Geometry Regents Lomac 2015-2016 **Date** 5/16 **due** 5/17 | **Circles: Chords and Diameters 10.7R**

Name _____ **Per**_____

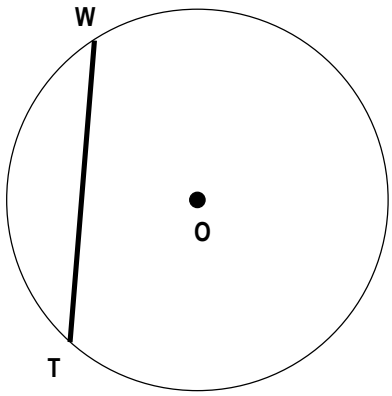
LO: I can solve problems involving diameters and chords.

☐ **DO NOW** On the back of this packet

☐ (1) **Circles: chord and diameter relationship**

Use the website link for 10.7 (see below or use the QR code at right) to investigate the relationship between chord midpoints and diameters.
http://tube.geogebra.org/m/sTestGMm?doneurl=%2Fsearch%2Fperform%2Fsearch%2Fchord%2Bdiameter

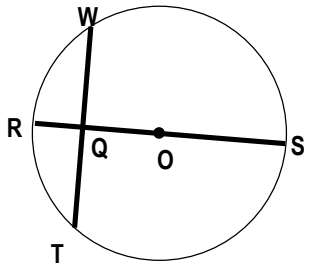
☐ (a) Construct the perpendicular bisector of $\overline{WT}$ and label the intersections with the circle R and S. Label the intersection of $\overline{WT}$ and $\overline{RS}$ with a Q.

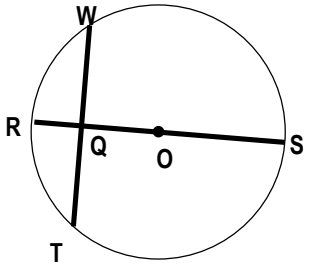


☐ (b) $\overline{RS}$ is a _____ of circle O. The perpendicular bisector of ANY chord in a circle is a _____of the circle.

☐ (c) If we know that a diameter bisects a chord, then it must also be _____ to the chord. If we know that a diameter is perpendicular to a chord, then it must also _____ the chord.

☐ (1) cont. ☐ (d) Prove the **CHORD DIAMETER THEOREM** which are your statements in part C. Mark each diagram provided as you write/assemble your proof.





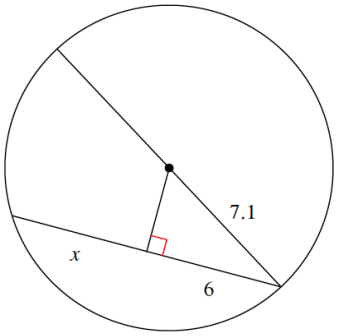
If a diameter ($\overline{RS}$) bisects a chord ($\overline{WT}$), then the diameter is perpendicular to the chord	
I know that . . .	because . . .
diameter $\overline{RS}$ bisects a chord $\overline{WT}$	
$\overline{WQ} \cong \overline{TQ}$	
$\overline{OQ} \cong \overline{OQ}$	
Auxiliary segments $\overline{OW} \cong \overline{OT}$	
$\triangle WOQ \cong \triangle TOQ$	
$\angle WQO \cong \angle OQT$ and both are 90°	
$\overline{WT} \perp \overline{RS}$	

If a diameter ($\overline{RS}$) is perpendicular to a chord ($\overline{WT}$), then the diameter bisects the chord	
I know that . . .	because . . .
diameter $\overline{RS}$ is perpendicular to a chord $\overline{WT}$	
$\angle WQO \cong \angle OQT$ and both are 90°	
$\overline{OQ} \cong \overline{OQ}$	
Auxiliary segments $\overline{OW} \cong \overline{OT}$	
$\triangle WOQ \cong \triangle TOQ$	
$\overline{WQ} \cong \overline{TQ}$	
diameter $\overline{RS}$ bisects chord $\overline{WT}$	

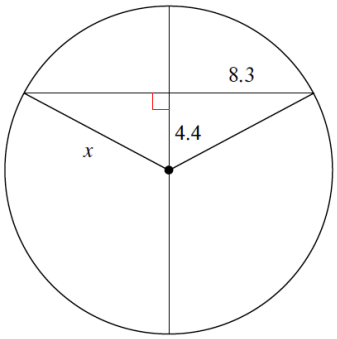
(e) ☐ In your proof, you added radii to your diagram and formed 2 triangles. What kind of triangles were formed?_____ What formula can you use to find unknown side lengths of _____ triangles?_____

☐ (2) Find x in each diagram. Adding a radius or other segment to the diagram may be helpful.

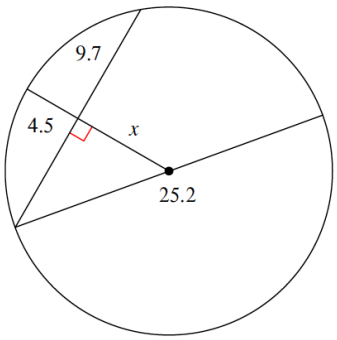
☐ (a)



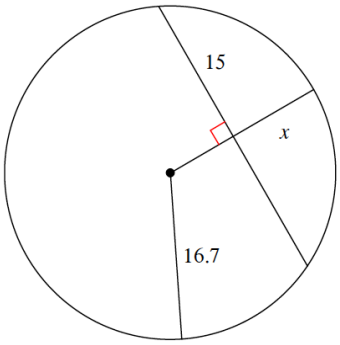
☐ (b)



☐ (c)



☐ (d)



☐ (3) calculator **Exit Ticket**

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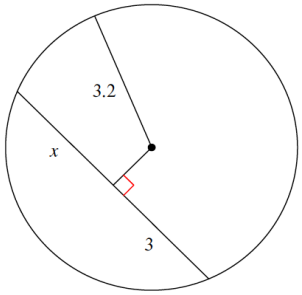
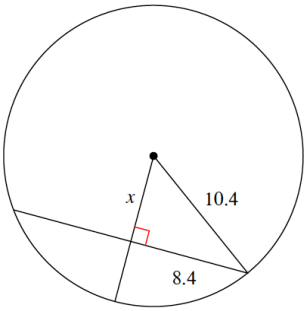
☐ (4) calculator **Homework**

(1) Find the measure of x.

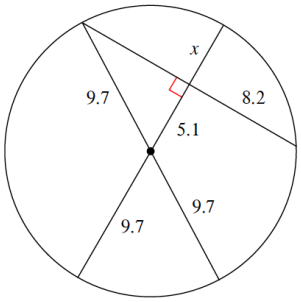
(a)



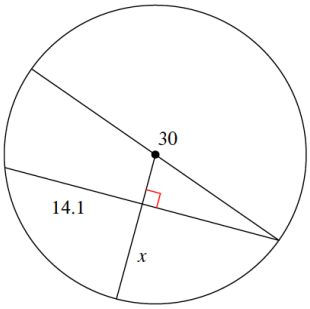
(b)



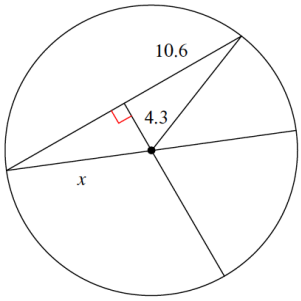
(c)



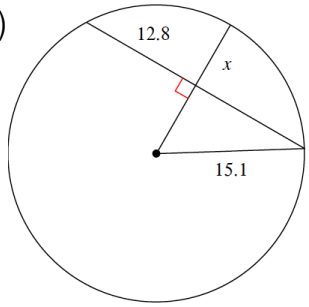
(d)



(e)



(f)



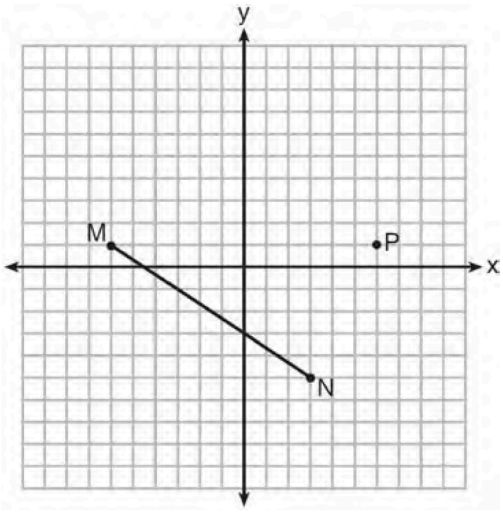
☐ (4) calculator **Homework**

(2) Review:

64 A shipping container is in the shape of a right rectangular prism with a length of 12 feet, a width of 8.5 feet, and a height of 4 feet. The container is completely filled with contents that weigh, on average, 0.25 pound per cubic foot. What is the weight, in pounds, of the contents in the container?

1 1,632
2 408
3 102
4 92

10 Given $\overline{MN}$ shown below, with $M(-6,1)$ and $N(3,-5)$, what is an equation of the line that passes through point $P(6,1)$ and is parallel to $\overline{MN}$?



1 $y = -\frac{2}{3}x + 5$

2 $y = -\frac{2}{3}x - 3$

3 $y = \frac{3}{2}x + 7$

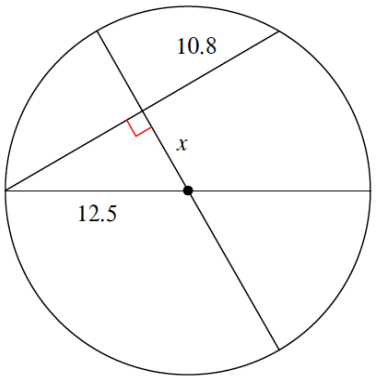
4 $y = \frac{3}{2}x - 8$

Exit Ticket **Name**_____ **Date** _____ **Per**_____ **10.7R**

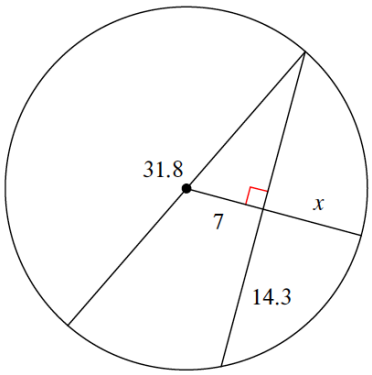
The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

(1) Find the indicated measure for each diagram. Show sufficient evidence of your solution

(a) x = _____

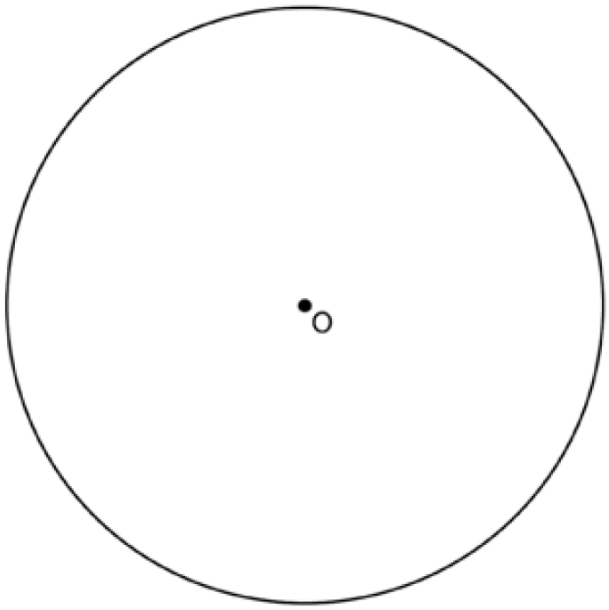


(b) x = _____



DO NOW **Name**_____ **Date** _____ **Per**_____ **10.7R**

(1) 5 Using a straightedge and compass, construct a square inscribed in circle O below. [Leave all construction marks.]



Determine the measure of the arc intercepted by two adjacent sides of the constructed square. Explain your reasoning.