Geometry Basics

A journey through your Geo Vocab book

What is Geometry?

Geometry is the study of shapes

They studied Geometry in Ancient Mesopotamia & Ancient Egypt

Geometry is important in the art and construction fields

THE BUILDING BLOCKS OF GEOMETRY

Point

An exact location in space.

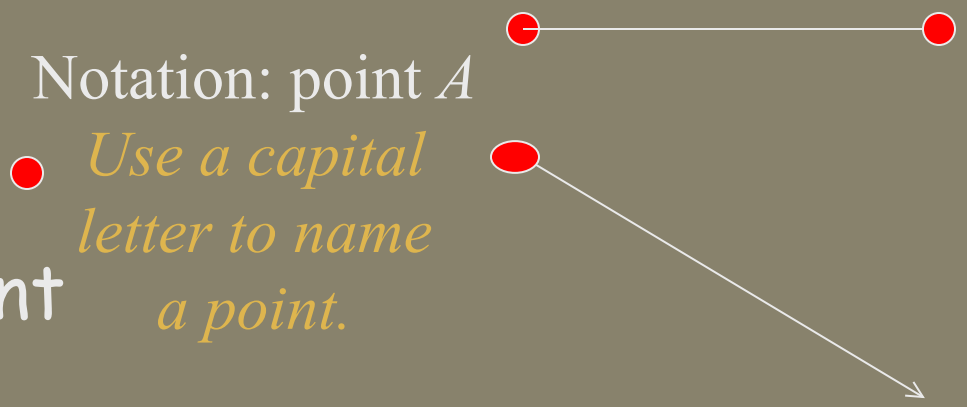
Normally labeled with one capital letter

Ex. Point A

Label your point

End point

A point at the end of a line segment or ray.



Notation: point *A*

Use a capital letter to name a point.

LINE

A LINE goes in opposite directions and never, never ends.

$\overleftrightarrow{GP}$

Lines may or may not have points. This line has 3 points. Add points to your line

Use two points on the line to name a line

Helpful Hint

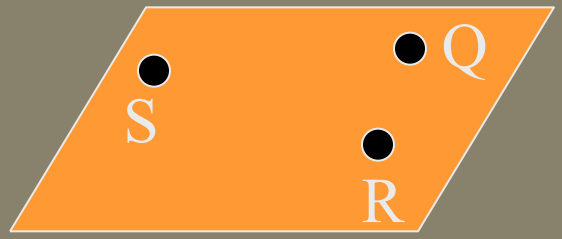
or *PG, SP or PS, SG or GS*

A number line is an example of a line.

Notate your line

Plane

A plane is a perfectly flat surface that extends infinitely in all directions

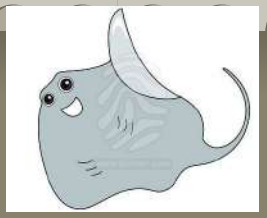


plane *QRS*

Use three points in any order, not on the same line, to name a plane.

Plot 3 points on your plane. Use the points to name your plane.

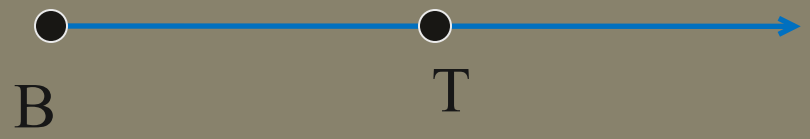
Ray



A part of a line. It has one endpoint and extends without end in one direction.

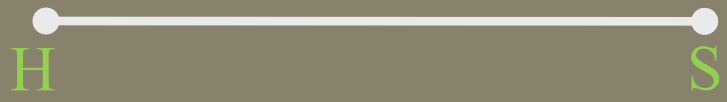
Plot an endpoint and another point on your ray

$\overrightarrow{BT}$



Naming a ray: *Name the endpoint first when naming a ray. Place a small ray on top*

Line Segment



$\overline{HS}$

- Part of a line; or a ray that extends from one endpoint to another

- Plot endpoints on your line segments. Label the points
- Use the points to name your line segment

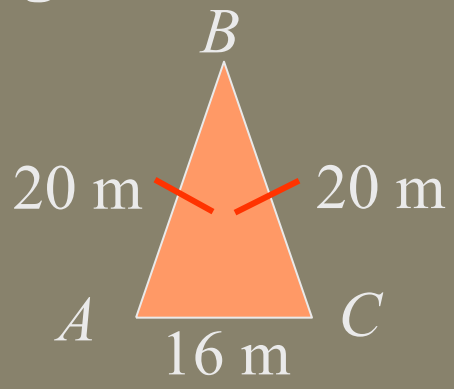
Congruent

CONGRUENT means the "same"

CONGRUENT LINE SEGMENTS means two line segments are the same or equal.

If you place one on top of the other, they match exactly.

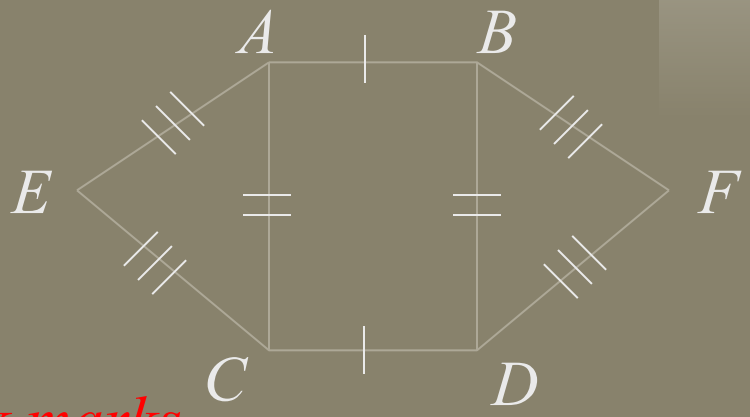
In the illustration below, line segments *AB* and *BC* are congruent.



You can use tick marks to indicate congruent line segments.

Congruent 2

Identify the line segments that are congruent in the figure.



$\overline{AB} \cong \overline{CD}$ *One tick mark*

$\overline{AC} \cong \overline{BD}$ *Two tick marks*

$\overline{BF} \cong \overline{DF} \cong \overline{EC} \cong \overline{AE}$ *Three tick marks*

Reading Math

The symbol $\cong$ means "is congruent to."

Lesson 8-1 Complete

Complete workbook pg. 68

Classifying Angles

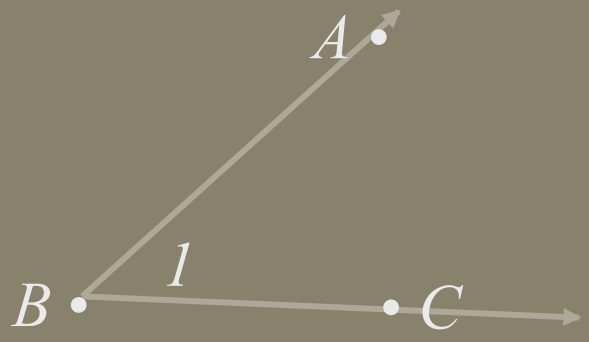
Angle – is formed by two rays with a common endpoint.

There are four types of angles

- ***Right angle***
- ***Straight angle***
- ***Acute angle***
- ***Obtuse angle***

Angle

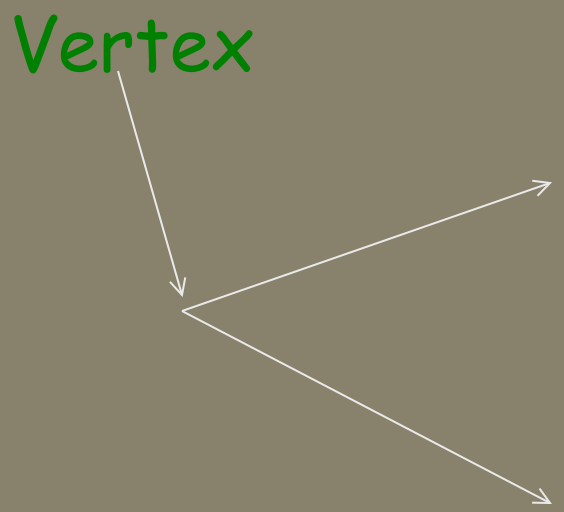
Reading Math



You can name this angle $\angle ABC$, $\angle CBA$, $\angle B$, or $\angle 1$.

Vertex

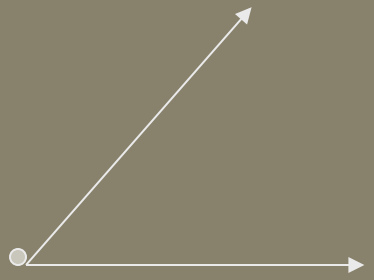
Definition – on an angle or polygon, the point where two sides intersect.



There is no symbol.

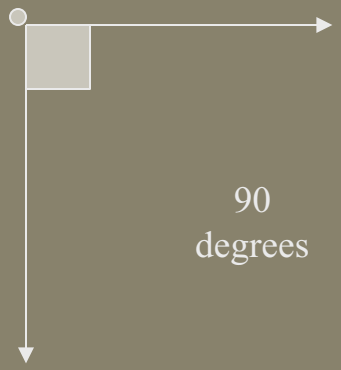
Acute Angles

- Forms an angle that is ***less*** than a right angle
- Angle is ***less*** than 90 degrees



Right Angles

- Forms a square corner
- Forms a 90 degree angle.



Straight Angle

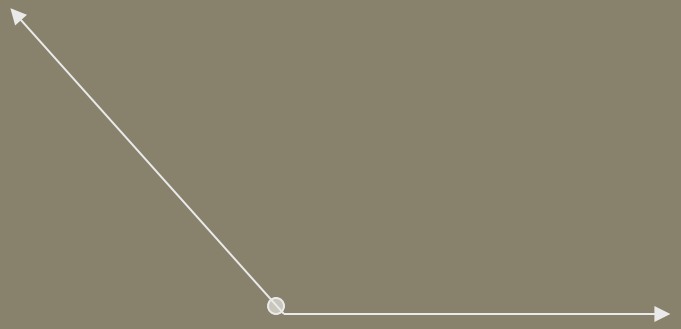
Forms a straight line

Angle is 180 degrees

Obtuse Angles

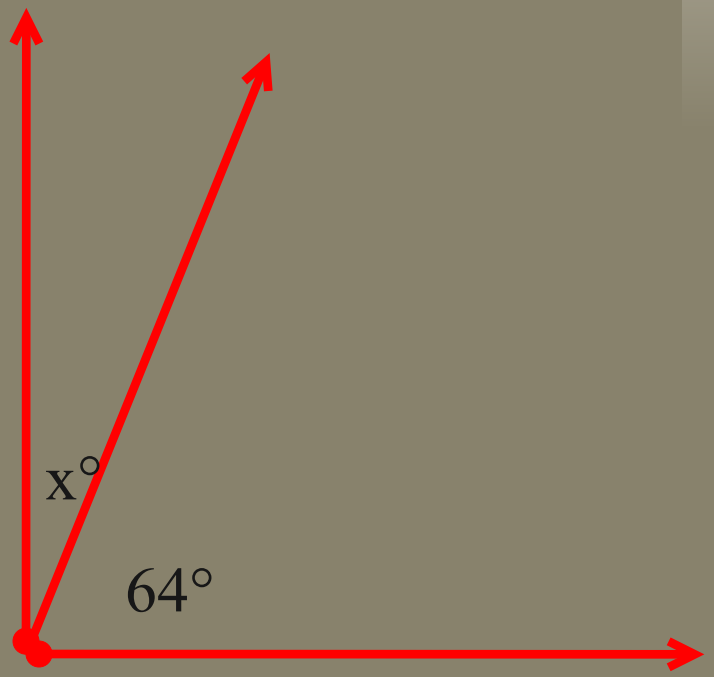
Form an angle that is ***more*** than a right angle

Angle is ***more*** than 90 degrees



Complementary Angles

Two angles whose sum adds up to 90°



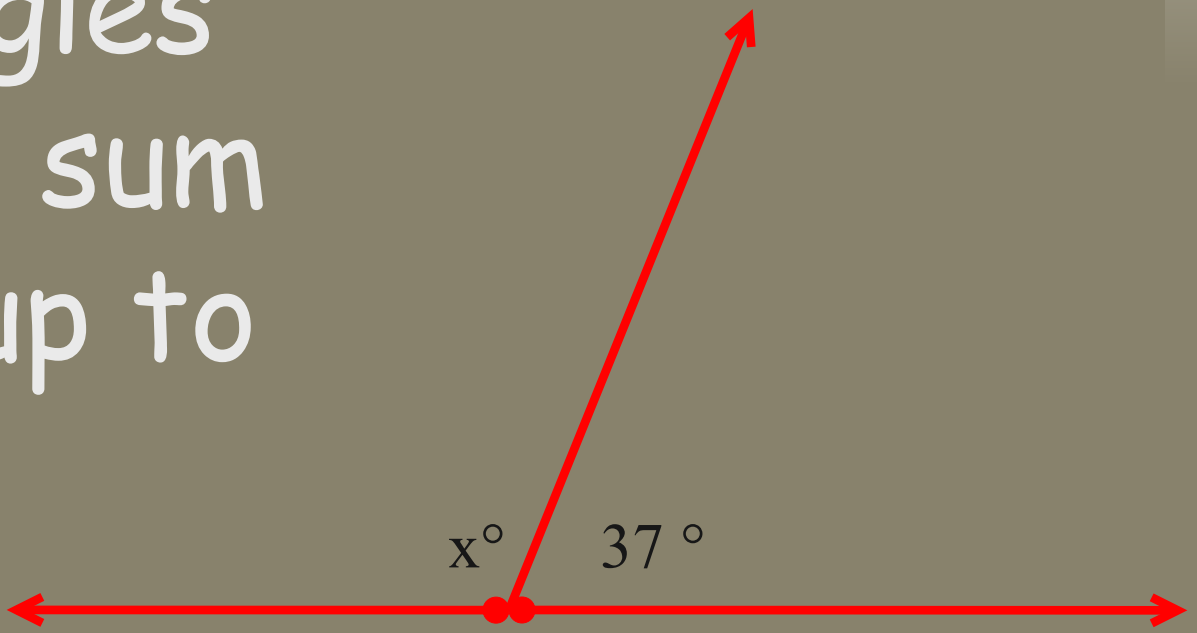
What is x?

$x + 64 = 90$

$x = 26°$

Supplementary Angles

Two angles whose sum adds up to 180°



What is x?

$x + 37 = 180°$

$x = 143°$

Lesson 8-2 Complete

Complete workbook pg. 69

Only do 1-3 and 9-12

LESSON 8-2

Practice B

Classifying Angles

Tell whether each angle is acute, right, obtuse, or straight.

1. 

2. 

3. 

Straight

Acute

Obtuse

9. Angles W and X are supplementary. If $m\angle W$ is 37°, what is $m\angle X$?

180-37=143°

10. Angles S and T are complementary. If $m\angle S$ is 64°, what is $m\angle T$?

90-64=26°

11. Angles C and D are supplementary. If $m\angle C$ is 83°, what is $m\angle D$?

180-83=97°

12. Angles U and V are complementary. If $m\angle U$ is 41°, what is $m\angle V$?

90-41=49°

Angle Relationships

Geometry

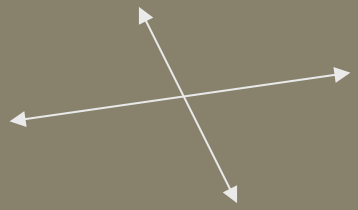
Parallel Lines

Lines do not intersect but are in the same plane

Symbol: ||

Intersecting Lines

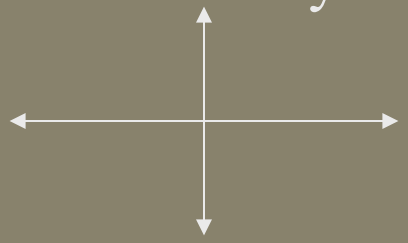
Lines meet at one point



Perpendicular Lines

Lines form a right angle

Symbol: ⊥

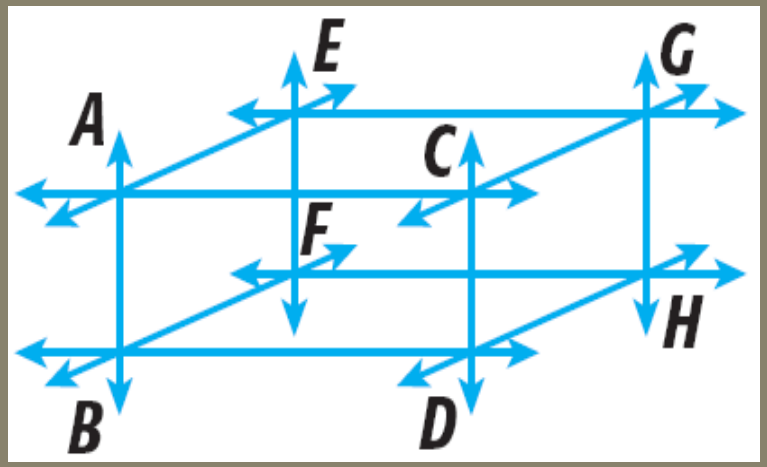


Skew Lines

Do not intersect and they are not parallel.

They lie in different planes.

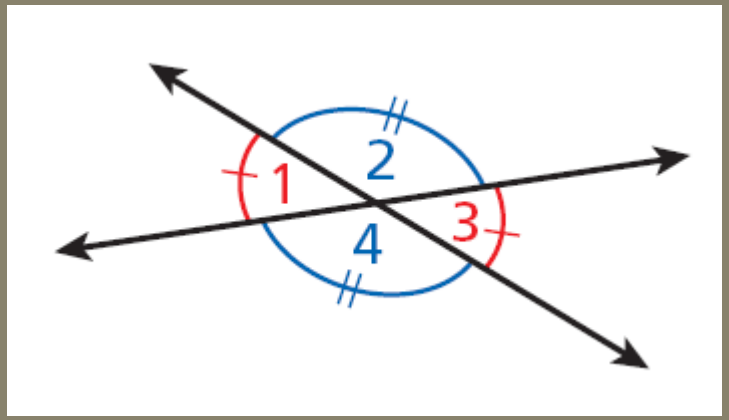
AE is skew to GH



Vertical Angles

Defnition – a pair of opposite congruent angles formed by intersecting lines.

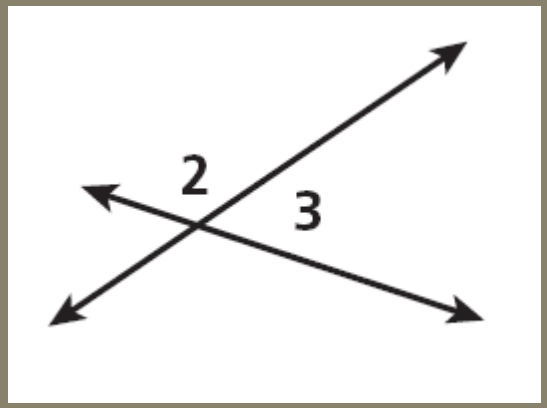
$\angle 1 = \angle 3$ & $2 = 4$



Adjacent angles

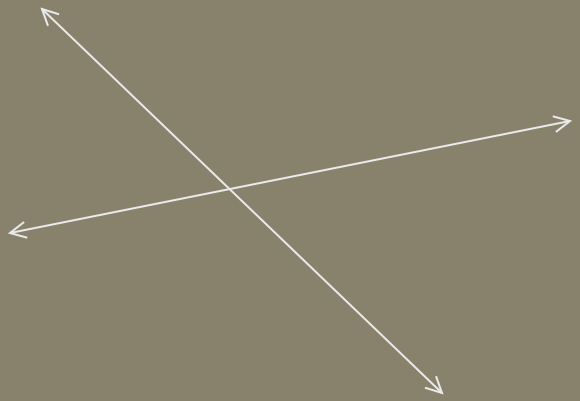
Definition – angles in the same plane that have a common vertex and a common side.

Angles are side by side – like neighbors



Intersecting lines - Intersection

Definition – lines that cross at exactly one point.



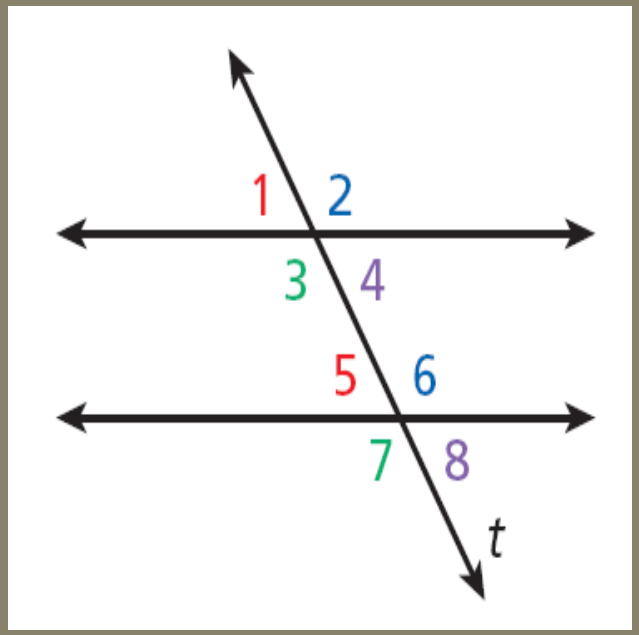
Corresponding Sides/Angles

Corresponding = matching

Matching sides in a polygon.

Matching angles in a polygon.

Matching angles are also congruent.



Lesson 8-3 Complete

Complete pg. 70

Do 1-8

Using adjacent, vertical, complementary and supplementary rules – do 9-14

LESSON 8-3

Practice B

Angle Relationships

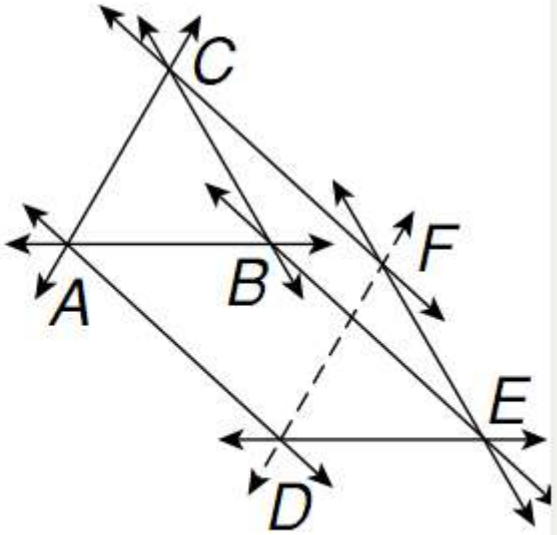
Tell whether the lines appear parallel, perpendicular, or skew.

1. $\overleftrightarrow{AB}$ and $\overleftrightarrow{DE}$ ll

2. $\overleftrightarrow{EF}$ and $\overleftrightarrow{CF}$ ⊥

3. $\overleftrightarrow{AB}$ and $\overleftrightarrow{AD}$ ⊥

4. $\overleftrightarrow{BC}$ and $\overleftrightarrow{DE}$ Skew



Now you try 5-8

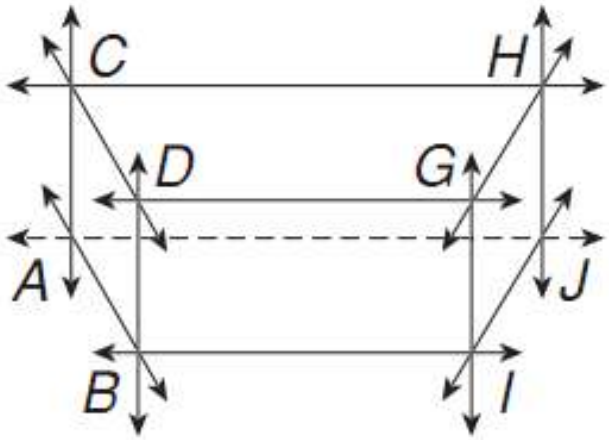
Tell whether the lines appear parallel, perpendicular, or skew.

5. $\overleftrightarrow{BD}$ and $\overleftrightarrow{DG}$ _____

6. $\overleftrightarrow{AB}$ and $\overleftrightarrow{BD}$ _____

7. $\overleftrightarrow{DG}$ and $\overleftrightarrow{IJ}$ _____

8. $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ _____



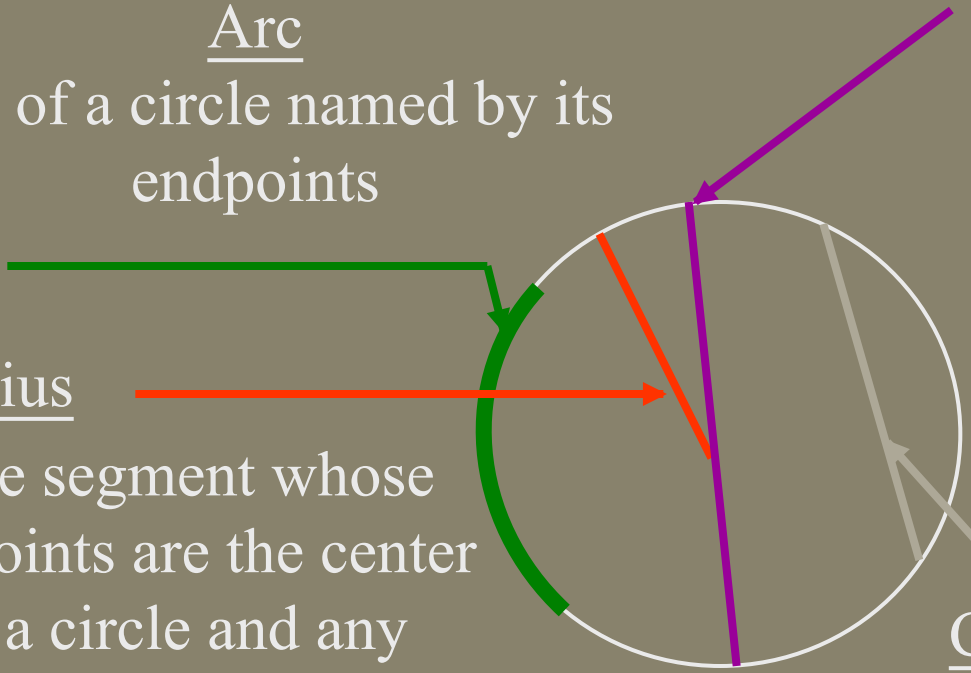
Properties of Circles

Arc

Part of a circle named by its endpoints

Diameter

Line segment that passes through the center of a circle, and whose endpoints lie on the circle



Radius

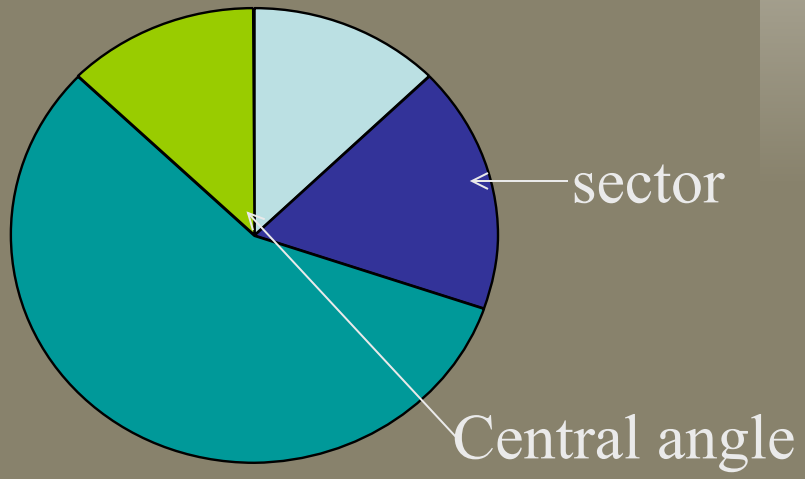
Line segment whose endpoints are the center of a circle and any point on the circle

Chord

Line segment whose endpoints are any two points on a circle

Part of a circle -2

A **central angle** of a circle is an angle formed by two radii. A **sector** of a circle is the part of the circle enclosed by two radii and an arc connecting them.



The sum of the measures of all of the central angles in a circle is 360°. We say that there are 360° in a circle.

Lesson 8-4 Complete

Complete pg. 71 ALL