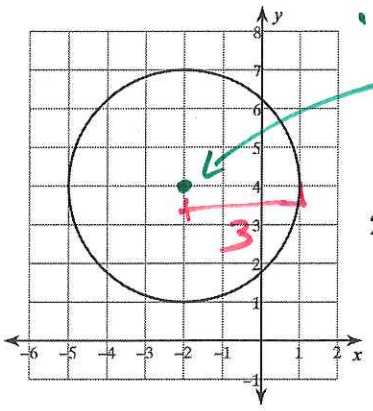
GPE-B1 Circles Practice Assessment

1. Write the equation of this circle.



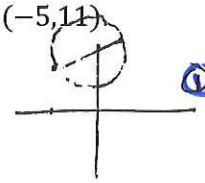
• Center? Look for it! (-2, 4) H K

• Radius? Just ~~count~~ count from center to edge! 3

$(x-h)^2+(y-k)^2=r^2$

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

2. Write the equation of a circle whose diameter has endpoints (1,13) and (−5,11).



Need center AND radius...

① CENTER: Find midpoint of diameter points.

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) \rightarrow \left(\frac{1+-5}{2}, \frac{13+11}{2}\right)$

$(-2, 12)$ H K

② Plug (H, K) into circle Eq.

$(x+2)^2+(y-12)^2=r^2$

③ Plug either given point into ↑, solve for r

(1, 13)

$(1+2)^2+(13-12)^2=r^2$

$3^2+1^2=r^2$

$9+1=r^2 \rightarrow 10=r^2 \rightarrow \sqrt{10}=r$

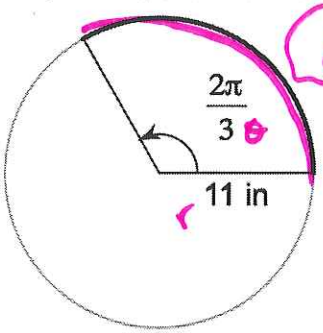
④ Update Equation with r^2.

$(x+2)^2+(y-12)^2=10$

C-B4

Be prepared for any of these 4 topics: arc length in degrees, arc length in radians, sector area in degrees, sector area in radians. See previous HW handouts for additional practice for these.

3. Find the exact arc length.



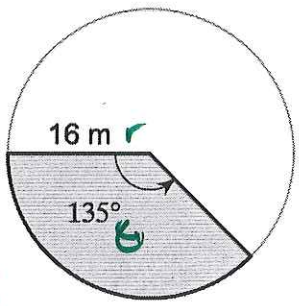
$AL = r \cdot \theta$

$= 11 \cdot \frac{2\pi}{3}$

$\frac{22\pi}{3}$ in

4. Find the shaded area to the nearest hundredth m^2.

$\frac{\theta}{360^\circ} = \frac{SA}{\pi r^2}$



$\frac{135^\circ}{360^\circ} = \frac{SA}{\pi \cdot 16^2}$

$16^2 \cdot \pi \cdot 135 = 360^\circ \cdot SA$

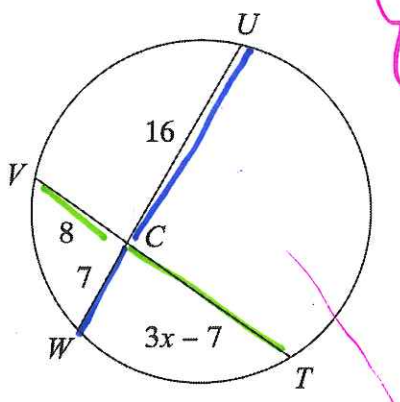
$\frac{34560\pi}{360} = \frac{360^\circ \cdot SA}{360}$

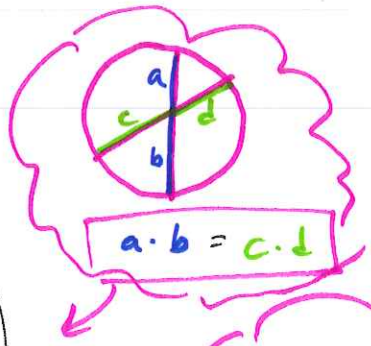
Reduce in calc ↓

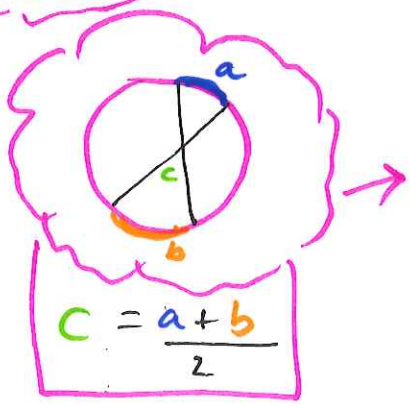
$96\pi \text{ m}^2 = SA.$

C-A2b

5. Find the length of $\overline{VT}$







$8(3x-7) = 7 \cdot 16$

$24x - 56 = 112$

$+56 \quad +56$

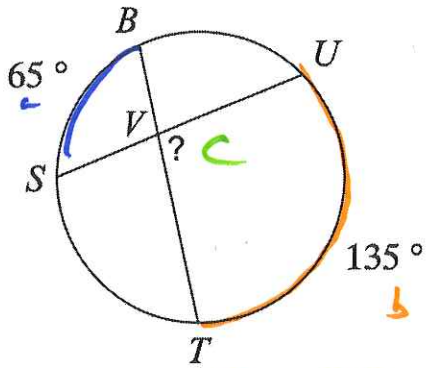
$\frac{24x}{24} = \frac{168}{24}$

$x = 7$ Now plug into VT.

$8 + 3(7) - 7$

$8 + 21 - 7 = 22$

6. Find the measure of $\angle UVT$

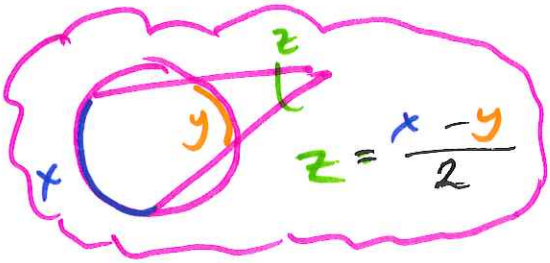


$c = \frac{65 + 135}{2}$

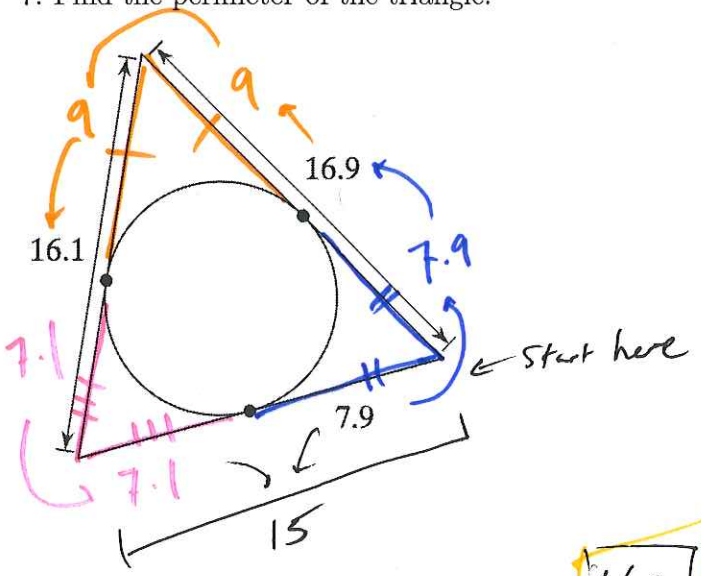
$c = \frac{200}{2}$

$c = 100°$

C-A2c: Assume all segments that appear tangent to the circle, are.

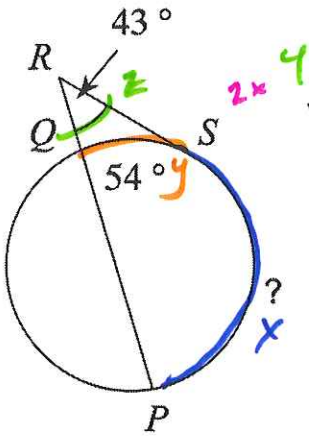


7. Find the perimeter of the triangle.



$P = 16.1 + 16.9 + 15 = 48$

8. Find the measure of $\widehat{SP}$



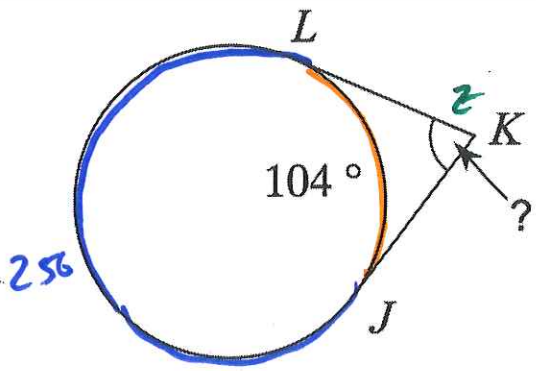
$2x \quad 43 = \frac{x - 54}{2} \quad \times 2$

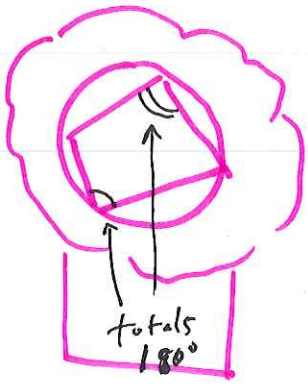
$86 = x - 54$

$+54 \quad +54$

$140 = x$

9. Find the measure of $\angle K$





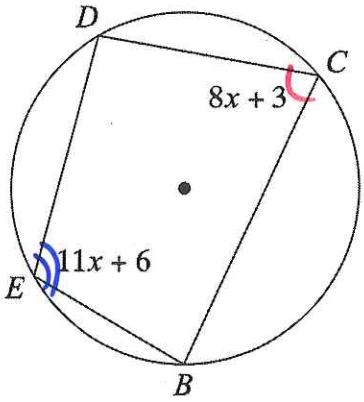
360 − 104 = 256

$z = \frac{256 - 104}{2}$

$z = \frac{152}{2}$

$z = 76°$

10. Find the measure of $\angle DEB$



$8x + 3 + 11x + 6 = 180°$

$19x + 9 = 180°$

$-9 \quad -9$

$\frac{19x}{19} = \frac{171}{19}$

$x = 9$

plug into $\angle DEB$

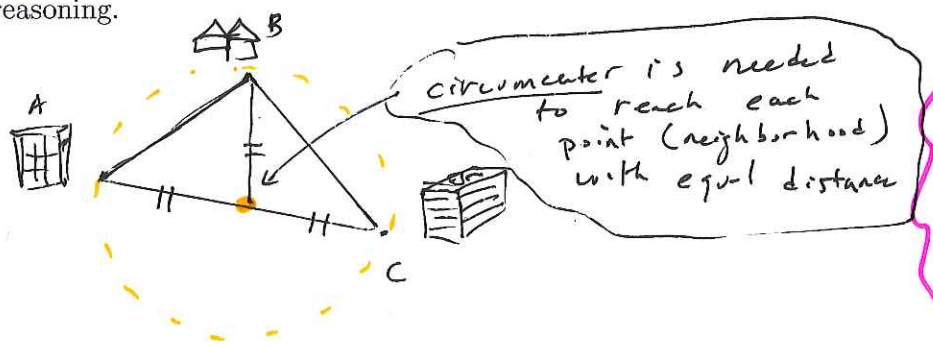
$11(9) + 6$

$99 + 6$

$105°$

C-A3

11. City planners are deciding where to put a new school. There are 3 separate neighborhoods/apartments the school should serve that are spread out around the area. In order for the school to be equidistant to each neighborhood, decide whether the planners should locate the circumcenter or the incenter, and justify your reasoning.



Circumcenter: Same distance to Corners/Angles

Incenter: Same distance to Sides

12. A group of civil engineers is deciding whether to put an urban fountain. It will be placed somewhere in a triangular park that is bordered by three streets. In order for the fountain to be equidistant to each street, , decide whether the planners should locate the circumcenter or the incenter, and justify your reasoning.

Incenter is needed in order to be equidistant to each side of the triangle.