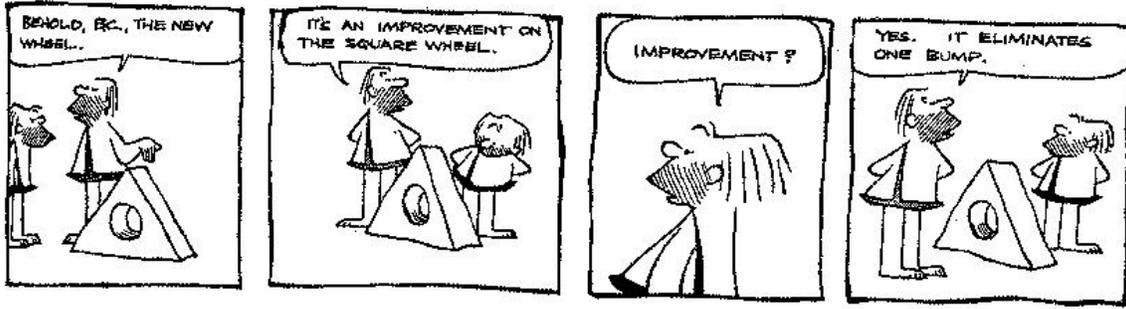Name _____

Circles

Unless you walked to school this morning, you arrived on a vehicle with circular wheels.
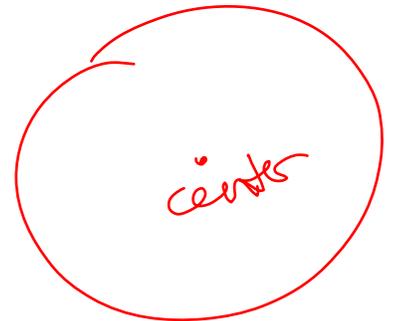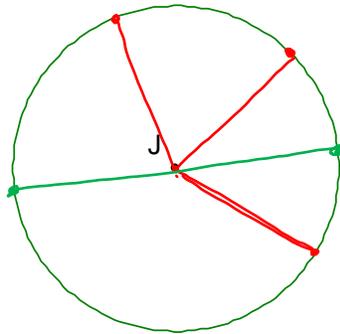

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A **circle** is the set of all ___points___ in a plane at an ___equal distance (radius)___

from a ___point (center)___ in the plane.

You name a circle by its ___center___. The circle below is circle ___J___.
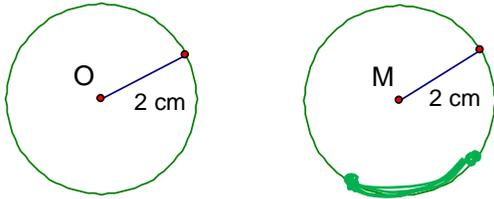
When you see a point at the center of the circle, you can assume that it

represents the center point.

A segment from the center to a point on the edge of the circle is called the
___radius___.

The ___diameter___ is a line segment containing the center, with its

endpoints on the circle.

If two or more circles have the __radius__, they are **congruent circles**.

O
2 cm

M
2 cm

Congruent Circles

An **arc of a circle** is __two__ points on the circle and the continuous

(unbroken) part of the circle __connecting the two points__.

The two points are called **endpoints** of the arc.

You write arc AB as: __$\overparen{AB}$__ or __$\overparen{BA}$__

You classify arcs into three types: __minor arc__, __major arc__,

__Semi-circle__.

A **semicircle** is an arc of a circle whose endpoints are __the endpoints__ __of a diameter__.

A **minor arc** is an arc of a circle that is __less than a semi-circle__.

You can name minor arcs with __two letters__.

A **major arc** is an arc of a circle that is __bigger than a semi-circle__.

For semicircles and major arcs, you need __three__ points to make clear
which arc you mean-the first and last letters are the endpoints and the middle
letter is any other point on the arc.

Use the following circle to name the following parts:
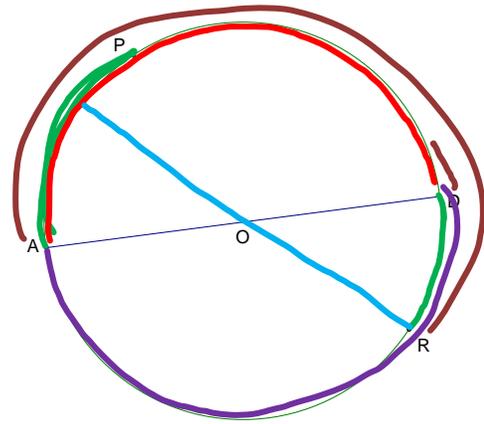
Name two minor arcs: $\overparen{AP}$

$\overparen{DR}$

Name two semi circles: $\overparen{APD}$

$\overparen{ARD}$

Name two major arcs: $\overparen{PAR}$

$\overparen{RPA}$

Arcs have a degree measure, just as angles do. A full circle has an arc measure

$360°$ ← $\dfrac{360°}{2}$

of __360°__, and a semicircle has an arc measure of __180°__.

You find the **arc measure** by measuring the **central angle**, the angle with its

__vertex on the center__ and sides

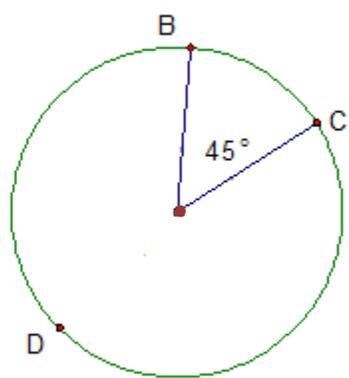passing through the __endpoints__ of the arc.

Another definition for a central angle is an angle formed by

__two radii__.
↖ plural for radius

Use the following circle to determine the measures:

What is the measure of arc BC? __45°__
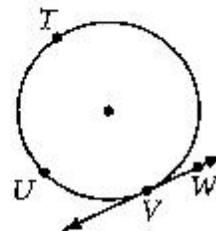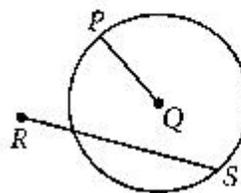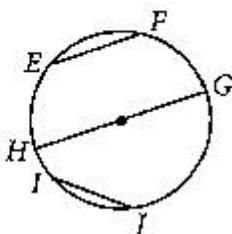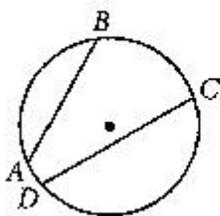
What is the measure of arc BDC? __360 − 45 = 315°__

Defining Circle Terms

Directions: Write a good definition of each boldfaced term. Discuss your definitions with others in your group. Use the word bank to help you write the definitions.

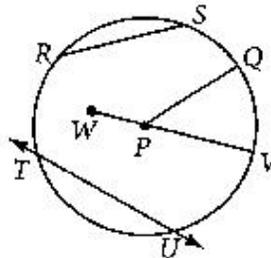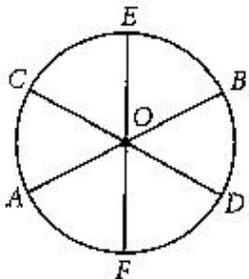| Word bank:	line segment	line	endpoints	circle
	center		intersecting	

Chord

Chords:

$\overline{AB}, \overline{CD}, \overline{EF}, \overline{GH},$ and $\overline{IJ}$

Not chords:

$\overline{PQ}, \overline{RS}, \overline{TU},$ and $\overleftrightarrow{VW}$

A **chord** is a ___line segment that has its endpoints on the circle.___
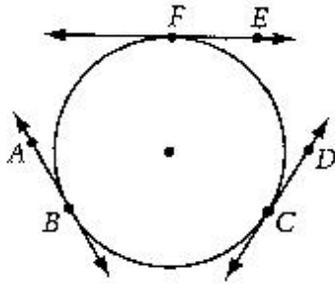
Diameter

Diameters:

$\overline{AB}, \overline{CD},$ and $\overline{EF}$

Not diameters:

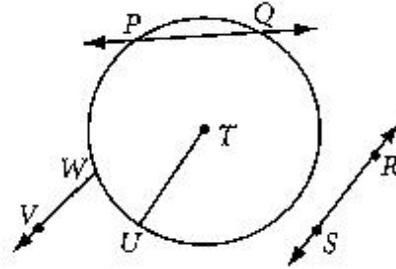$\overline{PQ}, \overline{RS}, \overleftrightarrow{TU},$ and $\overline{VW}$

A **Diameter** is a ___line segment that intersects the center of the circle with endpts. on the circle.___

Tangent

Tangents:

$\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, and $\overleftrightarrow{EF}$

Not tangents:

$\overleftrightarrow{PQ}$, $\overleftrightarrow{RS}$, $\overline{TU}$, and $\overleftrightarrow{VW}$

A **Tangent** is a ___line___ that intersects the circle one time.

Inscribed Angle
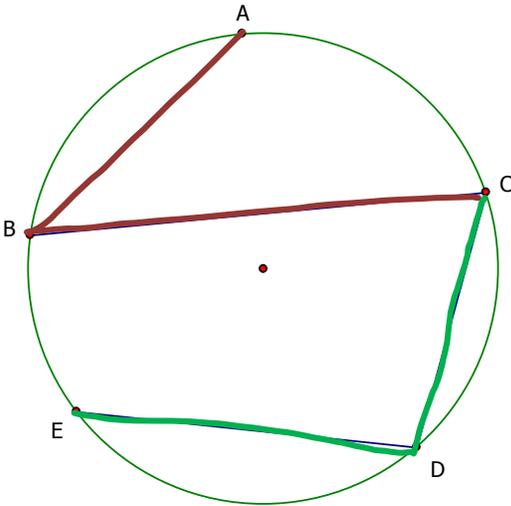
∠ABC, ∠BCD, and ∠CDE are inscribed angles. ∠ABC is inscribed in $\overset{\frown}{ABC}$ and intercepts (or determines) $\overset{\frown}{AC}$.
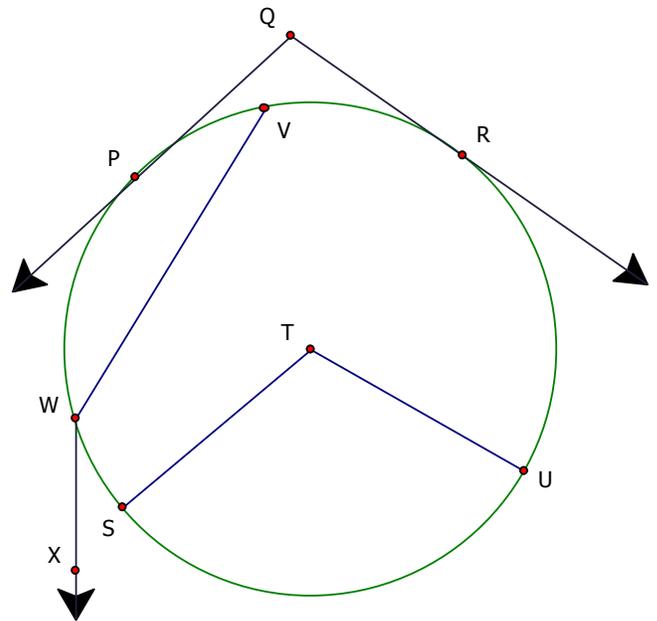
∠PQR, ∠STU, and ∠VWX are not inscribed angles.

An **Inscribed Angle** is an angle whose vertex is on the circle.

Answer the following questions with your group.

a.   Can a chord of a circle also be a diameter of the circle? Can it be tangent? Explain why or why not.

b.   Can two circles be tangent to the same line at the same point? Draw a sketch and explain.

Circles Homework

For exercises 1-8, use the diagram below. Points E, P, and C are collinear.

1.   Name three chords.

_____, _____, _____

2.   Name one diameter.

_____

3.   Name five radii.

_____, _____, _____, _____, _____

4.   Name five minor arcs.

_____, _____, _____, _____, _____
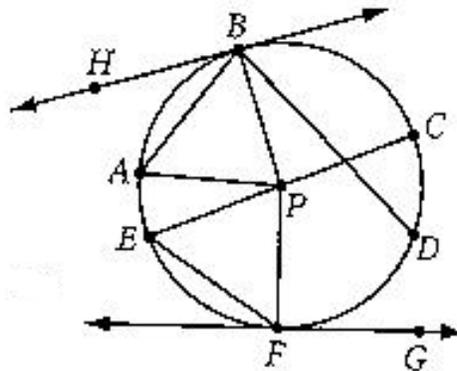
5.   Name two semicircles.

_____, _____

6.   Name two major arcs.

_____, _____

7.   Name two tangents.

_____, _____

8.   Name a point of tangency

_____

9. In the figure at the right, what is $m\overarc{PQ}$ and $m\overarc{PRQ}$?