

# No Quiz Today!

Grab a book from the front corner of the room and tear out chapter 9 (pgs. 649-720).

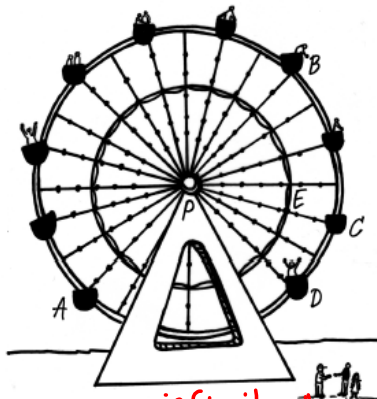
# Riding a Ferris Wheel

## Introduction to Circles

9.1

pg.651-653 in your book

A Ferris wheel is in the shape of a circle.



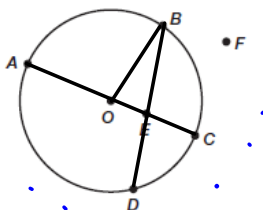
infinite #

Recall that a circle is the set of all points in a plane that are equidistant from a given point, which is called the center of the circle. The distance from a point on the circle to the center is the radius of the circle. A circle is named by its center. For example, the circle seen in the Ferris wheel is circle  $P$ .

1. Use the circle to answer each question.

a. Name the circle.

circle  $O$   
or  
 $\odot O$



$\odot P$  means "circle P"

b. Use a straightedge to draw  $\overline{OB}$ , a radius of circle  $O$ . Where are the endpoints located with respect to the circle?

$O$  is the center &  $B$  is on the circle

c. How many radii does a circle have? Explain your reasoning.

infinite #

Remember, radii is the plural of radius.



d. Use a straightedge to draw  $\overline{AC}$ . Then, use a straightedge to draw  $\overline{BD}$ . How are the line segments different? How are they the same?

$AC$  is longer than  $BD$ ,  
 $AC$  goes through the center,  $BD$  doesn't

$AC$  is a diameter

$BD$  is a chord

pg.653 in your book

Both line segments  $AC$  and  $BD$  are *chords* of the circle. A chord is a line segment with each endpoint on the circle. Line segment  $AC$  is called a *diameter* of the circle. A diameter is a chord that passes through the center of the circle.

- e. Why is  $\overline{BD}$  not considered a diameter?

doesn't pass through center

- f. How does the length of the diameter of a circle relate to the length of the radius?

diameter is radius times two

$$D = 2r$$

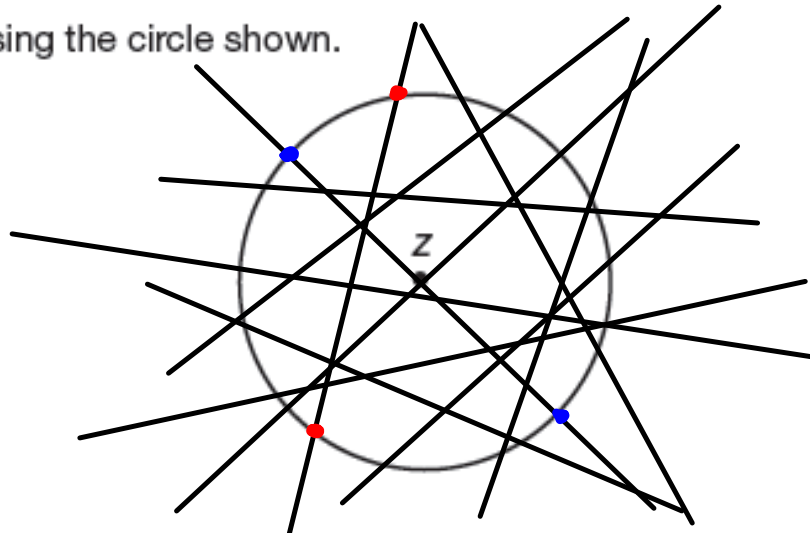
- g. Are all radii of the same circle, or of congruent circles, always, sometimes, or never congruent? Explain your reasoning.

Always

pg.654 in your book

A secant of a circle is a line that intersects a circle at exactly two points.

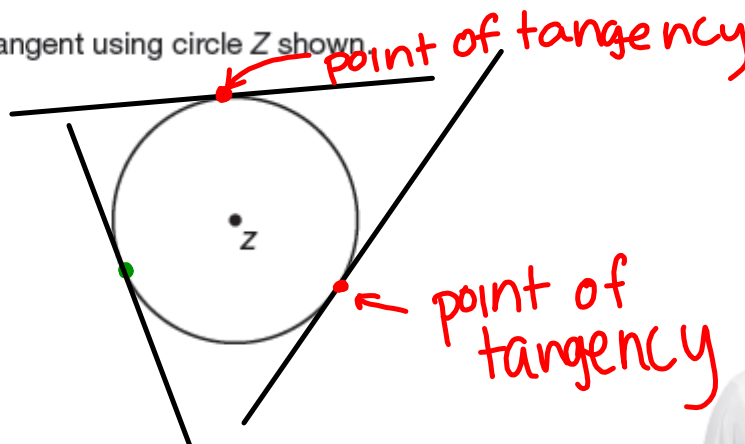
2. Draw a secant using the circle shown.



A tangent of a circle is a line that intersects a circle at exactly one point.

The point of intersection is called the point of tangency.

5. Draw a tangent using circle Z shown.



Try to draw different tangent lines through the point you chose.



6. Choose another point on the circle. How many tangent lines can you draw through this point?

Only one line tangent to the circle can go through any point on the circle.

pg.655 in your book

8. Check the appropriate term(s) associated with each characteristic in the table shown.

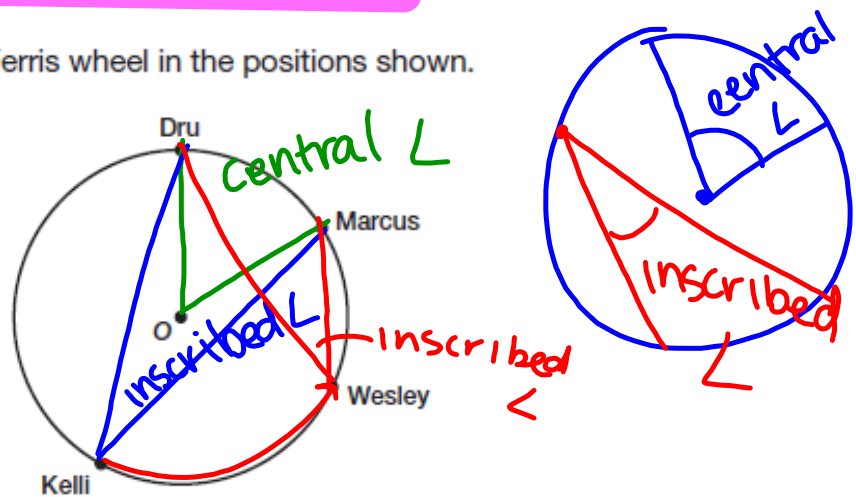
Characteristic	Chord	Secant	Diameter	Radius	Tangent
A line					
A line segment					
A line segment having both endpoints on the circle					
A line segment having one endpoint on the circle					
A line segment passing through the center of the circle					
A line intersecting a circle at exactly two points					
A line intersecting a circle at exactly one point					

pg.656 in your book

A central angle is an angle whose vertex is the center of the circle.

An inscribed angle is an angle whose vertex is on the circle.

1. Four friends are riding a Ferris wheel in the positions shown.



- Draw a central angle where Dru and Marcus are located on the sides of the angle.
- Draw an inscribed angle where Kelli is the vertex and Dru and Marcus are located on the sides of the angle.
- Draw an inscribed angle where Wesley is the vertex and Dru and Marcus are located on the sides of the angle.
- Compare and contrast these three angles.

pg.656 in your book

An arc of a circle is any unbroken part of the circumference of a circle. An arc is named using its two endpoints. The symbol used to describe arc  $AB$  is  $\widehat{AB}$ .



A major arc of a circle is the largest arc formed by a secant and a circle. It goes more than halfway around a circle.

A minor arc of a circle is the smallest arc formed by a secant and a circle. It goes less than halfway around a circle.

A semicircle is exactly half of a circle.

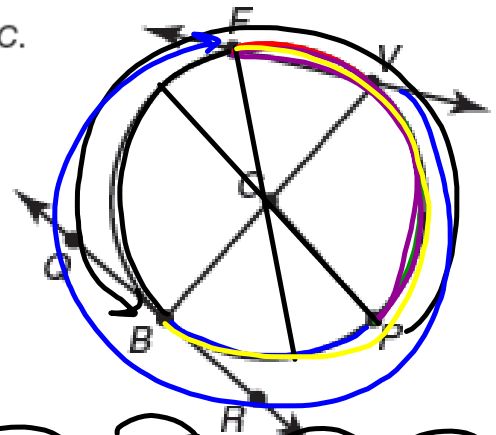
To avoid confusion, three points are used to name semicircles and major arcs. The first point is an endpoint of the arc, the second point is any point at which the arc passes through and the third point is the other endpoint of the arc.

finish pgs.657-659 in your book

NOT in your book

Circle C is shown. Identify the indicated components of circle C.

1. Name the chord(s).
2. Name the tangent(s).
3. Name the secant(s).
4. Name the central angle(s).
5. Name the inscribed angle(s).
6. Name the major arc(s).
7. Name the minor arc(s).
8. Name the semicircle(s).



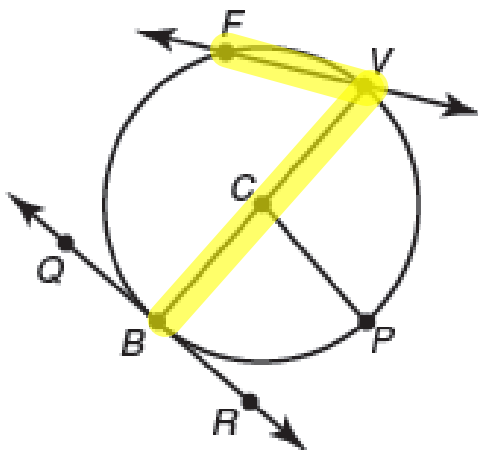
$\angle PCV$

$\angle FVB$

$\widehat{BVF}$  (or  $\widehat{BPF}$ ),  $\widehat{PFP}$ ,  $\widehat{VPF}$ ,  $\widehat{PBF}$ ,  $\widehat{PBV}$

$\widehat{BP}$ ,  $\widehat{VP}$ ,  $\widehat{FV}$ ,  $\widehat{BF}$ ,  $\widehat{FP}$

Semicircle BFV and semicircle BPV

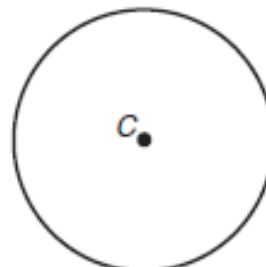




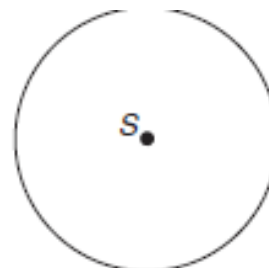
NOT in your book

Draw the indicated part using each given circle.

9. Draw chord  $ST$  using circle  $C$ .



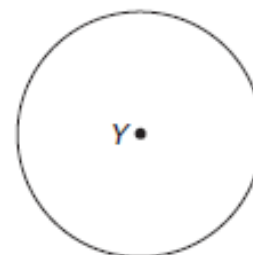
10. Draw tangent  $BC$  using circle  $S$ , where  $B$  is the point of tangency.



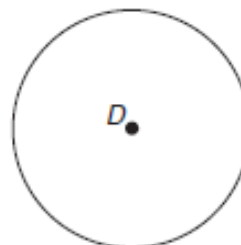
11. Draw secant  $LM$  using circle  $P$ .



12. Draw central angle  $XYZ$  using circle  $Y$ .



13. Draw inscribed angle  $JKL$  using circle  $D$ .



# Homework

## Finish Lesson 9.1