

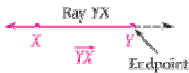
(1.4) Measuring Angles 8.notebook

September 29, 2017

Objectives: You will learn how to measure and classify angles as well as how to identify and use congruent angles and the bisector of an angle.

Ray: part of a line. It contains one **endpoint** and extends **indefinitely** in one direction.

→ What does it look like?



→ How do you name it?



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→ **Opposite rays:** Two **collinear** rays that share an **endpoint** and extend in opposite directions.

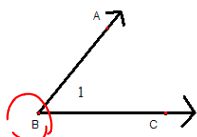


Opposite rays always form a line!

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Angle: Formed by two rays (the **sides**) with the same endpoint (the **vertex**).

What do they look like?



How do you name them?

vertex $\angle B$
3 letters $\angle ABC$
$\angle 1$

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Example 1:

a) How many angles do you see in the picture?

3



b) Name each angle in 2 different ways.

$\angle AEC$ or $\angle 1$
 $\angle CED$ or $\angle 2$
 $\angle AED$ or $\angle DEA$

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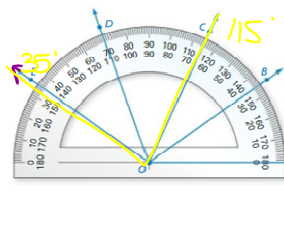
→ Angles are measured in degrees.

→ You use a protractor to measure an angle.



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Example 2:



Find the measure of each angle on the left.

$m\angle AOC = 65^\circ$

$m\angle AOE = 145^\circ$

$m\angle COD = 110 - 65 = 45^\circ$

$m\angle COE = 115 - 35 = 80^\circ$

$\angle AOC$

$\angle DOB$

$\angle COD$

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Two angles that have the same measure are congruent.

How to mark angles congruent



Name a pair of congruent angles in the picture.

$\angle 1 \cong \angle 2$

Mar 7-1:49 PM

You classify angles by their measure:



acute angle
 $0 < x < 90$

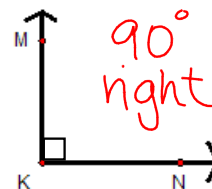
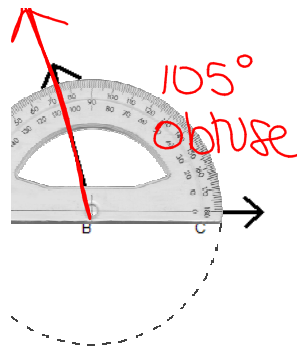
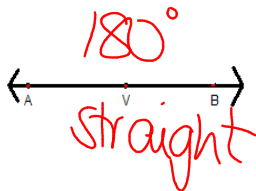
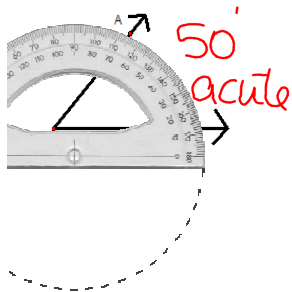
right angle
 $x = 90$

obtuse angle
 $90 < x < 180$

straight angle
 $x = 180$

Example #4:

Measure and classify the following angles:



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Mar 7-2:08 PM

Example 4:

If $\angle ABC \cong \angle DEF$ and $m\angle ABC = 6x + 2$ and $m\angle DEF = 8x - 14$, Find x and $m\angle ABC$
(Draw a picture first!!)

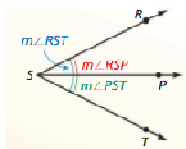
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Example 5:

If \overline{PQ} bisects $\angle LPM$ and $m\angle LPM = 76^\circ$, what is the $m\angle LPQ$? (Draw a picture first!!)

Sep 30-4:23 PM

Angle Addition Postulate: If P is in the interior of $\angle RST$, then $m\angle RSP + m\angle PST = m\angle RST$.



Sep 26-8:31 AM

Example 6:

If the $m\angle NKL = 145^\circ$, find the $m\angle MKL$ and $m\angle MKN$.

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Example 7:

\overrightarrow{RT} and \overrightarrow{RS} are opposite rays and \overrightarrow{RW} bisects $\angle QRS$.

If $m\angle QRW = 2x + 20$ and $m\angle WRS = 4x - 2$, find the following:

a) $x = 11$

b) $m\angle QRS = 42$

c) $m\angle TRQ = 96$

Sep 30-3:47 PM