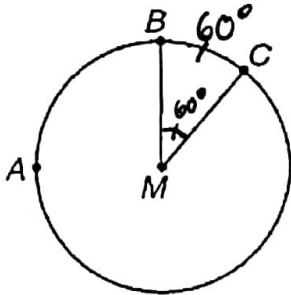Name: ___**KEY**___   Date: _____

1. Points A, B, and C lie on circle M, as shown below.

What is the measure of $\angle BMC$ if the measure of arc BAC is **300**?

$$360$$
$$-300$$
$$\overline{}$$
$$60$$

$$\boxed{60^\circ}$$

2. Chords RQ and SU intersect at point T in circle M.
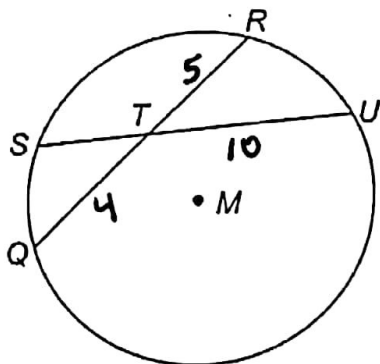
If $RT = 5$, $TQ = 4$, and $UT = 10$, what is the length of ST?
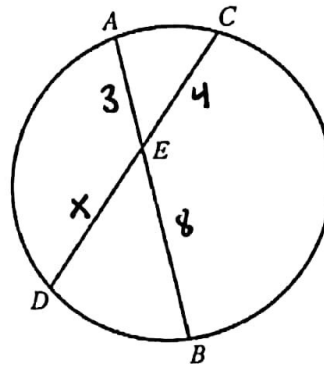
$$10X = 4(5)$$
$$10X = 20$$
$$X = 2$$

$$\boxed{ST = 2}$$

3. In the circle below, $\overline{AB}$ and $\overline{CD}$ are chords intersecting at E.

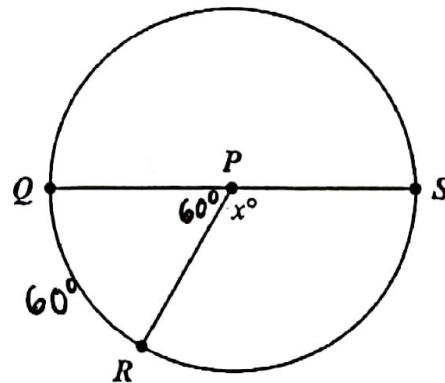If $AE = 3$, $BE = 8$, and $CE = 4$, what is the length of $\overline{DE}$?

$$8(3) = X(4)$$
$$24 = 4X$$
$$X = 6$$

$$\boxed{DE = 6}$$

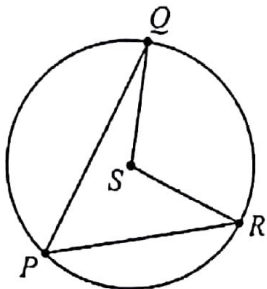4. Points Q, R, and S lie on circle P, and line $\overline{SQ}$ is a diameter of circle P, as shown below.

$$180 - 60 = 120$$

The measure of $\overset{\frown}{QR}$ is **60**. What is the value of x?

$$\boxed{X = 120^\circ}$$

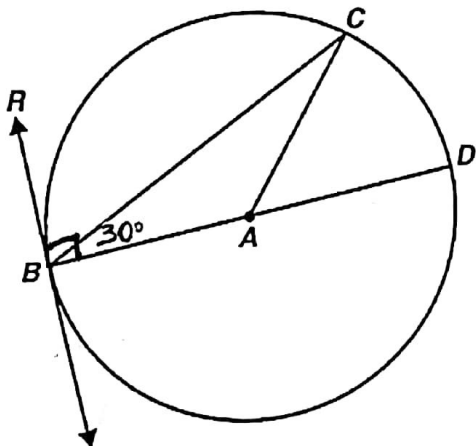5. The diagram below shows points P, Q, and R on circle S. The measure of $\angle QSR$ is $122°$.

What is the measure of $\angle QPR$?

$$\frac{122}{2} = 61$$

$$m\angle QPR = \boxed{61°}$$

7. What is the area of the shaded sector?

$$A = \frac{\theta}{360} \cdot \pi r^2$$

$$A = \frac{120}{360} \cdot \pi (6)^2$$

$$A = 12\pi = \boxed{37.7 \text{ m}^2}$$

6. $\overrightarrow{RB}$ is tangent to a circle, whose center is A, at point B. $\overline{BD}$ is a diameter.
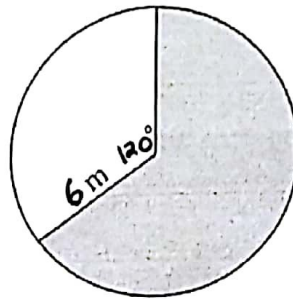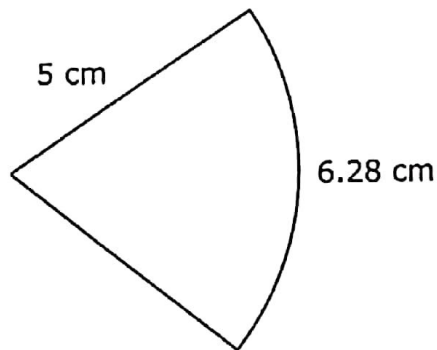

What is $m\angle CBR$?

$\angle DBR$ is right angle because a tangent and radius intersect at point of tangency.

$$90 - 30 = 60$$

$$m\angle CBR = \boxed{60°}$$

8. A sector of a circle is shown.

What is the area of the sector? (Use 3.14 for π.)

$$C = \frac{\theta}{360} \cdot 2\pi r$$

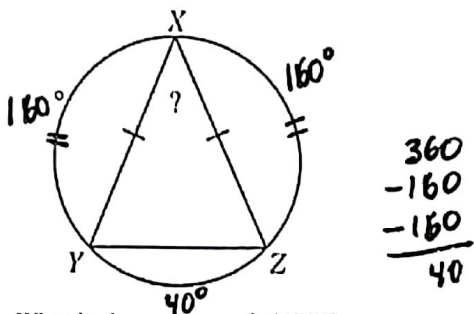$$6.28 = \frac{\theta}{360} \cdot 2\pi (5)$$

$$6.28 = 0.08730$$

$$\theta = 71.9635°$$

$$A = \frac{\theta}{360} \cdot \pi r^2$$

$$A = \frac{71.96}{360} \cdot \pi (5)^2$$

$$A = \boxed{5\pi = 15.7 m^2}$$

9. The circle shown below has chords $\overline{XY}$, $\overline{XZ}$, and $\overline{YZ}$, with $\overline{XY} \cong \overline{XZ}$. The measure of $\overarc{XY}$ is 160°, as shown.
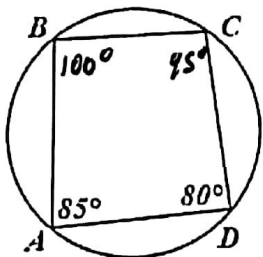

$$\begin{array}{r} 360 \\ -160 \\ -160 \\ \hline 40 \end{array}$$

What is the measure of $\angle YXZ$?

$$\frac{40}{2} = 20$$

$$m\angle YXZ = \boxed{20°}$$

11. In the circle shown below, the measure of $\overarc{PR} = 150°$ and the measurements of $\angle RPQ = 40°$.

What is the measure of $\overarc{PQ}$?

$$40 \cdot 2 = 80 \quad m\overarc{RQ} = 80°$$

$$360 - 150 - 80 = 130; \quad m\overarc{PQ} = \boxed{130°}$$

10. Quadrilateral $ABCD$ is inscribed in a circle as shown in the diagram below.

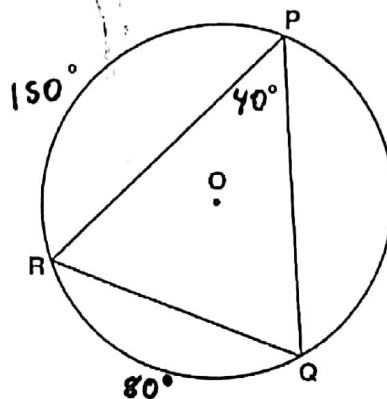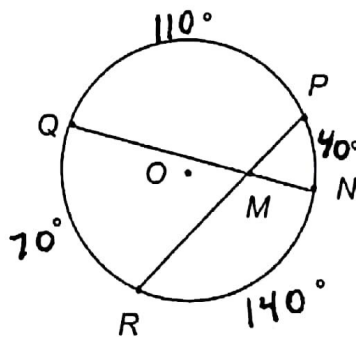If $m\angle A = 85°$ and $m\angle D = 80°$, what is $m\angle B$?

Opposite angles of a quadrilateral inscribed in a circle are supplementary.

$$180 - 80 = 100$$

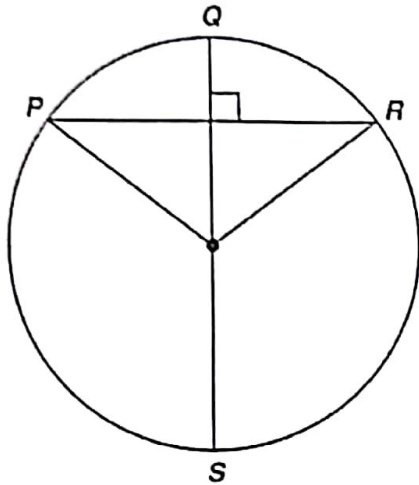$$180 - 85 = 95$$

$$m\angle B = \boxed{100°}$$

12. Points N, P, R, and Q lie on circle O.

In circle O, what is the $m\angle PMN$?

$$\frac{70 + 40}{2} = \frac{110}{2} = \boxed{55°}$$

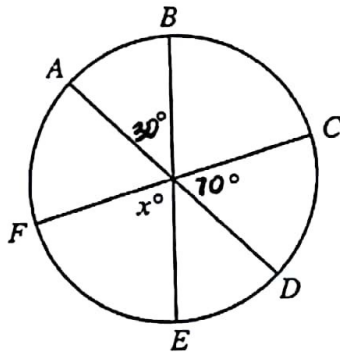13. $\overline{QS}$ is a diameter of the circle below, and $\overline{QS} \perp \overline{PR}$

If $m\overset{\frown}{PQR} = 100$, what is $m\overset{\frown}{PS}$?

$180 - 100 = 80$

$m\overset{\frown}{PS} = \boxed{80°}$

14. In the circle shown below, $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$ are diameters.

What is the value, in degrees, of x?

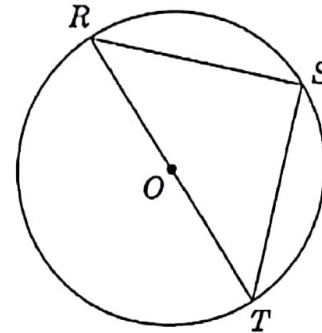Let M
be the
center of
the circle.

$m\angle EMD = 30°$
    since $\angle AMB \cong \angle EMD$
    by vertical angle theorem.

$180 - 30 - 70 = 80$
  $m\angle FME = 80°$

$x = \boxed{80}$

15. In circle O shown below, $\overline{RS} \cong \overline{ST}$.
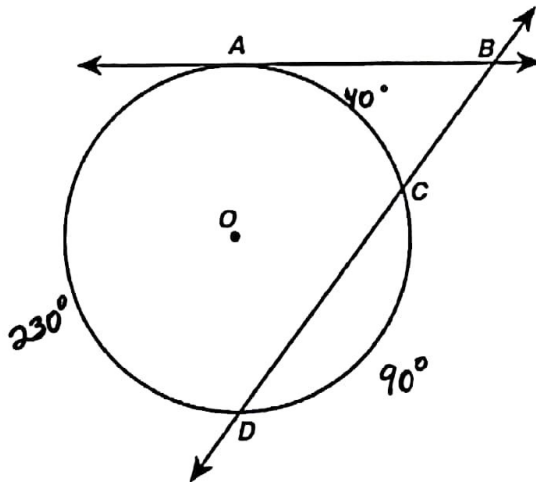

$\frac{180}{2} = 90$

$m\angle RST = 90°$

What kind of triangle is $\triangle RST$?

  (A.) right   B. acute

  C. obtuse   D. scalene

16. In the figure below, $\overleftrightarrow{AB}$ is tangent to circle O at point A, secant $\overleftrightarrow{BD}$ intersects circle O at points C and D, $m\overset{\frown}{AC} = 40°$ and $m\overset{\frown}{CD} = 90°$.

What is $m\angle ABC$?

$360 - 90 - 40 = 230$

$m\overset{\frown}{AD} = 230°$

$\frac{230 - 90}{2} = 70$ $m\angle ABC = \boxed{70°}$

       Unit 6 Review Problems

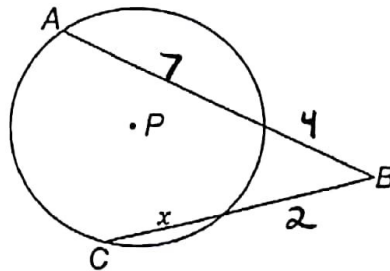17. Find the unknown length in the picture below.
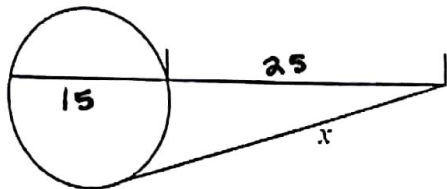
$$25(15+25) = x(x)$$

$$1000 = x^2$$

$$x = \sqrt{1000} = \boxed{31.62}$$

18. Line segments AB and CB intersect outside of circle P as shown below.

What is the value of x?

$$4(7+4) = 2(2+x)$$

$$77 = 4+2x$$

$$73 = 2x$$

$$x = \boxed{36.5 = \frac{73}{2}}$$

Unit 6 Review Problems