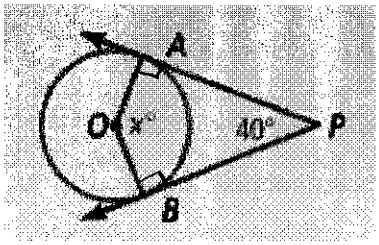
Name: Key Date:
Geometry Band:

Circles Study Guide

LT#1: Use properties of a tangent to a circle.

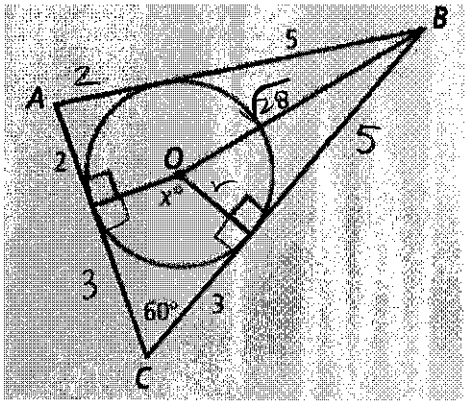
1. $\overrightarrow{PA}$ and $\overrightarrow{PB}$ are tangents. Find x.



$x = 360 - 90 - 90 - 40$

$\boxed{x = 140°}$

Use ⊙ O for #2-4.



2. What is the perimeter of ΔABC?

$2 + 2 + 5 + 5 + 3 + 3 = \boxed{20}$

3. $OB = \sqrt{28}$. What is the radius?

$r^2 + 5^2 = (\sqrt{28})^2$

$r^2 + 25 = 28$

$r^2 = 3$

$\boxed{r = \sqrt{3}}$

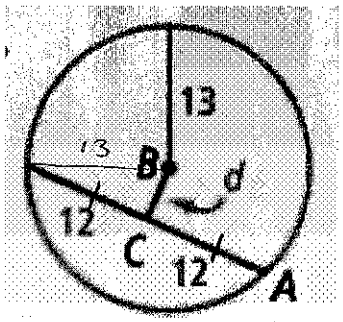
4. What is the value of x?

$x = 360 - 90 - 90 - 60$

$\boxed{x = 120°}$

LT#2: Use congruent chords, arcs, and central angles.
LT#3: Use perpendicular bisectors to chords.

5. What is the value of d?



$12^2 + d^2 = 13^2$

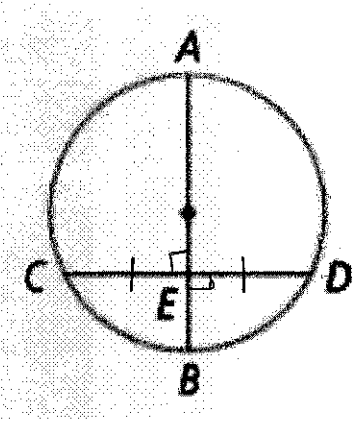
$144 + d^2 = 169$

$d^2 = 25$

$\boxed{d = 5}$

Use the figure at the right for #6-8.

6. If $\overline{AB}$ is a diameter and $CE = ED$, then $m\angle AEC =$ 90.



7. If $\overline{AB}$ is a diameter and is perpendicular to $\overline{CD}$, what is the ratio of CD to DE?

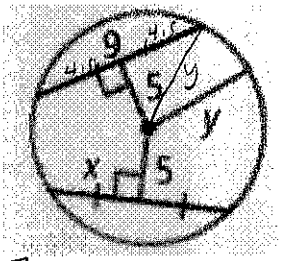
2 : 1

8. If $CE = \frac{1}{2}CD$ and $m\angle DEB = 90$, what is true of $\overline{AB}$?

It is the diameter.

Use the circle below for #9 and #10.

9. What is the value of x?



$x = 4.5$

10. What is the value of y?

$4.5^2 + 5^2 = y^2$

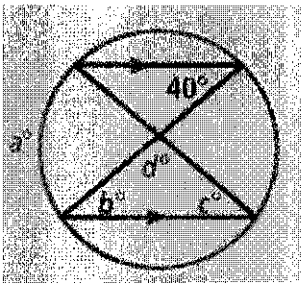
$45.25 = y^2$

$y \approx 6.7$

LT#4: Find the measure of an inscribed angle.
LT#5: Find the measure of an angle formed by a tangent and a chord.

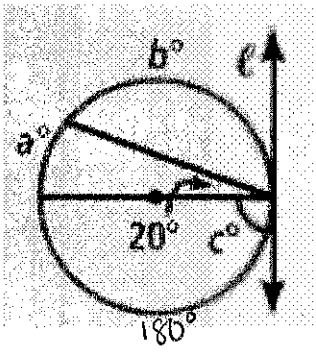
Find the value of each variable. Line l is a tangent.

11.



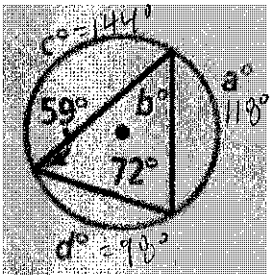
$a = 80°$
$b = 40°$
$c = 40°$
$d = 100°$

12.



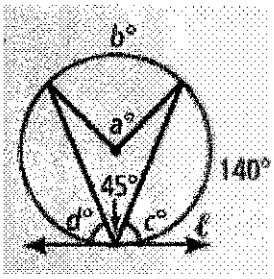
$a = 40°$
$b = 140°$
$c = 90°$

13.



$a = 118°$
$b = 49°$
$c = 144°$
$d = 98°$

14.

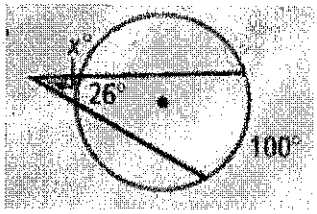


$a = 90°$
$b = 90°$
$c = 70°$
$d = 70°$

LT#6: Find measures of angles formed by chords, secants, and tangents.
LT#7: Find the lengths of segments associated with circles.

Find the value of each variable.

15.

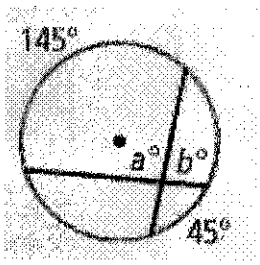


$x = \frac{1}{2}(100 - 26)$

$x = \frac{1}{2}(74)$

$\boxed{x = 37}$

16.



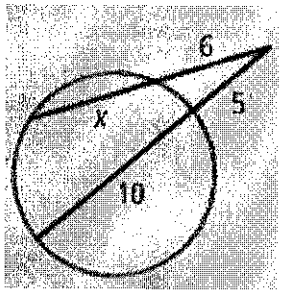
$a = \frac{1}{2}(145 + 45)$

$a = \frac{1}{2}(190)$

$\boxed{a = 95°}$

$\boxed{b = 85°}$

17.



$(x + 6)6 = (10 + 5)5$

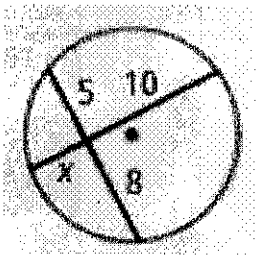
$6x + 36 = 15 \cdot 5$

$6x + 36 = 75$

$6x = 39$

$\boxed{x = 6.5}$

18.



$10 \cdot x = 5 \cdot 8$

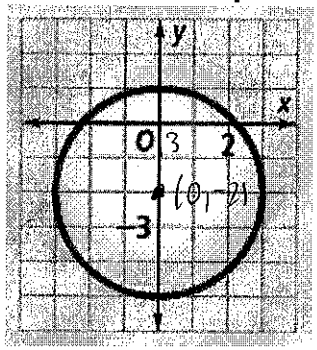
$10x = 40$

$\boxed{x = 4}$

LT#8: Write the equation of a circle. $(x-h)^2 + (y-k)^2 = r^2$
LT#9: Find the center and radius of a circle.

Write the standard equation of each circle below.

19.



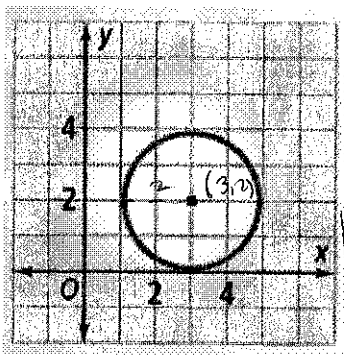
center: $(0, -2)$

radius = 3

$(x-0)^2 + (y-(-2))^2 = 3^2$

$\boxed{x^2 + (y+2)^2 = 9}$

20.



center: $(3, 2)$

radius = 2

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

$\boxed{(x-3)^2 + (y-2)^2 = 4}$

21. What is the standard equation of the circle with radius 5 and center $(-3, -4)$?

$(x-(-3))^2 + (y-(-4))^2 = 5^2$

$\boxed{(x+3)^2 + (y+4)^2 = 25}$

22. What is the standard equation of the circle with center (1,1) that passes through (−2,4)?

$r = \sqrt{(1-(-2))^2+(1-4)^2} = \sqrt{3^2+(-3)^2} = \sqrt{9+9} = \sqrt{18}$

$(x-1)^2+(y-1)^2=(\sqrt{18})^2$

$\boxed{(x-1)^2+(y-1)^2=18}$

23. What are the center and radius of the circle with equation $(x-7)^2+(y+5)^2=36$?

center: (7, −5)

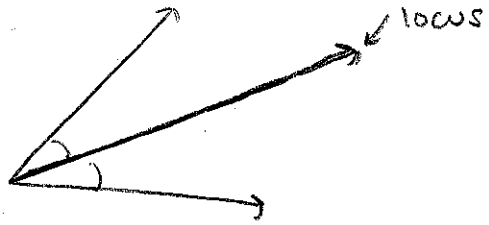
radius = 6

LT#10: Draw and describe a locus.

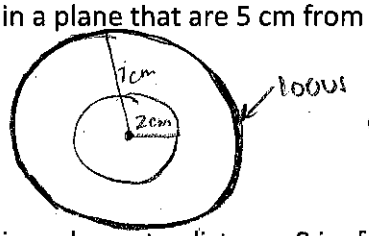
Sketch and describe each locus of points.

24. The set of all points in a plane that are in the interior of an angle and equidistant from the sides of the angle.

angle bisector

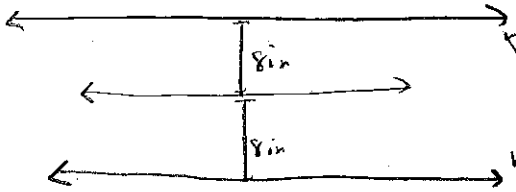


25. The set of all points in a plane that are 5 cm from a circle with radius 2 cm.



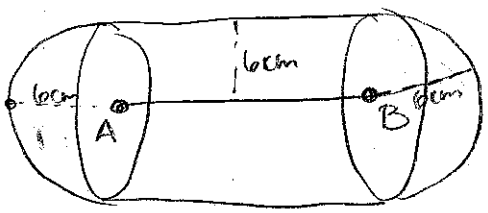
circle with radius 7cm with center of circle with radius 2cm

26. The set of all points in a plane at a distance 8 in. from a given line.



pair of ll lines 8cm from given line

27. The set of all point in space that are a distance 6 in. from $\overline{AB}$.



cylinder with radius 6cm with 2 semicircles with radius 6cm