

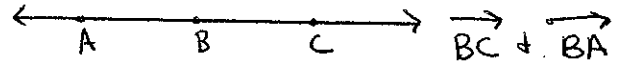
1.4 Measure and Classify Angles

Vocabulary

Ray: has 1 endpoint and extends infinitely in 1 direction.

Always label with the endpoint first!!!

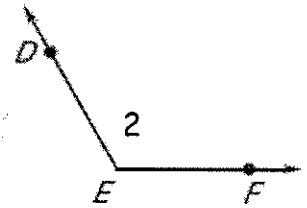
Opposite Rays are collinear and have the same endpoint  
 \*they form a line



Angle: a figure formed by 2 noncollinear rays with a common endpoint.

Sides the 2 rays  $\overrightarrow{ED}$   $\overrightarrow{EF}$

Vertex the common endpoint E



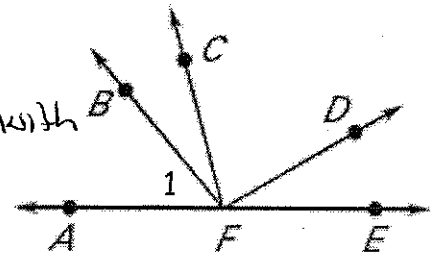
Labeled 3 ways:

- a) 3 letters (vertex is always in the middle)  $\angle DEF$  or  $\angle FED$
- b) 1 letter (only if no other angles have the same vertex)  $\angle E$
- c) 1 number  $\angle 2$

$\angle CFD$  and  $\angle DFC$  are the same angle.

Can you say  $\angle BFA$  is the same as  $\angle F$ ? No  $\rightarrow$  other  $\angle$ s with vertex F

Can you say  $\angle BFA$  is the same as  $\angle 1$ ? Yes




Measurement

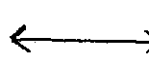
- Angles are measured in units called **degrees**
- Use a **protractor** to measure angles- place the center point of the protractor over the vertex; align the mark labeled 0 on the protractor with one side of the angle.
- Measure of  $\angle ABC$  is abbreviated as  $m$  before an angle name, like  $m\angle ABC = 72^\circ$

Angle Classification

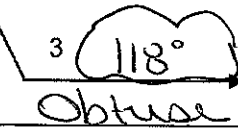
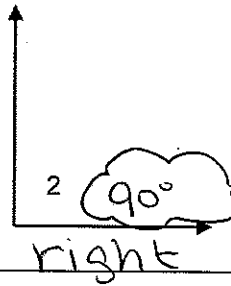
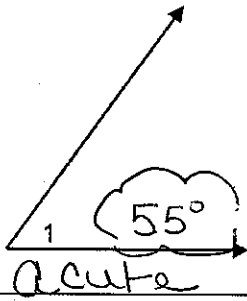
 • Acute: if measure is greater than  $0^\circ$  but less than  $90^\circ$

 • Right: if the measure is  $90^\circ$ .

 • Obtuse: if the measure is greater than  $90^\circ$  but less than  $180^\circ$

 • Straight: if the measure is  $180^\circ$

Measure each angle and classify according to the measure:



More Vocabulary:

Congruent Angles have the same measure.

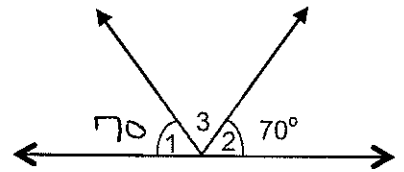
According to the picture, fill in the blanks:

$\angle 1 \cong \angle 2$  or  $m\angle 1 = m\angle 2$

$m\angle 1 = 70^\circ$

$m\angle 3 = 40^\circ$

$$\begin{aligned} \angle 1 + \angle 2 + \angle 3 &= 180^\circ \\ 70 + 70 + \angle 3 &= 180 \\ 140 + \angle 3 &= 180 \\ \angle 3 &= 40^\circ \end{aligned}$$

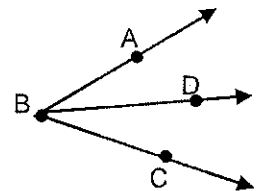


Angle Bisector

• a ray that divides an angle into 2  $\cong$   $\Delta$ s

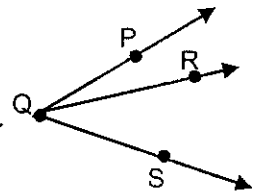
• If  $\overline{BD}$  bisects  $\angle ABC$  then  $\angle ABD \cong \angle DBC$

and  $m\angle ABD = m\angle DBC$

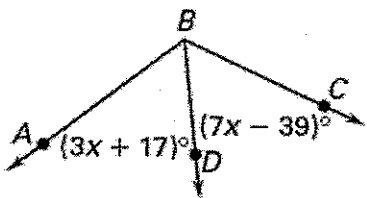


Angle Addition Postulate

• If R is in the interior of  $\angle PQS$  then  $\angle PQR + \angle RQS = \angle PQS$



1.  $\overline{BD}$  bisects  $\angle ABC$ . Find  $m\angle ABC$ .



$$\begin{aligned} \angle ABD &= \angle CBD \\ 3x + 17 &= 7x - 39 \\ 56 &= 4x \\ 14 &= x \end{aligned}$$

$\angle ABD = 3(14) + 17 = 59^\circ$

$\angle CBD = 7(14) - 39 = 59^\circ$

$\angle ABC = 118^\circ$

2. Given  $m\angle ADC = 135^\circ$ , find  $m\angle BDA$ .

$$\begin{aligned} \angle ADB + \angle BDC &= \angle ADC \\ 7x + 11x + 9 &= 135 \\ 18x + 9 &= 135 \\ 18x &= 126 \end{aligned}$$

$x = 7$

$\angle BDA = 7(7) = 49^\circ$

$\angle BDA = 49^\circ$

