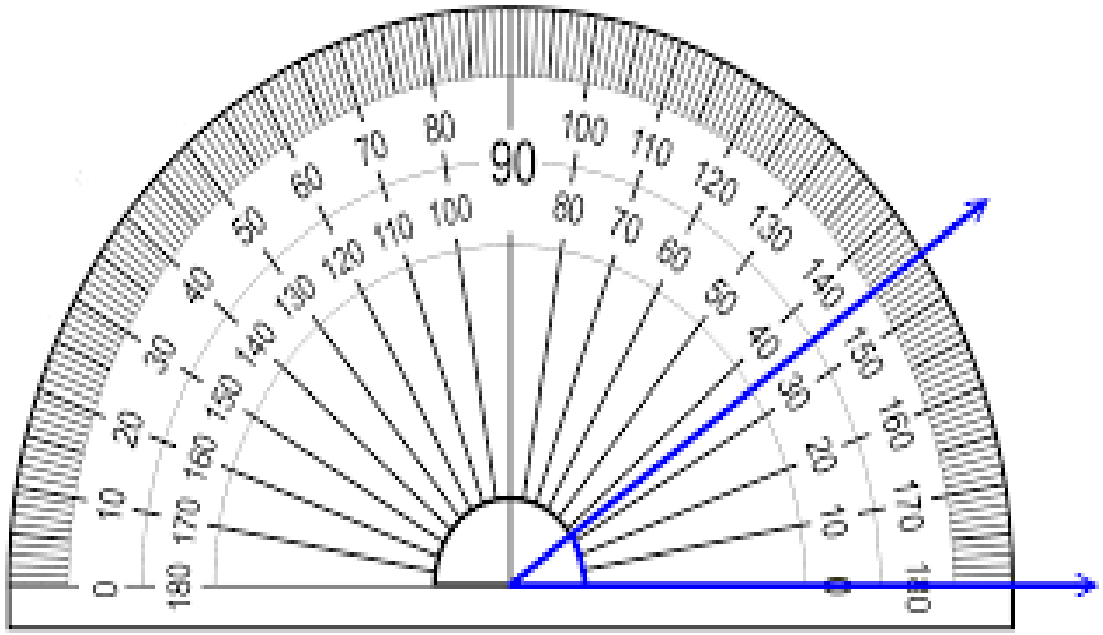


Measuring Angles

- Use a _____
- Measured in _____
- Symbol: _____



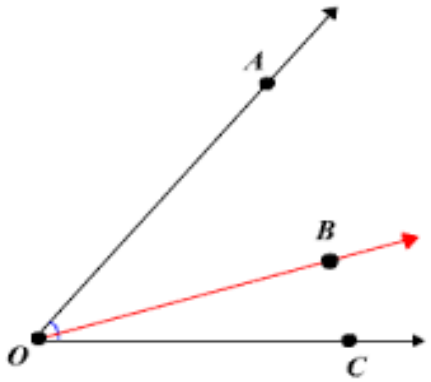
EX:



Classifying Angles

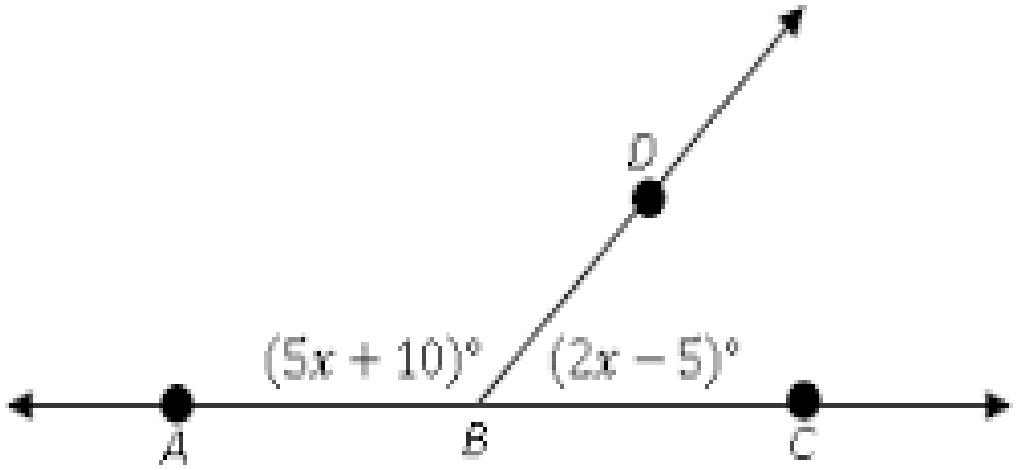
- Acute:
- Right:
- Obtuse:
- Straight:

- **POSTULATE #4: Angle Addition Postulate**
- If _____ is in the _____, then the _____ is equal to the _____
- Symbols:

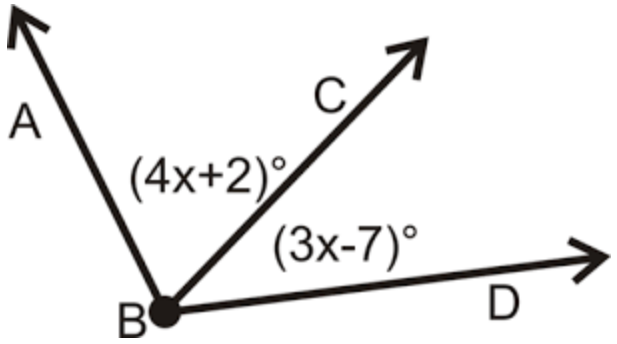


EX: Find the indicated angle measure.

- Given that angle ABC is a straight angle, find the _____.

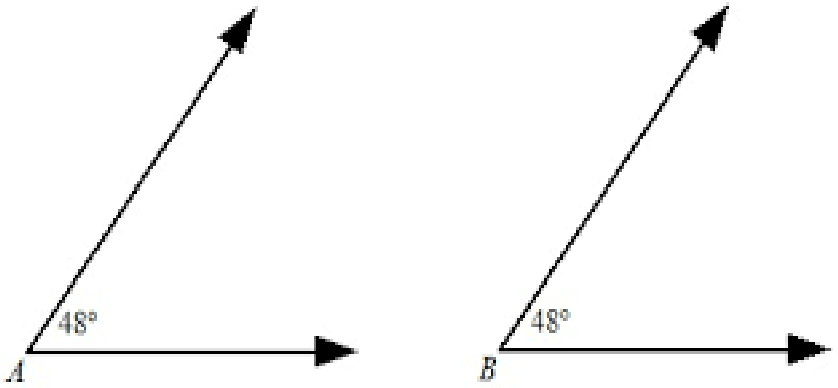


- Given that the measure of angle ABD is 100 degrees find _____



Congruent Angles

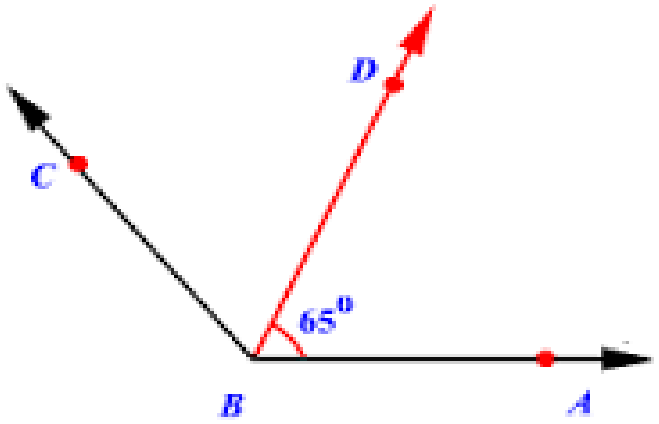
- Have the _____
- Symbol: _____



EX: Identify the congruent angles.

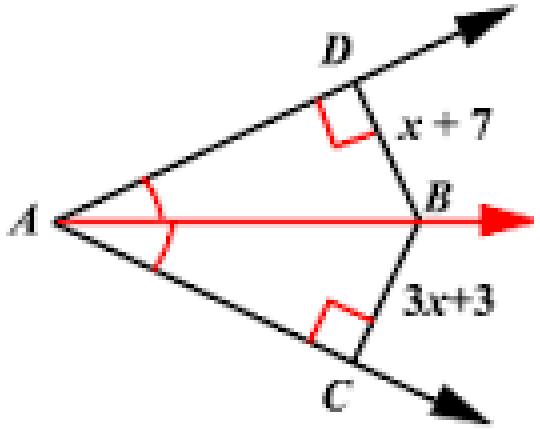
Angle Bisector

- A _____ that _____ an angle into _____ that are _____



EX: Find the indicated angle measure.

- Ray AB bisects angle DAC. Find _____



EX:

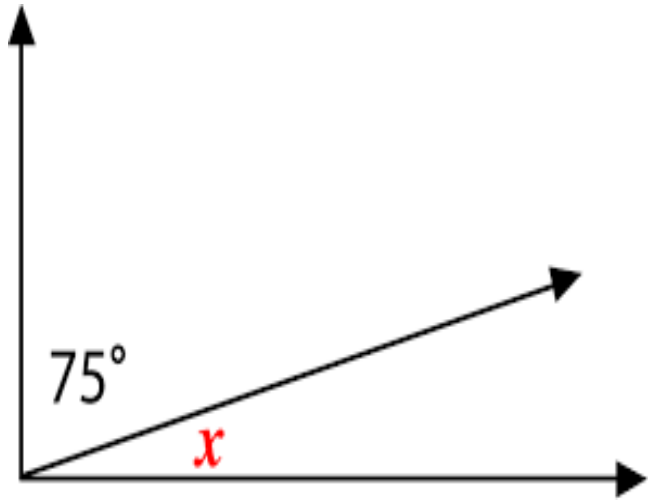
- Angle MNP is a straight angle and ray NQ bisects it. Draw angle MNP and ray NQ. Use arcs to mark the congruent angles in your diagram, and give the angel measures of these congruent angles.

1.5

Describe Angle Pair Relationships

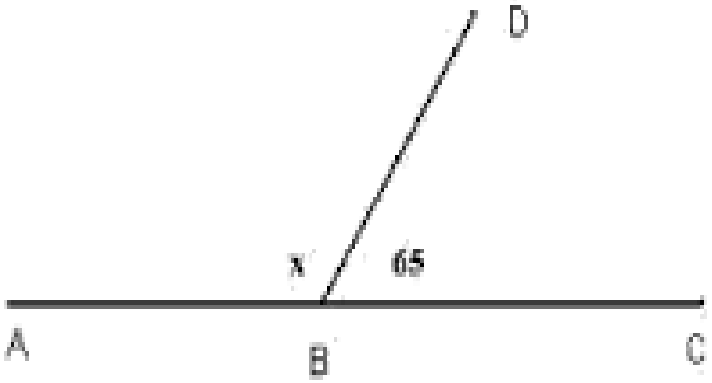
Complementary Angles

- _____ of their _____ is _____



Supplementary Angles

- _____ of their _____ is _____



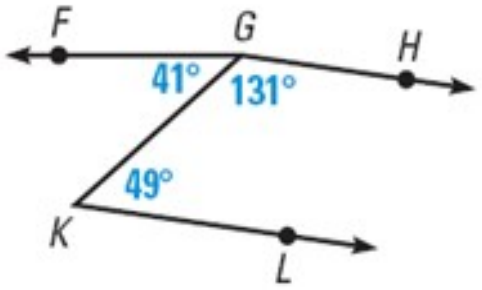
Complementary and Supplementary Angles can be:

- Adjacent: _____ that _____ a common _____
- Nonadjacent: _____

  _____
- EX:

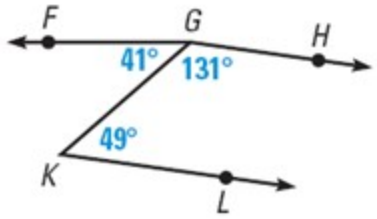
EX:

- Name a pair of complementary angles, supplementary angles, and a pair of adjacent angles.



EX:

- Are _____ adjacent angles? Are _____ adjacent angles? EXPLAIN!



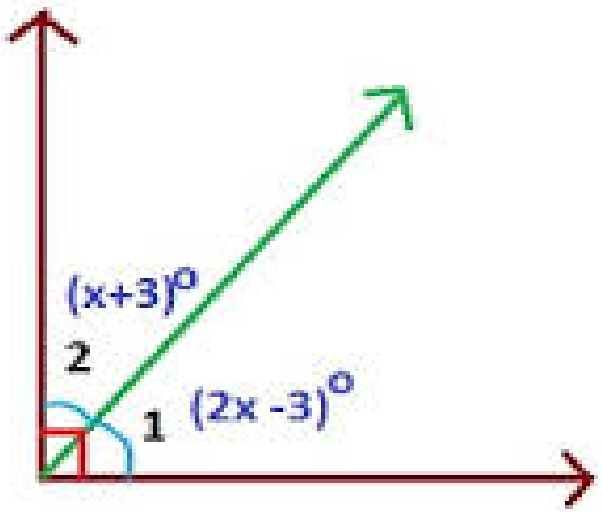
EX:

- Given that _____ is a _____ of _____ and _____, find the _____.

- Given that _____ is a _____ of _____ and _____, find the _____.

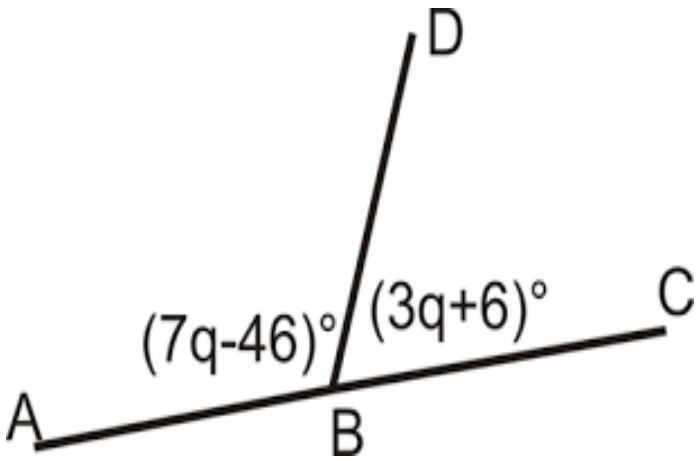
EX:

- Find the _____ and _____



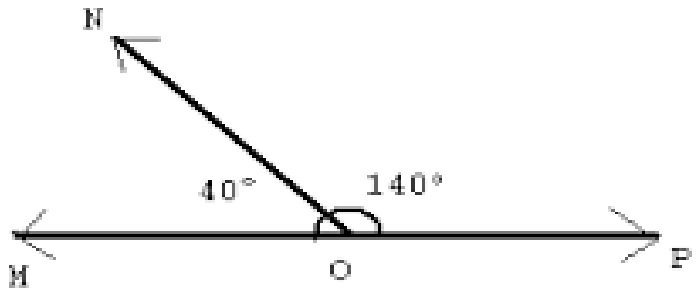
EX:

- Find the _____ and _____.



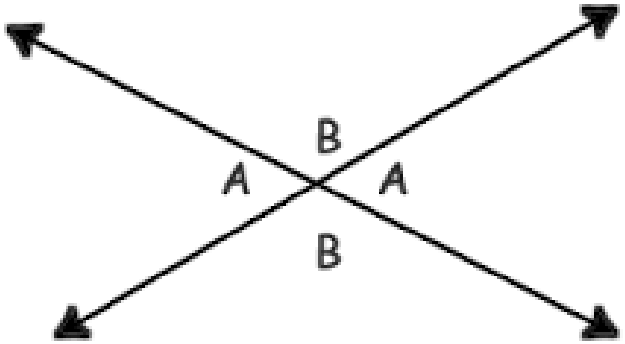
Angle Pairs

- Linear Pair: _____ whose _____ are _____.
  - _____ angles

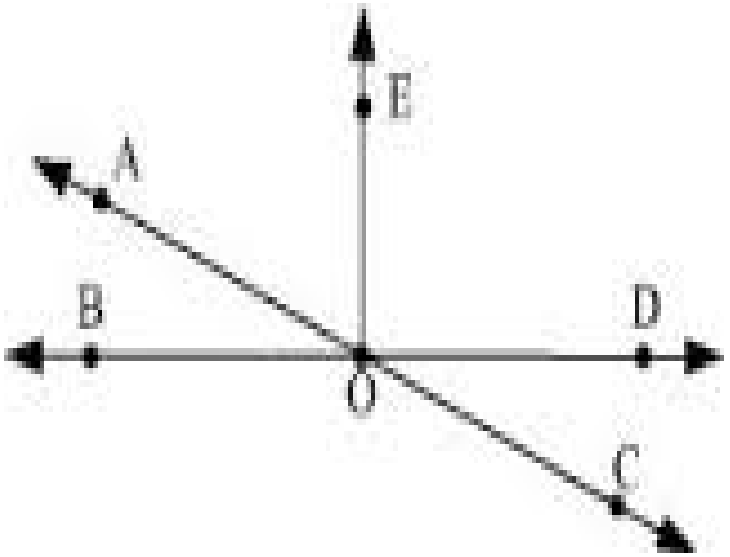


Angle Pairs Cont.

- Vertical Angles: Two _____ whose _____ form _____ of _____.



EX: Name all Linear Pairs and Vertical Angles.



EX:

- Two angles form a linear pair. The measure of one angle is 5 times the measure of the other. Find the measure of each angle.

1.6

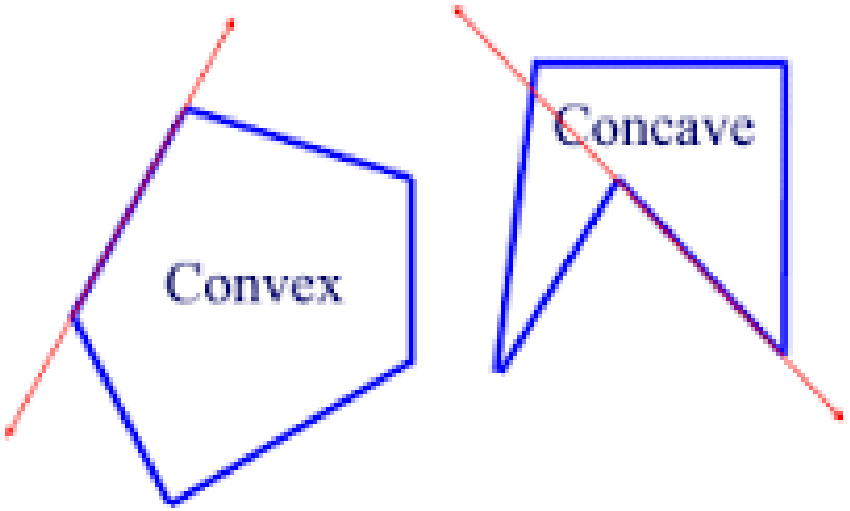
Classify Polygons

Polygons

- A _____ with the following properties:
  - Formed by _____ or more _____ _____ called _____
  - Each side _____ exactly _____ sides, one at each _____, so that no two sides with a common endpoint are _____
  - Vertex: _____

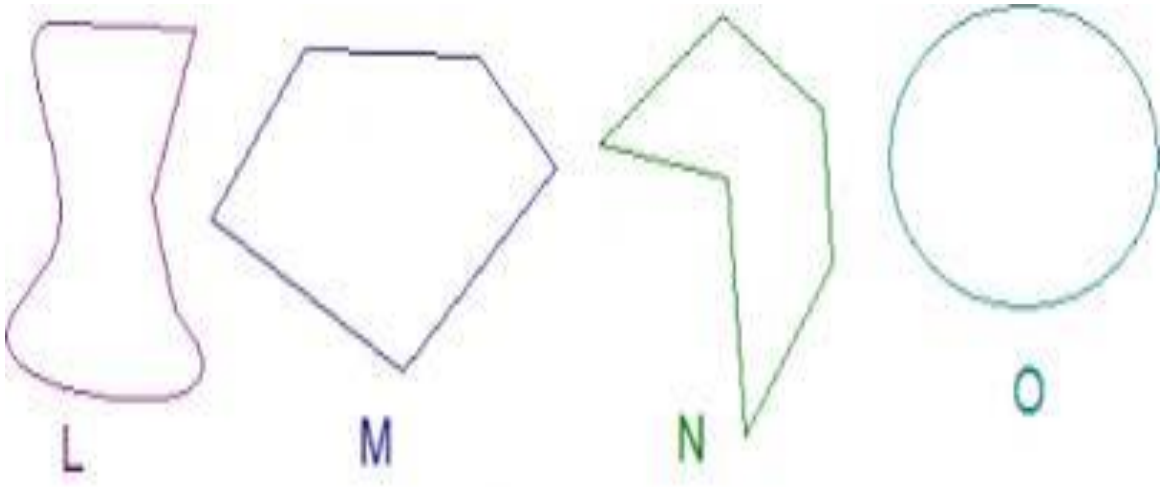
Types of Polygons

- Convex: _____ that contains a _____ of the polygon contains a _____ in the _____ of the polygon.
- Concave: a _____ that contains the _____ of the polygon does contain a _____ in the _____ of the polygon.


Convex
Concave

EX:

- Tell whether the figure is a polygon and whether it is convex or concave.



Classifying Polygons

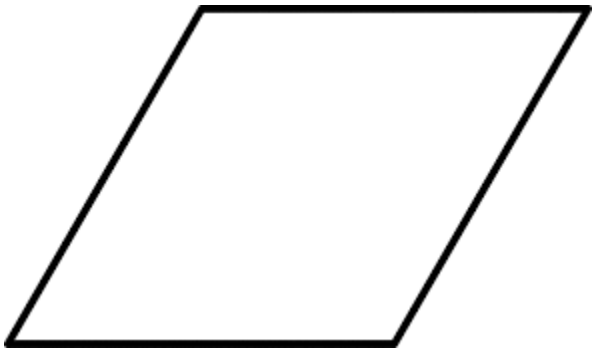
- Polygons are named by the _____ of its _____.

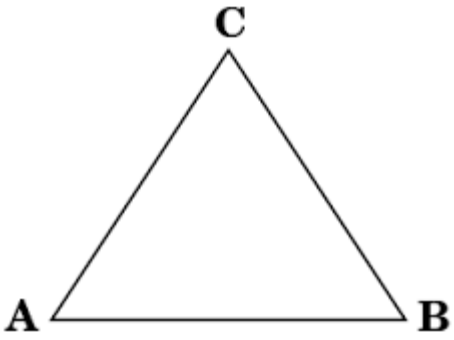
Number of Sides	Name

Number of Sides	Name

Types of Polygons

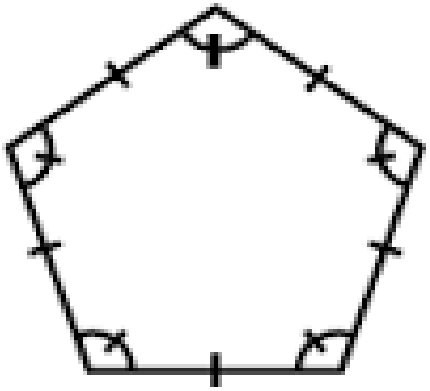
- Equilateral: All _____ are _____
- Equiangular: All _____ are _____
- Regular: A _____ polygon that is _____

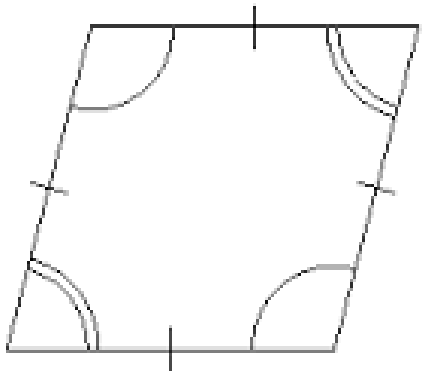




EX:

- Classify the polygon by the number of sides. Tell whether it is equilateral, equiangular, or regular. EXPLAIN.





EX:

- A rack for pool balls is shaped like an equilateral triangle. Find the length of a side if the lengths (in inches) of two sides are represented by the expressions $(4x + 2)$ and $(6x - 4)$.