

No Quiz Today!

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

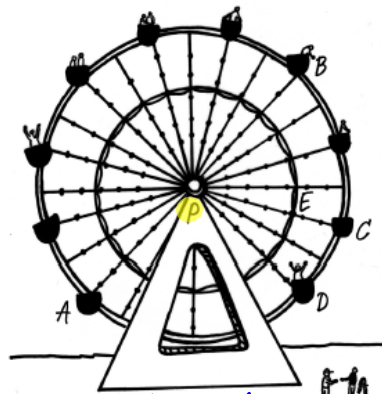
Riding a Ferris Wheel

Introduction to Circles

9.1

pg.651-653 in your book

A Ferris wheel is in the shape of a circle.



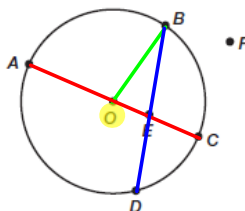
circle P
or $\odot P$

(an infinite # of points)

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
 $\odot O$



- 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 a point on the circle.**
 - c. How many radii does a circle have? Explain your reasoning.

Because we have an infinite # of points on a circle, we have an infinite # of radii.

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?

- Both are line segments with endpoints on the circle.
- \overline{AC} is longer; \overline{AC} goes through the center, \overline{BD} does not. (\overline{AC} is a diameter)

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?

It doesn't pass through the center.

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

Diameter is twice the length of a radius.

$$D = 2r$$

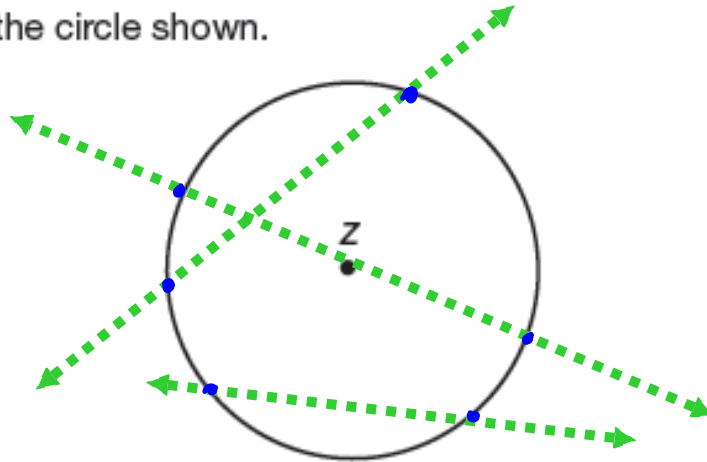
- g. Are all radii of the same circle, or of congruent circles, always, sometimes, or never congruent? Explain your reasoning.

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.

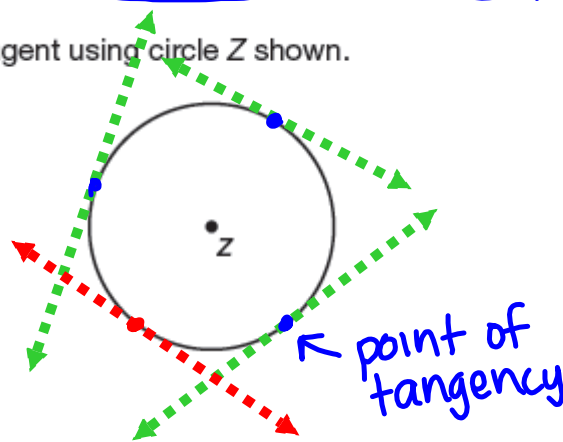


pg.655 in your book

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?

For any point on a circle, there is only one line tangent to the circle that passes through the point.

pg.655 in your book

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

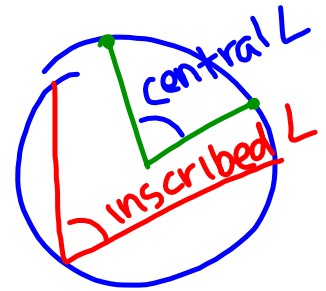
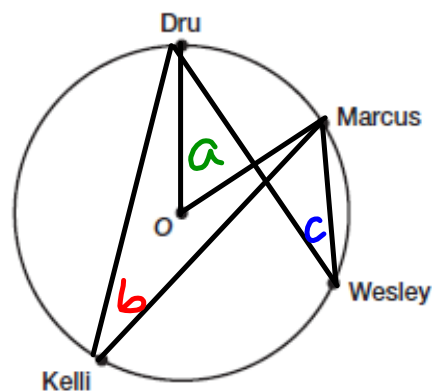
Characteristic	Chord	Secant	Diameter	Radius	Tangent
A line		✓			✓
A line segment	✓		✓	✓	
A line segment having both endpoints on the circle	✓		✓		
A line segment having one endpoint on the circle				✓	
A line segment passing through the center of the circle			✓		
A line intersecting a circle at exactly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

All 3 have Dru & Marcus in common,
but have different vertices.

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} .

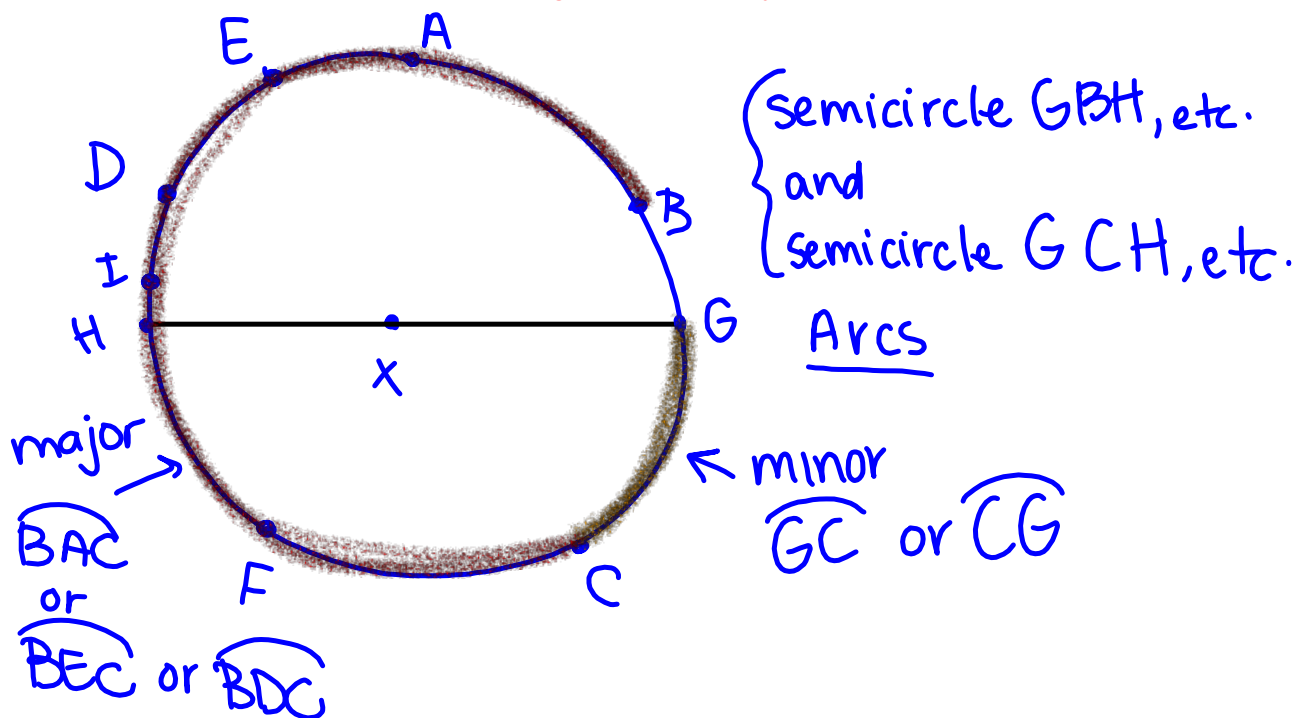
A major arc of a circle is the largest arc formed by a secant and a circle. It goes more than halfway around a circle.

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. (180°)

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.

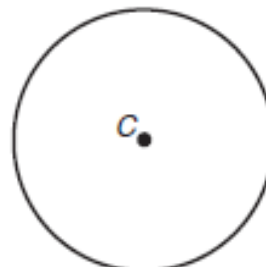
finish pgs.657-659 in your book



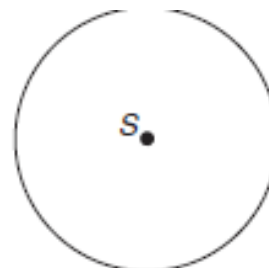
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Draw the indicated part using each given circle.

9. Draw chord ST using circle C .



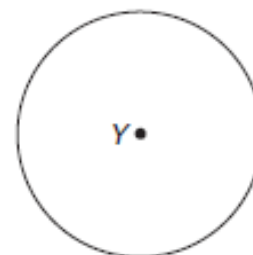
10. Draw tangent BC using circle S , where B is the point of tangency.



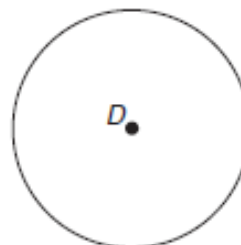
11. Draw secant LM using circle P .



12. Draw central angle XYZ using circle Y .



13. Draw inscribed angle JKL using circle D .



Homework

Finish Lesson 9.1