GPE-A1a   Practice Assessment

1. Write the equation of a circle where $(-9,14)$ and $(-5,-6)$ are endpoints of a diameter. [1]

[3] $(x-h)^2 + (y-k)^2 = r^2$ [2] $\left(\dfrac{-9+-5}{2}, \dfrac{14+-6}{2}\right)$ ↳ midpoint → Center of circle

$(x+7)^2 + (y-4)^2 = r^2$

choose either pt: $(-5+7)^2 + (-6-4)^2 = r^2$ $\left(\dfrac{-14}{2}, \dfrac{8}{2}\right) \Rightarrow \underset{h\ \ k}{(-7,4)}$

$4 + 100 = r^2 \rightarrow 104 = r^2$

[4] $(x+7)^2 + (y-4)^2 = 104$

2. Does the point $(3,\sqrt{5})$ lie on a circle with center $(2,0)$ and radius 3? Show the calculations that lead to your conclusion.

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

$(x-2)^2 + y^2 = 9 \rightarrow (3-2)^2 + (\sqrt{5})^2 = 9$

$(3,\sqrt{5})$ $1^2 + 5 = 9$
$\underset{x\ \ y}{}$ $1 + 5 = 9 \Rightarrow 6 = 9$? No!

GPE-A1b

3. Find the center and radius of a circle whose equation is $x^2 - 8x + y^2 + 2y = -8$ $(x-h)^2 + (y-k)^2 = r^2$

$x^2 - 8x + y^2 + 2y = -8$

$-\dfrac{8}{2} = (-4)^2 : 16$ $\dfrac{2}{2} : (1)^2 : 1$

Complete the Square:
① half of x or y coefficient
② Square result
③ Add to both sides
④ Factor, simplify.

$x^2 - 8x + 16 + y^2 + 2y + 1 = -8 + 16 + 1$

$(x-4)(x-4) + (y+1)(y+1) = 9 \Rightarrow (x-4)^2 + (y+1)^2 = 3^2$ CENTER: $(4,-1)$ RAD: 3

4. Find the center and radius of a circle whose equation is $x^2 + 4x + y^2 - 6y = 3$. Then, sketch the circle onto the graph.
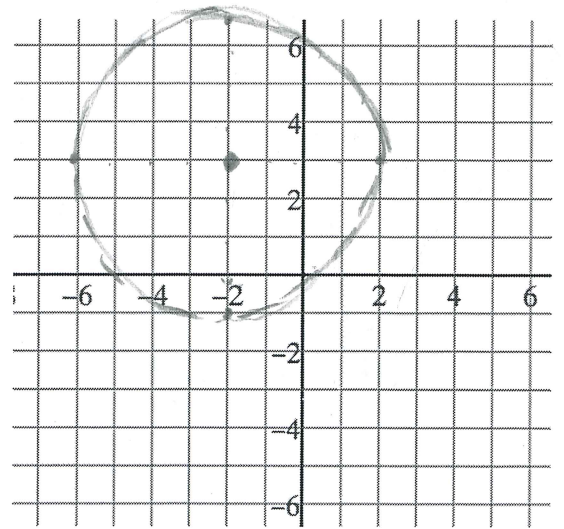
$x^2 + 4x + y^2 - 6y = 3$

$\dfrac{4}{2} = (2)^2 = 4$ $\dfrac{-6}{2} = (-3)^2 = 9$
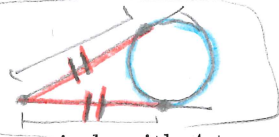
$x^2 + 4x + 4 + y^2 - 6y + 9 = 3 + 4 + 9$

$(x+2)(x+2) + (y-3)(y-3) = 16$

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

Center: $(-2,3)$

rad: 4

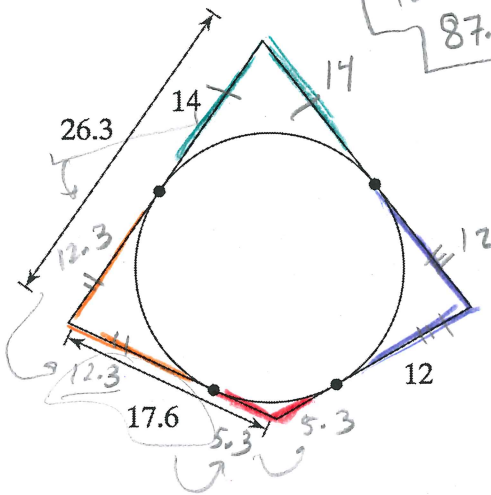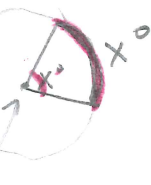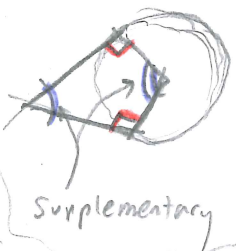C-A2c

5. Drawn below is a circle with 4 tangent lines. Find the perimeter of the quadrilateral formed by the tangent lines.

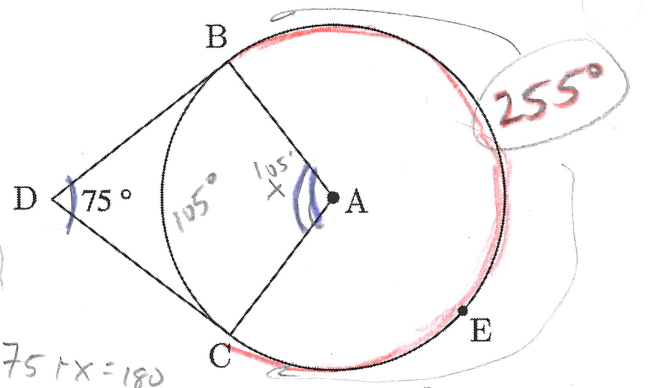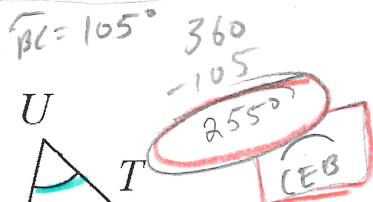**6.** DB and DC are tangent to circle A. Find the measures of $\angle A$ and $\overgroup{CEB}$.

Perimeter: 87.2

14
14
26.3
12.3
12.3
17.6
5.3   5.3
12
12

Concepts
Supplementary
center

$x°$

B   255°
D 75°   105°   105°   x   •A
C
E

$75 + x = 180$
$x = 105°$
$\angle A = 105$
$\overgroup{BC} = 105°$
$360 - 105 = 255°$ CEB

U
T   255°
V   44°
L   S
164°

7. Find the measure of $\angle U$

$\angle U = \dfrac{164° - 44°}{2}$

$\angle U = \dfrac{120'}{2} = 60°$

Concept

$z° = \dfrac{x° - y°}{2}$

$x°$ $y°$ $z°$
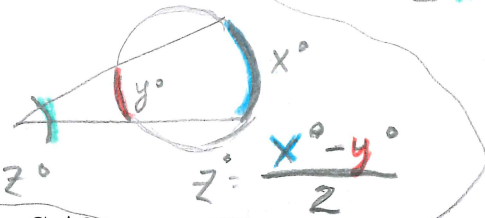
C-A3a

8. Find the measure of $\angle C$

skip for now

A
B   109°
130°
•
?   C
W
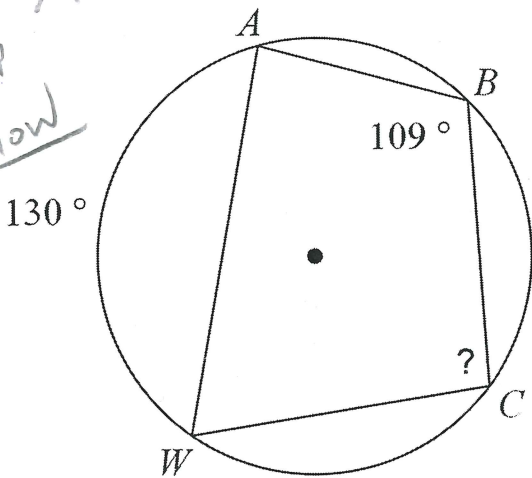
9. Find the measure of $\angle CAB$

Concept

$z° = \dfrac{x° + y°}{2}$

$x°$ $y°$ $z°$
82°

D   105°
C   A $z°?$ U
145°   B

$z° = \dfrac{145° + 105}{2}$

$z° = \dfrac{250°}{2} = 125°$