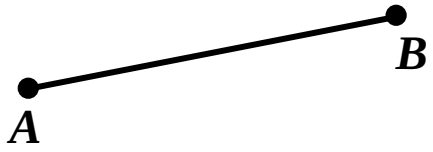
More Terminology and Notation:

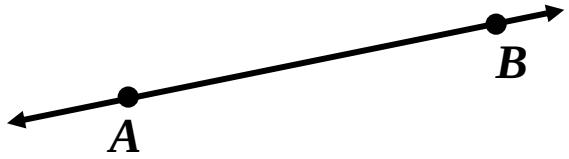
Plane: **It's an infinitely large flat surface.**

Line Segment: **It's the straight arrangement of points that connect two points called the endpoints.**



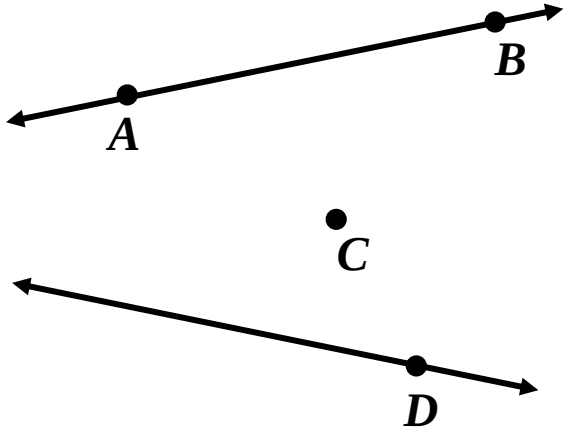
$\overline{AB}$

Line: **It's a straight arrangement of points that extends indefinitely in opposite directions.**

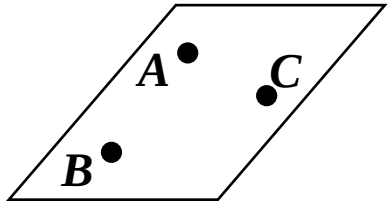


$\overleftrightarrow{AB}$

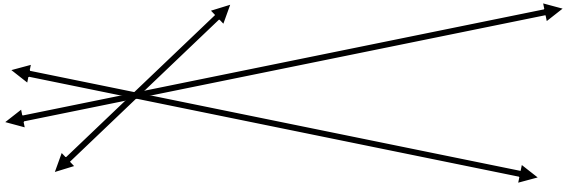
<u>Collinear Points:</u> Points that lie on the same line/line segment are called collinear points.



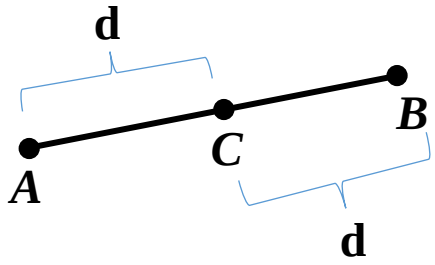
<u>Coplanar Points:</u> Points that lie on the same plane are called coplanar points.



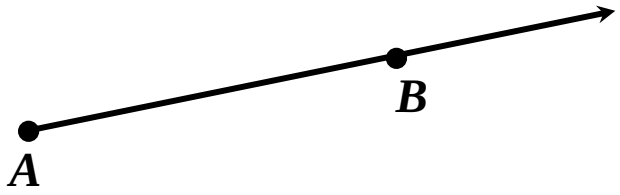
<u>Concurrent Lines:</u> Three or more lines that contain the same point are called concurrent.



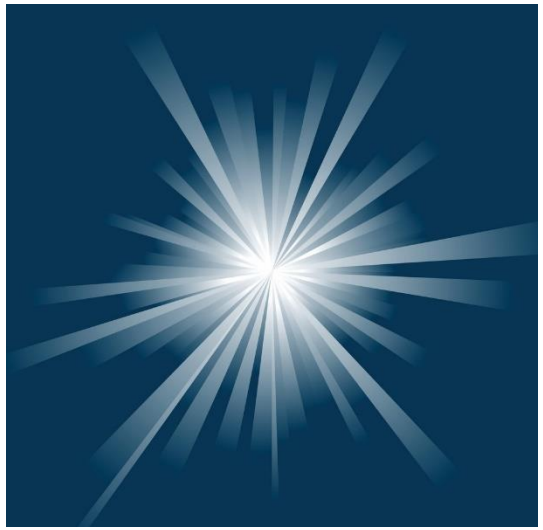
<u>Midpoint:</u> It's the point on a line segment that is equidistant from the endpoints.

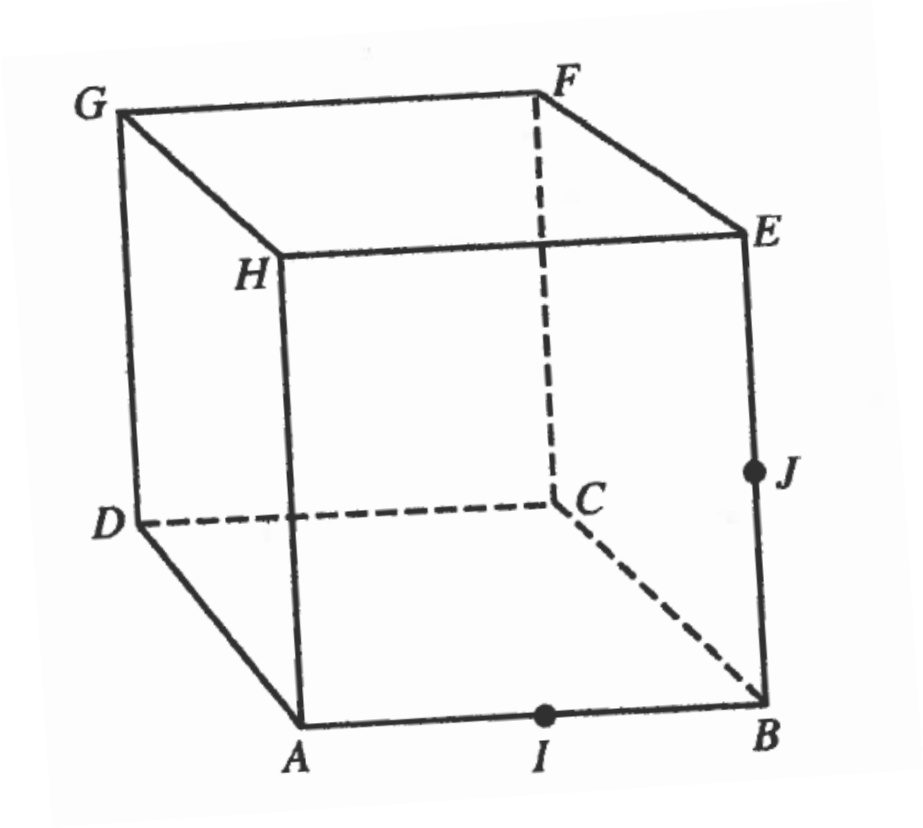


<u>Ray:</u> It's a straight arrangement of points that extends indefinitely in one direction from a point called its endpoint.



$\overrightarrow{AB}$





Which set of points are collinear?

D,G,H

H,C,B

E,J,B

A,D,C,B

Which set of points are coplanar?

A,I,D,G

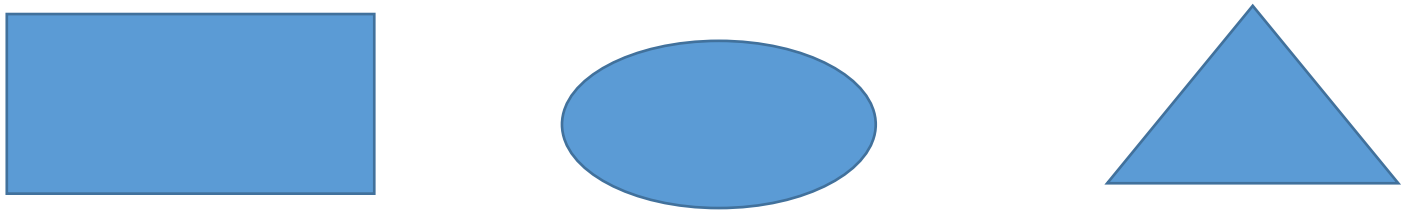
A,H,E,F

A,B,C,D

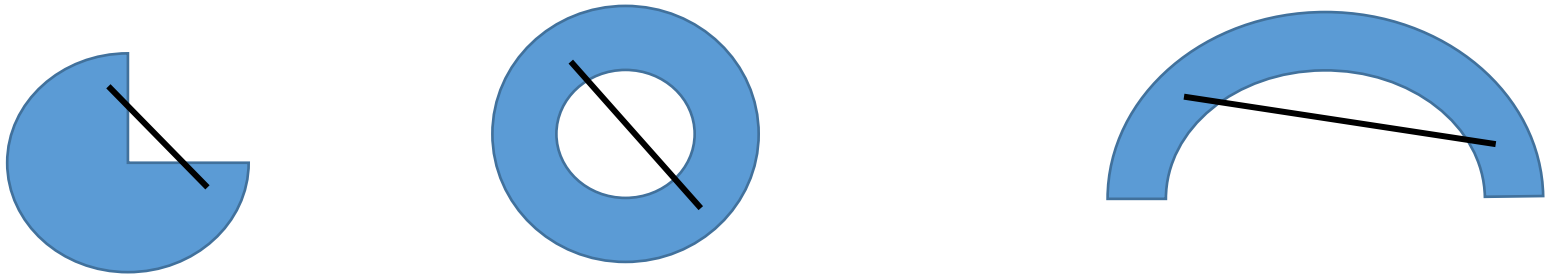
B,G,H,J

<u>Convex and Concave Regions:</u> **A region is convex if for every pair of points in the region, the line segment connecting them is also in the region. A region is concave if there is at least one pair of points in the region where the connecting line segment leaves the region.**

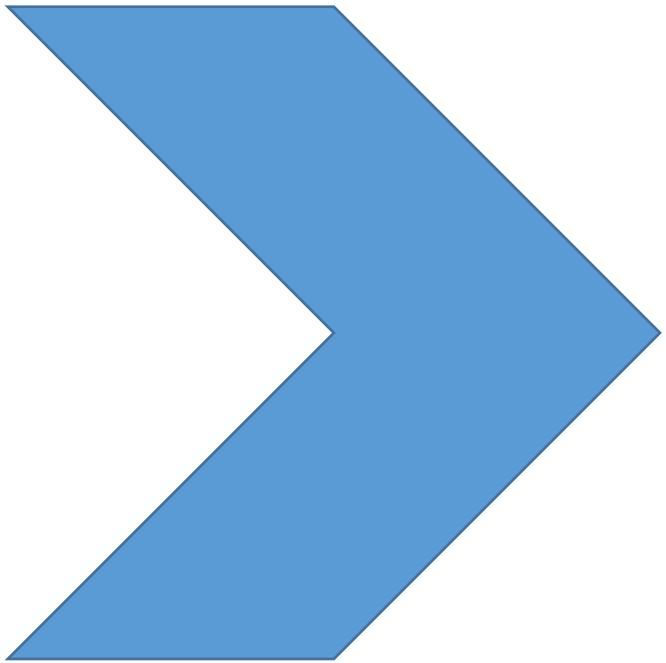
Convex:

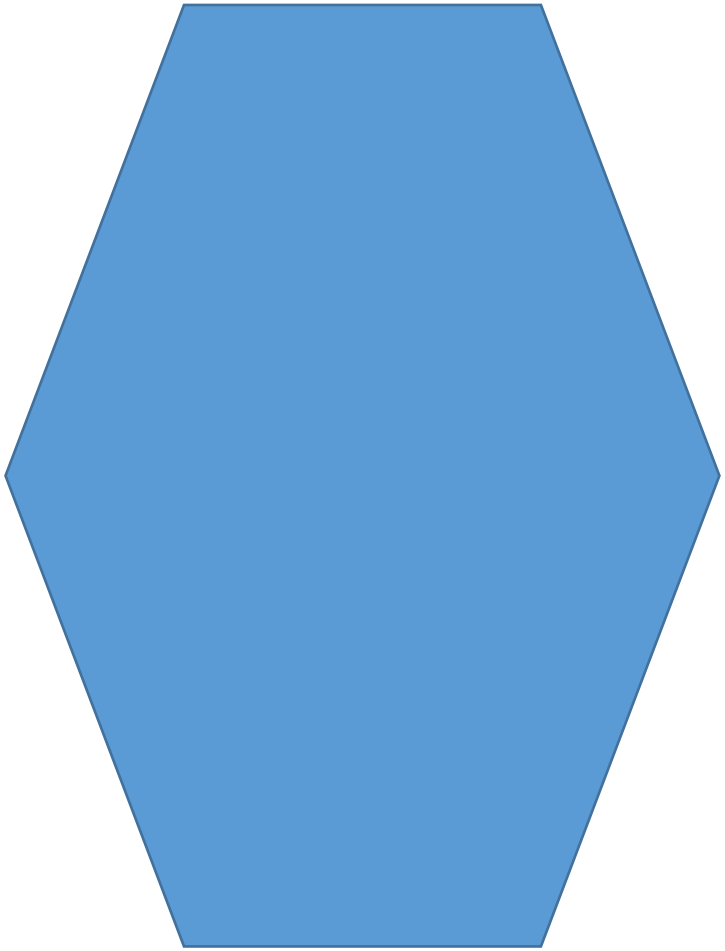


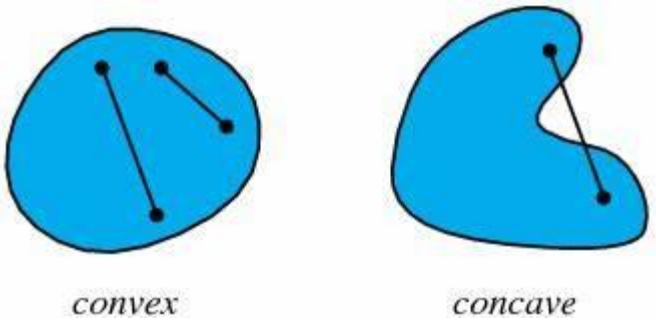
Concave:



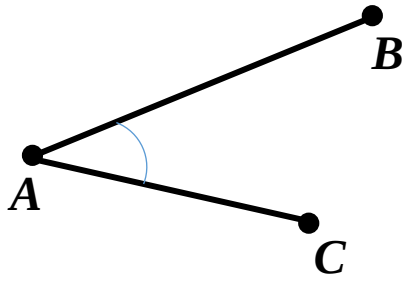
Convex or Concave?



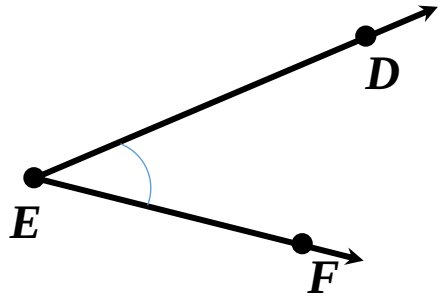




Angle: **It's the union of two line segments with a common endpoint or the union of two rays with a common endpoint. The common endpoint is called its vertex, and the line segments or rays are called its sides.**

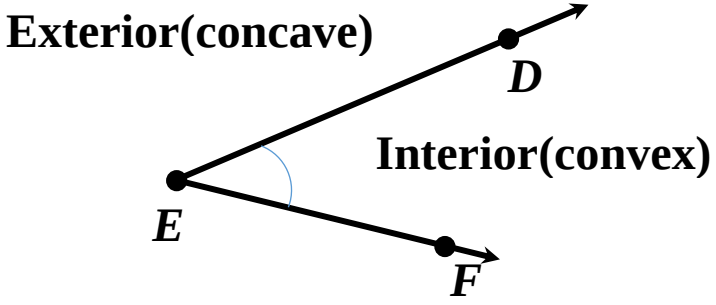


$\angle BAC$

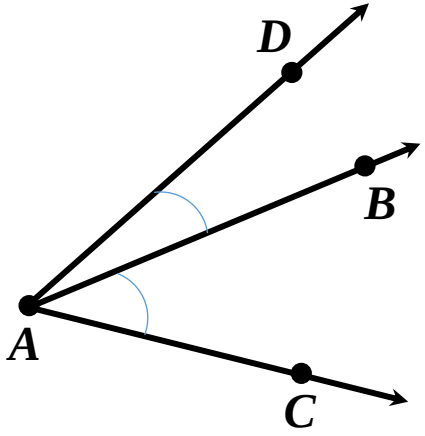


$\angle DEF$

Interior/Exterior of an Angle: **An angle that is formed by two rays divides a plane into three parts: the angle, the interior of the angle, and the exterior of the angle.**

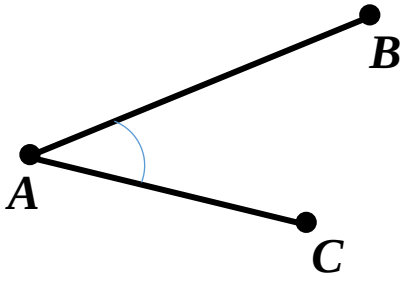


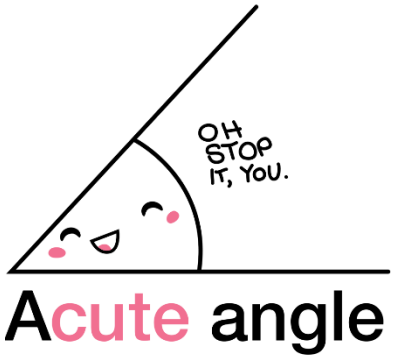
<u>Adjacent Angles:</u> They are two angles that share a vertex, have a common side, but whose interiors don't intersect.



$\angle DAB$ **and** $\angle BAC$ **are adjacent angles.**

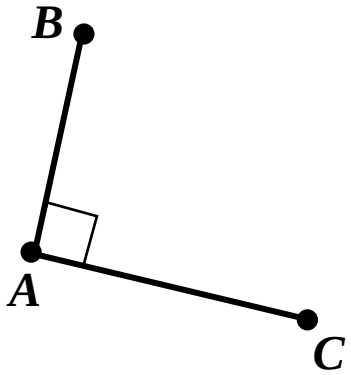
<u>Acute Angle:</u> An angle whose degree measure is less than $90°$**.**





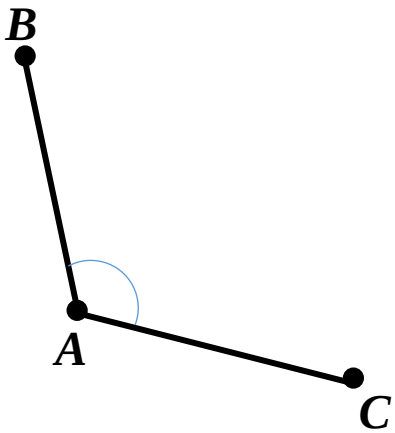
$m(\angle BAC) < 90°$

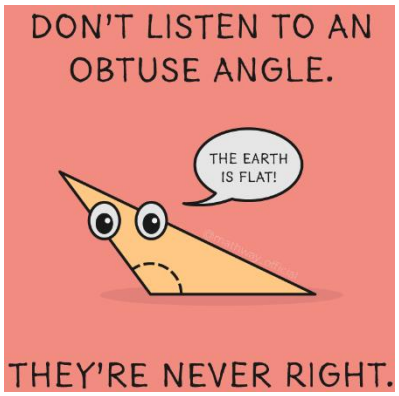
<u>Right Angle:</u> An angle whose degree measure is equal to $90°$.



$$m\left(\angle BAC\right)=90°$$

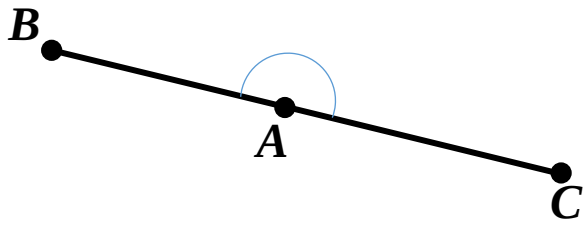
<u>Obtuse Angle:</u> An angle whose degree measure is greater than $90°$ but less than $180°$.





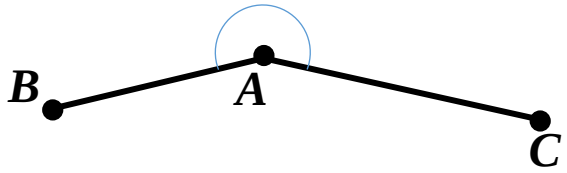
$$90°<m\left(\angle BAC\right)<180°$$

<u>Straight Angle:</u> An angle whose degree measure is equal to $180°$. Interior and exterior are convex.

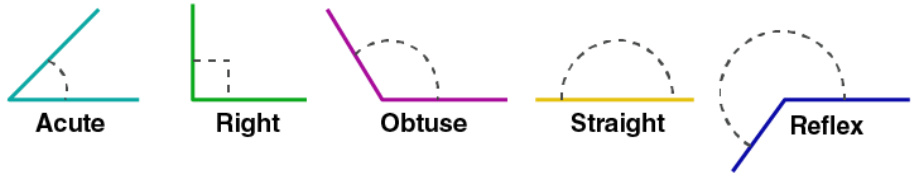


$$m\left(\angle BAC\right)=180°$$

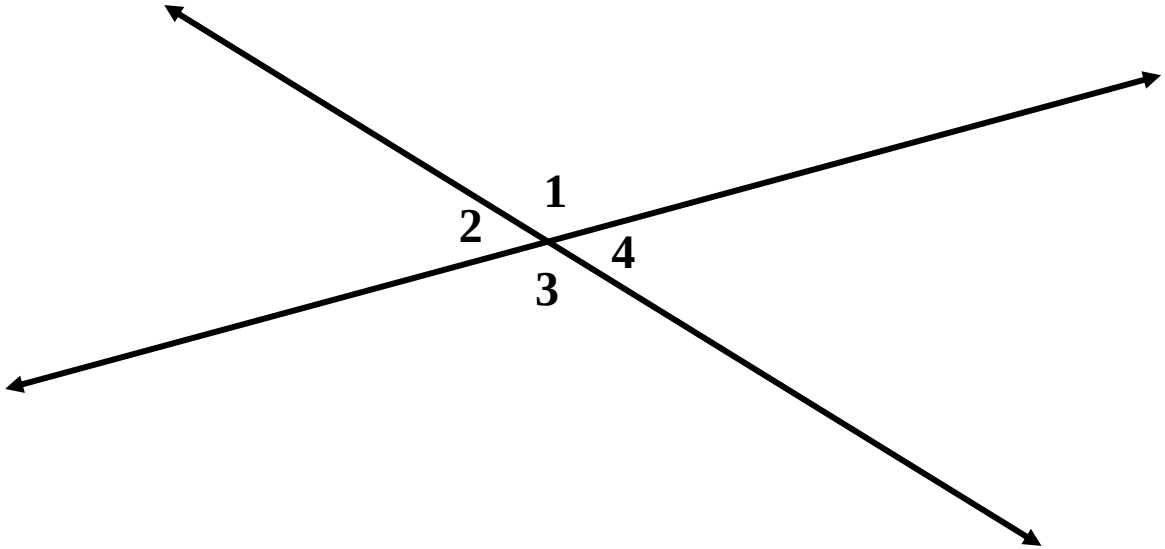
<u>Reflex Angle:</u> An angle whose degree measure is greater than $180°$ but less than $360°$. Interior is concave, and the exterior is convex.



$$180° < m\left(\angle BAC\right) < 360°$$



<u>Vertical Angles:</u> When two lines intersect, angles are formed. The pairs of non-adjacent angles are called vertical angles.

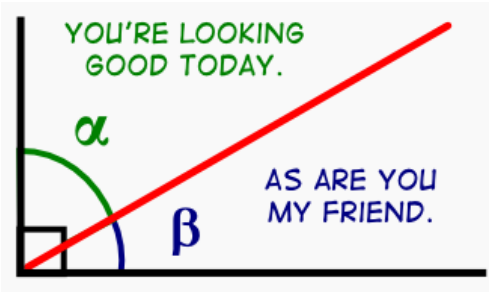


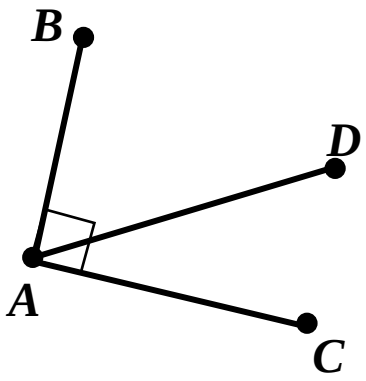
$\angle 1$ and $\angle 3$ are vertical angles.

$\angle 2$ and $\angle 4$ are vertical angles.

<u>Vertical angles are congruent.</u> **Show why $\angle 1$ and $\angle 3$ are congruent.**

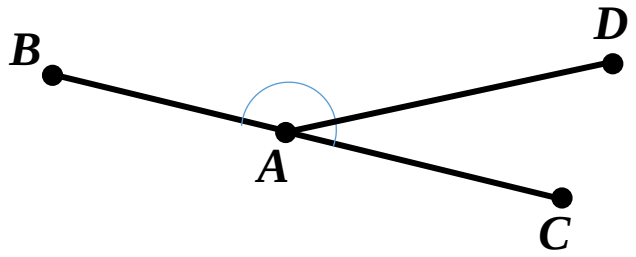
<u>Complementary Angles:</u> If the measures of two angles add up to $90°$, then the two angles are complementary.





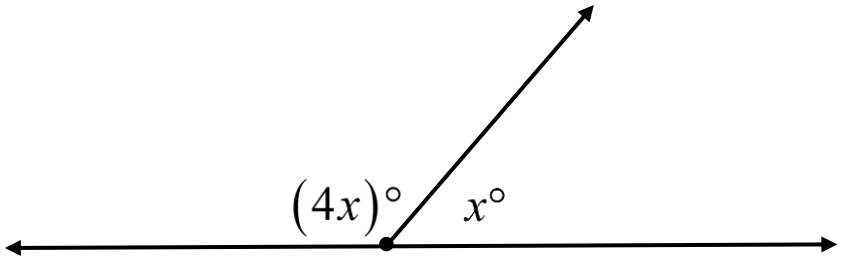
$\angle BAD$ and $\angle DAC$ are complementary angles.

<u>Supplementary Angles:</u> If the measures of two angles add up to $180°$, then the two angles are supplementary.

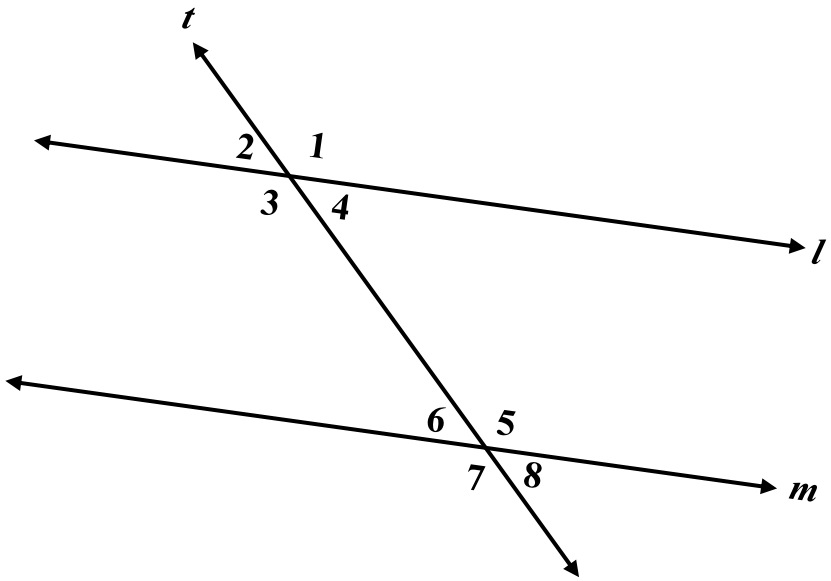


$\angle BAD$ and $\angle DAC$ are supplementary angles.

Find the value of *x*.



Two Parallel Lines Intersected by a Transversal:



Corresponding Angles: Pairs of angles that match up.

$\angle 1$ and $\angle 5$ are corresponding angles.

$\angle 2$ and $\angle 6$ are corresponding angles.

$\angle 3$ and $\angle 7$ are corresponding angles.

$\angle 4$ and $\angle 8$ are corresponding angles.

Corresponding angles are congruent.

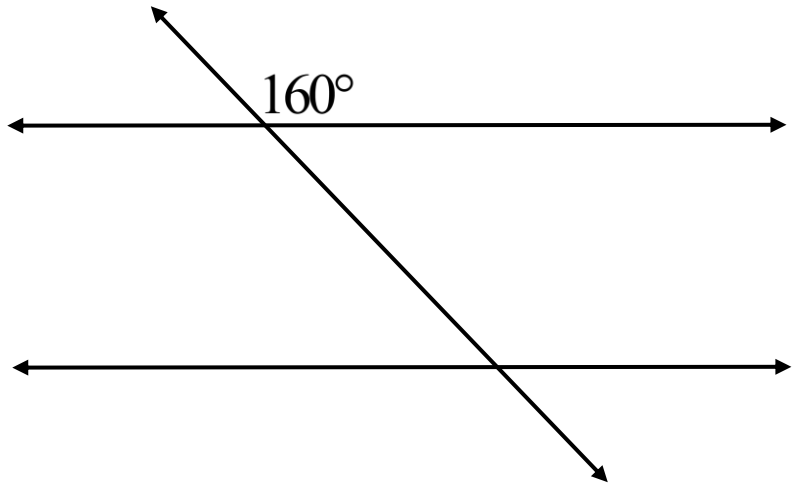
<u>Alternate Interior Angles:</u> Pairs of non-adjacent angles between the parallel lines but on opposite sides of the transversal.

$\angle 3$ and $\angle 5$ are alternate interior angles.

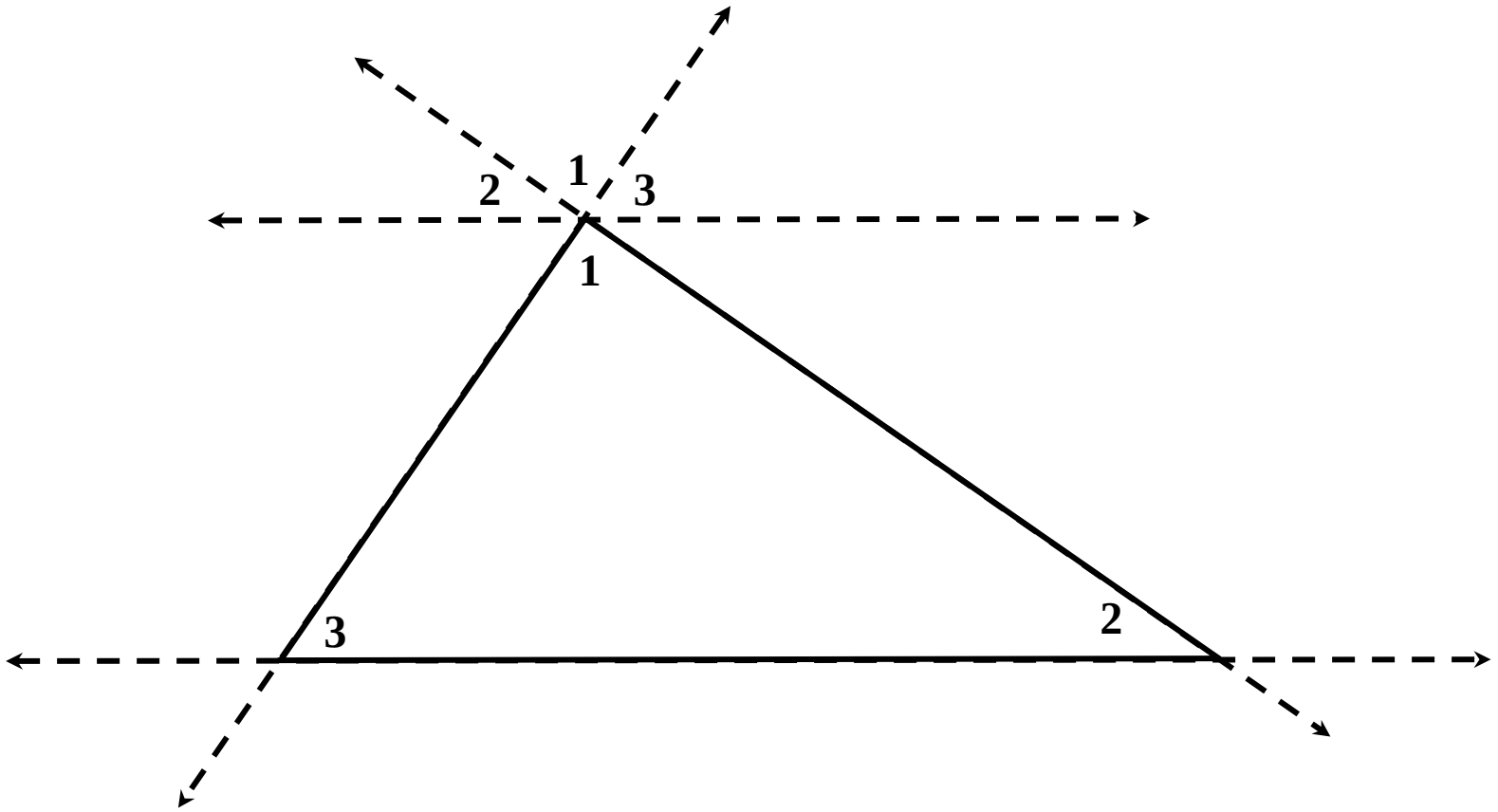
$\angle 4$ and $\angle 6$ are alternate interior angles.

<u>Alternate interior angles are congruent.</u> **Show why $\angle 3$ and $\angle 5$ are congruent.**

Complete the labelling of the angle measures in the following pair of parallel lines cut by a transversal.

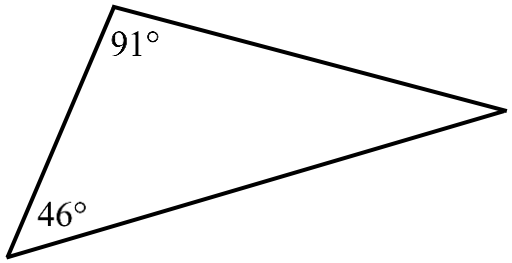


<u>The sum of the angle measures in a triangle:</u>



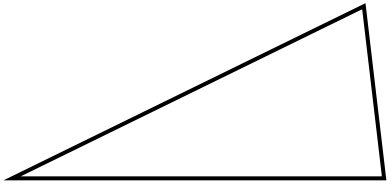
So $m(\angle 1)+m(\angle 2)+m(\angle 3)=$

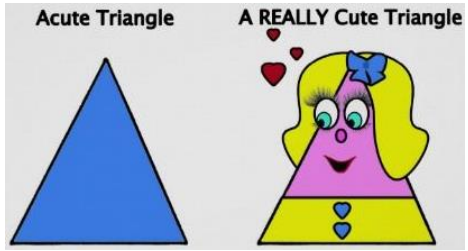
Find the missing angle measure in the following triangle.



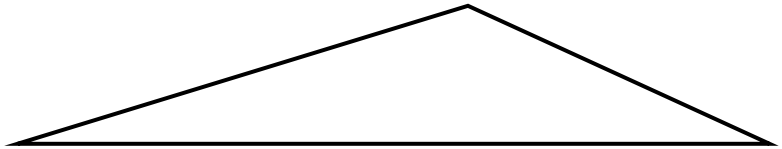
<u>More on Triangles:</u>

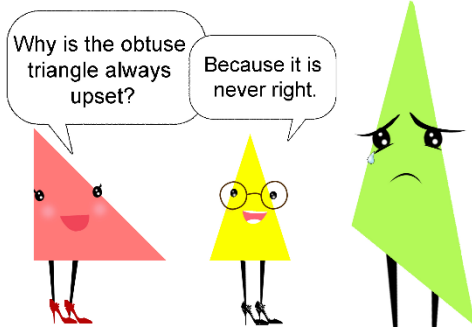
<u>Acute Triangle:</u> It's a triangle in which all three angles are acute.



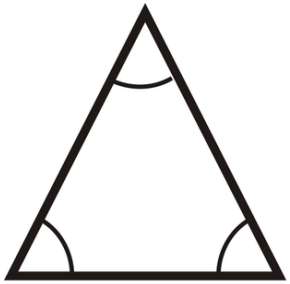


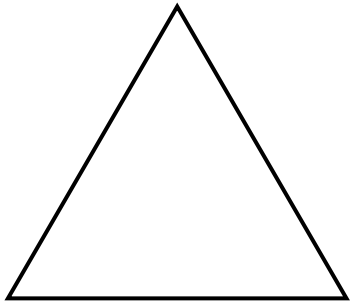
<u>Obtuse Triangle:</u> It's a triangle with one angle larger than $90°$.





<u>Equiangular Triangle:</u> It's a triangle with all three angles of equal measure.





What is the measure of each of the angles in an equiangular triangle?

In the Venn diagram below, draw a representative figure in each of the three regions, if possible.