

Geometry Test Review on Unit 8 – Circles

Name Master E

Round all decimal answers to the nearest tenth.

Date \_\_\_\_\_ Block \_\_\_\_\_

**Target 1:** I can define, identify, and use standard notation for the following: radius, diameter, chord, secant, and tangent, major arc, minor arc, intercepted arc, central angle, inscribed angle, congruent arcs, congruent circles, concentric circles, and common tangents.

1-11: Given  $\odot Q$ , give at least one example of each term using the correct notation. \*Some terms have more than one example!

$\widehat{AB}, \widehat{BE}, \widehat{EC}, \widehat{CA}$  1. minor arc

$\angle AQB, \angle BQE, \angle EQC$  2. central angle  $\angle AQC$  & more!

$\widehat{ABC}, \widehat{BCA}, \widehat{ECB}$  3. major arc

$\overleftrightarrow{AB}$  4. secant

$\overline{AB}, \overline{AC}, \overline{BC}$  5. chord

$\overleftrightarrow{CD}$  6. tangent

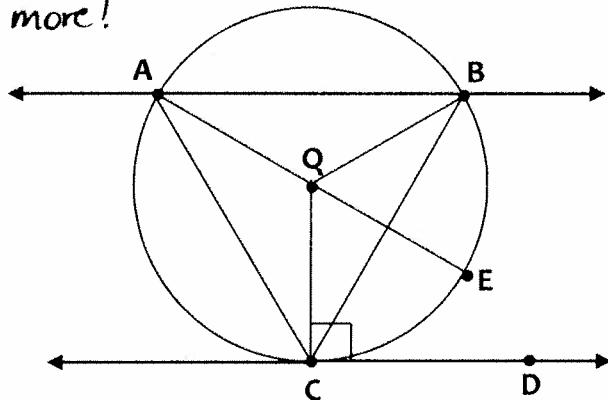
$\overline{QA}, \overline{QB}, \overline{QE}, \overline{QC}$  7. radius

$\angle BAE, \angle EAC, \angle BCA$  8. inscribed angle  $\angle BAC$

$C$  9. point of tangency

$\overline{AE}$  10. diameter

$\widehat{ABE}, \widehat{ACE}$  11. Semicircle



**Target 2:** I can relate measures of central angles to fractions of a circle and calculate circumference, arc length, and the area of a sector.

12-13: Find the circumference and area of each circle using the given inscribed or circumscribed polygon.

12.  $6\sqrt{2}\pi$   $c = 26.7$  in.  
 $(3\sqrt{2})^2 \pi$   $A = 56.5$  in<sup>2</sup>  
 $18\pi$

13.  $32\pi$   $c = 100.5$   
 $16^2 \pi$   $A = 804.2$   
 $256\pi$

14: Find the radius of a circle that has an area of 855.3 square millimeters.

$$\pi r^2 = 855.3 \Rightarrow r^2 = \frac{855.3}{\pi} \quad r = \sqrt{\frac{855.3}{\pi}} \approx 16.5 \text{ mm}$$

15-16: Find the arc length and area of each shaded sector. Round to the nearest tenth.

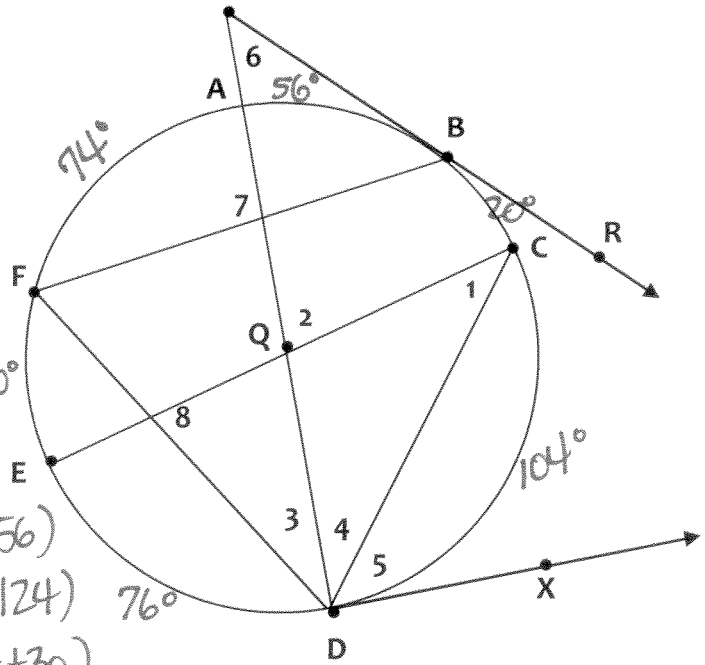
15.  $\frac{121}{360} \cdot 16\pi$   $c = 16.9$  ft.  
 $\frac{121}{360} \cdot 64\pi$   $A = 67.6$  ft<sup>2</sup>

16.  $\frac{32}{360} \cdot 6\pi$   $c = 1.7$  cm  
 $\frac{32}{360} \cdot 9\pi$   $A = 2.5$  cm<sup>2</sup>

**Target 3:** I can apply properties of circles to find measures of angles or arcs formed by radii, chords, secants, and tangents and I can apply properties of circles to find measures of radii, diameters, chords, secant segments, and tangent segments.

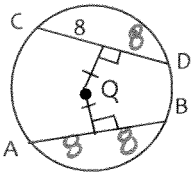
17: Given  $\odot Q$  with tangents  $\overline{BR}$  and  $\overline{DX}$ ,  $m\widehat{BC} = 20^\circ$ ,  $m\widehat{EF} = 30^\circ$ , and  $m\widehat{ED} = 76^\circ$ , find each measure below.

- a.  $m\widehat{FA} = 74^\circ$
- b.  $m\widehat{AB} = 56^\circ$
- c.  $m\widehat{CD} = 104^\circ$
- d.  $m\angle 1 = 38^\circ \frac{1}{2}(76)$
- e.  $m\angle 2 = 76^\circ = \widehat{AC} = 56 + 20$
- f.  $m\angle ADX = 90^\circ = \frac{1}{2}(\widehat{ABD}) = \frac{1}{2}(180^\circ)$
- g.  $m\angle FDX = 127^\circ \frac{1}{2}(\widehat{FCD}) = \frac{1}{2}(254) 30^\circ$
- h.  $m\angle FBR = 115^\circ \frac{1}{2}(\widehat{FDB}) = \frac{1}{2}(230)$
- i.  $m\angle 6 = 34^\circ \frac{1}{2}(\widehat{DB} - \widehat{AB}) = \frac{1}{2}(124 - 56)$
- j.  $m\angle 7 = 99^\circ \frac{1}{2}(\widehat{AP} + \widehat{DB}) = \frac{1}{2}(74 + 124)$
- k.  $m\angle 8 = 67^\circ \frac{1}{2}(\widehat{CD} + \widehat{EF}) = \frac{1}{2}(104 + 30)$

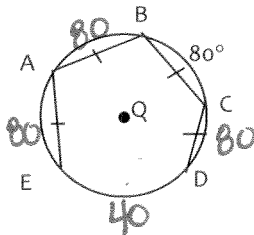


18-21: Given  $\odot Q$ , find each value. All segments that appear to be tangent are tangent.

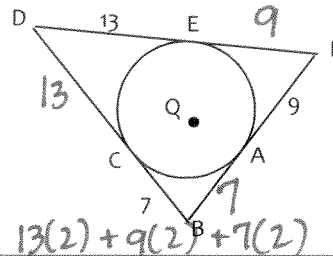
18.  $AB = 16$



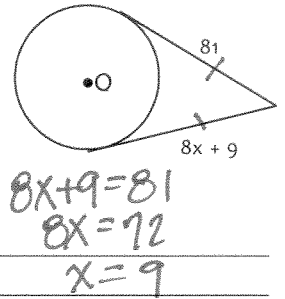
19.  $m\widehat{ED} = 40^\circ$



20. Perimeter of  $\triangle DBF = 58$

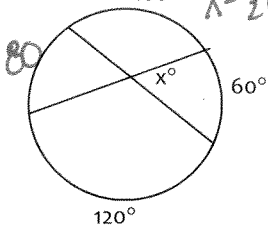


21.  $x = 9$

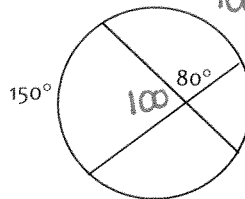


22-30: Find the values of  $x$  and ( $y$  and  $z$ ) in each circle. Write an equation and show your work!

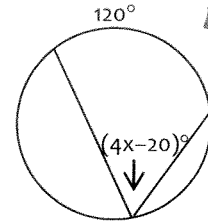
22.  $x = 70^\circ$   
 $x = \frac{1}{2}(80 + 60)$



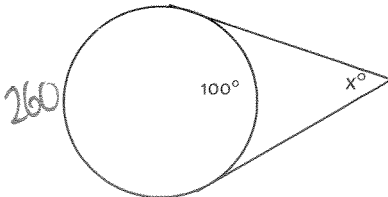
23.  $x = 50^\circ$   
 $100 = \frac{1}{2}(150 + x)$   
 $200 = 150 + x$   
 $x = 50$



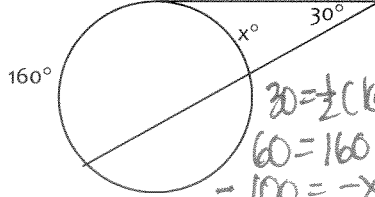
24.  $x = 20$   
 $4x - 20 = \frac{1}{2}(120)$   
 $4x - 20 = 60$   
 $4x = 80$   
 $x = 20$



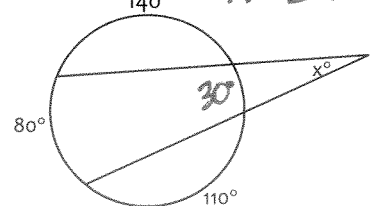
25.  $x = 80^\circ$   
 $x = \frac{1}{2}(260 - 100)$



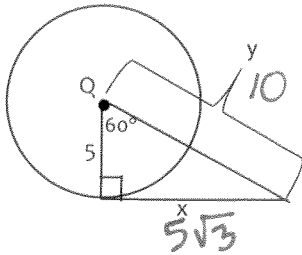
26.  $x = 100^\circ$   
 $30 = \frac{1}{2}(60 - x)$   
 $60 = 60 - x$   
 $-100 = -x$   
 $100 = x$



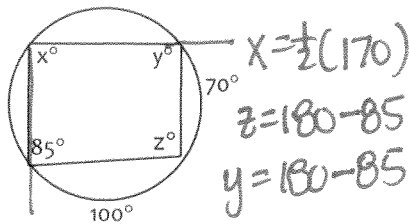
27.  $x = 25^\circ$   
 $x = \frac{1}{2}(80 - 30)$



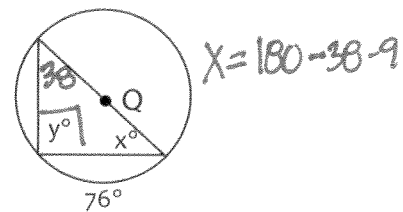
28.  $x = 5\sqrt{3}$   $y = 10$



29.  $x = 85^\circ$   $y = 95^\circ$   $z = 95^\circ$

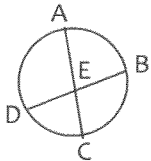


30.  $x = 52^\circ$   $y = 90^\circ$

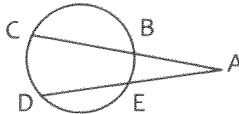


31: Fill in the blanks with the correct segments to complete each formula.

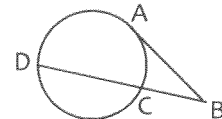
a.  $AE \bullet EC = DE \bullet EB$



b.  $AB \bullet AC = AE \bullet AD$

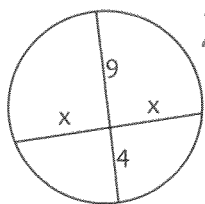


c.  $AB^2 = BC \bullet BD$



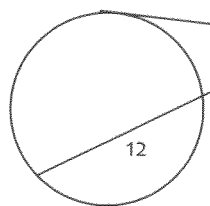
32-37: Find the values of x in each circle. Write an equation and show your work!

32.  $x = 6$



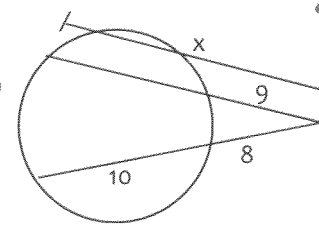
$x^2 = 9 \cdot 4$   
 $x^2 = 36$   
 $x = 6$

33.  $x = 4$



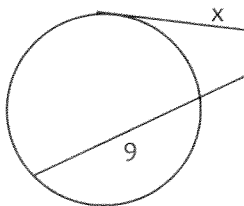
$8^2 = x(x+12)$   
 $64 = x^2 + 12x$   
 $x^2 + 12x - 64 = 0$   
 $(x+16)(x-4) = 0$   
 $-16 \quad 4$

34.  $x = 16$



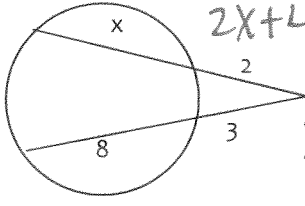
$9 \cdot x = 8(18)$   
 $9x = 144$   
 $x = 16$

35.  $x = 4.7$



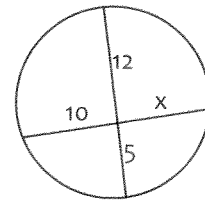
$x^2 = 2(11)$   
 $x^2 = 22$   
 $x = \sqrt{22}$

36.  $x = 14.5$



$2(x+2) = 3(11)$   
 $2x+4 = 33$   
 $2x = 29$   
 $x = 14.5$

37.  $x = 6$

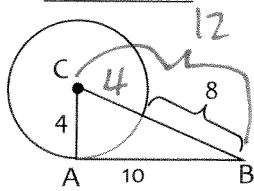


$10 \cdot x = 12 \cdot 5$   
 $10x = 60$   
 $x = 6$

38-39: Tell whether AB is tangent to circle C (Yes or No). Show Work!

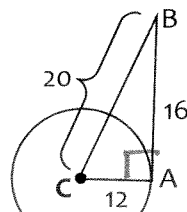
40: AB is a tangent. Find x.

38. No



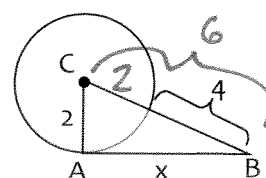
Is  $4^2 + 10^2 = 12^2$   
 $116 \neq 144$

39. Yes



Is  $12^2 + 16^2 = 20^2$   
 $400 = 400$

40.  $x = 5.7$



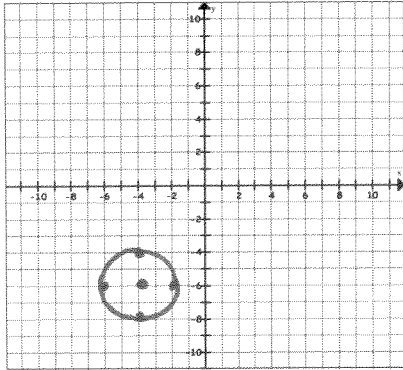
$x^2 + 2^2 = 6^2$   
 $x^2 + 4 = 36$   
 $x^2 = 32$   
 $x = \sqrt{32}$

**Target 4:** I can write the equation of a circle when given the center and a radius, the center and a point on the circle, or the endpoints of a diameter. I can also graph a circle when given the equation or the center and radius.

**41-42:** Write the equation of the circle with the given information and then graph it.

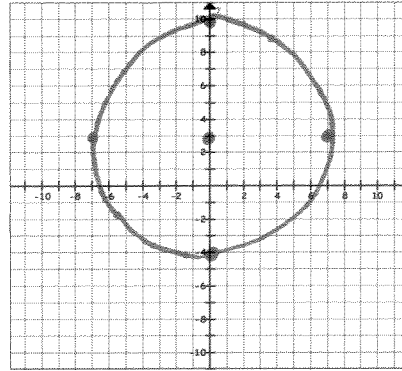
41. Center  $(-4, -6)$  and radius = 2

$$(x+4)^2 + (y+6)^2 = 4$$



42. Center  $(0, 3)$  and diameter = 14  $r=7$

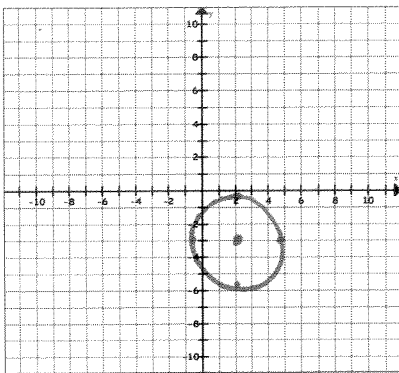
$$x^2 + (y-3)^2 = 49$$



**43-44:** Find the center and the radius of the given equation and then graph it.

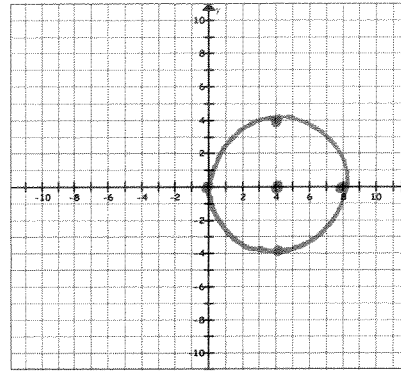
43.  $(x-2)^2 + (y+3)^2 = 8$

Center:  $(2, -3)$  Radius:  $\sqrt{8} \approx 2.8$



44.  $(x-4)^2 + y^2 = 16$

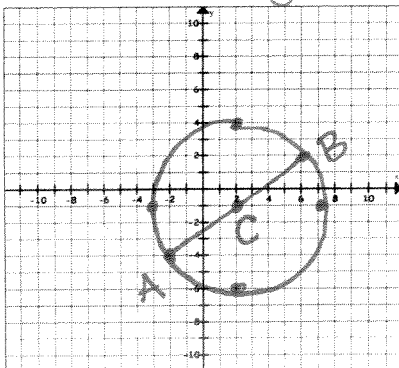
Center:  $(4, 0)$  Radius: 4



**45-46:** Write the equation of the circle with the given information and then graph it.

45. Endpoints of the diameter:  $(-2, -4)$  and  $(6, 2)$

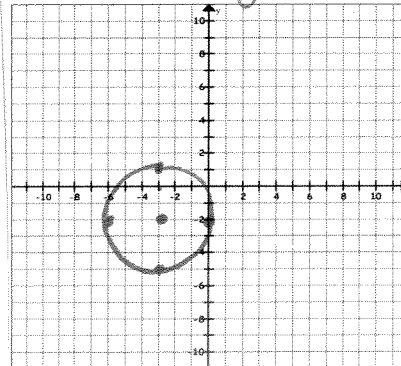
$$(x-2)^2 + (y+1)^2 = 25$$



Center = Midpoint  
 $\left(\frac{-2+6}{2}, \frac{-4+2}{2}\right)$   
 $\left(\frac{4}{2}, \frac{-2}{2}\right) = (2, -1)$   
 Radius = dist of  
 AC or BC  
 $\sqrt{4^2 + 3^2} = \sqrt{25} = 5$

46. Center is  $(-3, -2)$  and it is tangent to the y-axis.

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



$r=3$