Master Ep

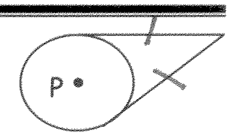
WARM-UP/REVIEW of Unit 8 (Chapter 10) – Circles

Vocabulary: You must these terms/definitions and be able to identify them when given a picture of a circle.

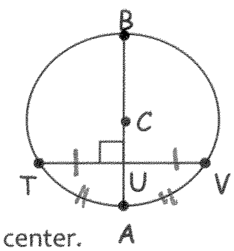
1. circle
2. center
3. radius
4. congruent circles
5. diameter
6. chord
7. secant
8. tangent
9. interior of a circle
10. exterior of a circle
11. point of tangency
12. central angle
13. minor arc
13. major arc
14. circumference
15. arc length
14. semicircle
15. congruent arcs
16. inscribed angle
17. intercepted arc
18. inscribed polygon
19. circumscribed circle
20. tangent segment
21. secant segment
22. external secant seg.
23. common tangent
24. concentric circles
25. sector/area

Theorems: Label the appropriate picture to illustrate the theorem.

- Tangents to a circle from the same exterior point are $\cong$ to each other.

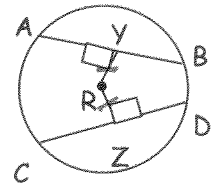


- If a radius is perpendicular to a chord, it bisects the chord and its arc.

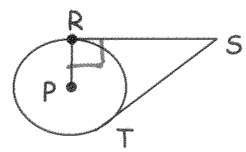


- Two chords are congruent if they are equidistant from the center.

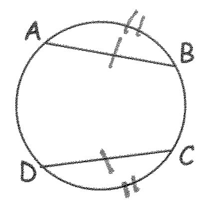
$\overline{AB} \cong \overline{CD}$



- A tangent is perpendicular to the radius at the point of tangency.



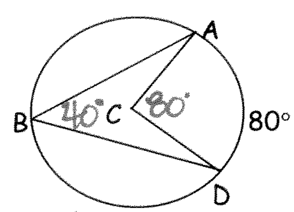
- If 2 chords are congruent, then the arcs they form are congruent also.



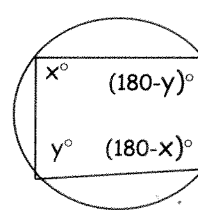
- Circumference of a circle is $2\pi r$ or πd Area of a circle is πr^2.
- The arc length of a circle (l) is part of the circumference of a circle. Formula: $l = \frac{m}{360} \cdot 2\pi r$
- The area of a sector of a circle (A) is the part of the area of a circle. Formula: $l = \frac{m}{360} \cdot \pi r^2$

Angles: Memorize the formulas for each scenario.

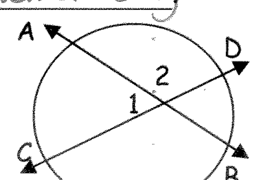
- A central angle is = to its arc.
- An inscribed angle is half the measure of its arc.



- The opposite angles of an inscribed quadrilateral are supplementary

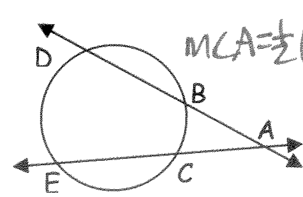


- An angle inside the circle is half the sum of its arcs.



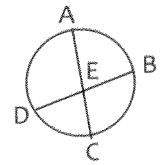
- An angle outside the circle is half the difference of its arcs.

$m\angle 1 = \frac{1}{2}(\overset{\frown}{AC} + \overset{\frown}{BD})$

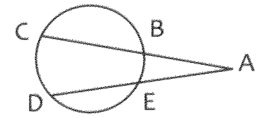


$m\angle A = \frac{1}{2}(\overset{\frown}{DE} - \overset{\frown}{BC}$

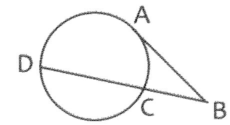
Segments: Memorize the formulas for each scenario.



- 2 chords in a circle form 4 segments: part times part = part times part
  $AE \cdot EC = DE \cdot EB$



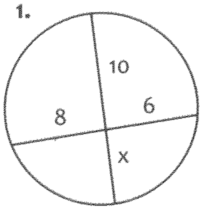
- 2 secant segments: part times whole = part times whole.
  $AB \cdot AC = AE \cdot AD$



- A tangent and a secant segment: tangent squared = part times whole.
  $AB^2 = BC \cdot BD$

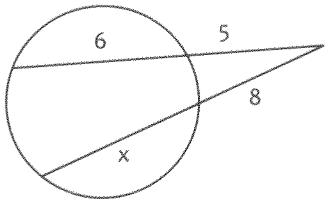
PRACTICE:

1.



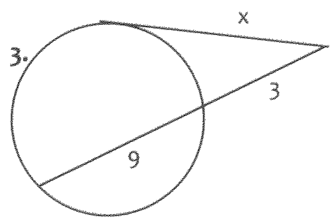
$10x = 8 \cdot 6$
$10x = 48$
$x = 4.8$

★ **2.**



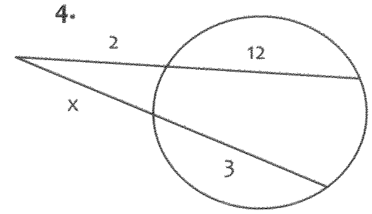
$5(11) = 8(x+8)$
$55 = 8x + 64$
$-9 = 8x$
$-\frac{9}{8} = x$

3.



$x^2 = 3(12)$
$x^2 = 36$
$x = 6$

4.



$x(x+3) = 2(14)$
$x^2 + 3x = 28$
$x^2 + 3x - 28 = 0$
$(x+7)(x-4) = 0$
$-7 \quad 4$

$x = 4$

Equations of a circle: Formula: $(x - h)^2 + (y - k)^2 = r^2$

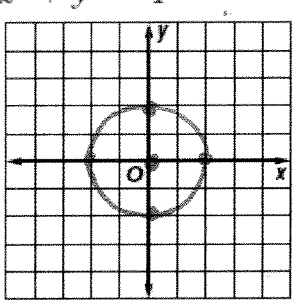
PRACTICE:

5. Write an equation for a circle with a center at the origin and r = 6 $x^2 + y^2 = 36$

6. Write an equation for the circle with a center at (4,3) and d = 10 $(x-4)^2 + (y-3)^2 = 25$
   $r = 5$

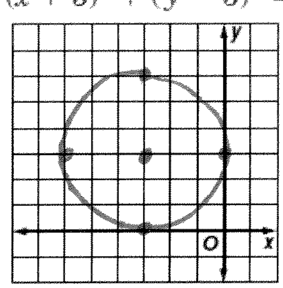
7. Graph the circle below.

$x^2 + y^2 = 4$



8. Graph the circle below.

$(x + 3)^2 + (y - 3)^2 = 9$



$c(-3,3)$
$r = 3$