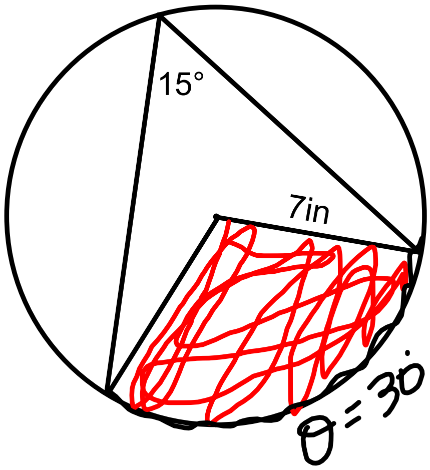
Bellwork: Find the area of the shaded region



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

$$A = \frac{\pi (7)^2 (30)}{360}$$

$$\boxed{A = 12.8\,in^2}$$

2D	radius	θ	L	A
	8.79	101°	15.49	68

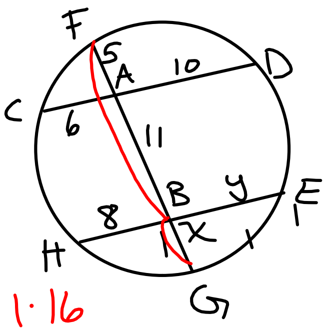
$$A = \frac{\pi r^2 \theta}{360} \qquad 360 \cdot 68 = \frac{\pi r^2 (101)}{\cancel{360}} \cancel{360}$$

$$\frac{24480}{(101\pi)} = \frac{\cancel{101}\cancel{\pi} r^2}{\cancel{101}\cancel{\pi}} \qquad \sqrt{77.15} = \sqrt{r^2}$$

$$r = 8.79$$

$$L = \frac{\pi r \theta}{180} = \frac{\pi (8.79)(101)}{180}$$

7)



BE = 2

BG = 1

$6 \cdot 10 = 5(11 + x)$

$60 = 55 + 5x$

$-55 \quad -55$

$5 = 5x \qquad x = 1$

$$\frac{8y}{8} = \frac{1 \cdot 16}{8}$$

$y = 2$

Homework 6.2 Solutions

1.

	Radius	Diameter	Circumference	Area
Circle A	6 cm	12 cm	37.7 cm	113.1 cm^2
Circle B	11 ft	22 ft	69.12 ft	380.13 ft^2
Circle C	7.64 m	15.28 m	48 m	183.35 m^2
Circle D	4.82 in	9.64 in	30.29 in	73 in^2

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2.

	Radius	θ	Arclength	Area
Sector A	12 cm	125°	26.18 cm	157.08 cm^2
Sector B	80.21 ft	60°	84 ft	3368.99 ft^2
Sector C	30 m	53.48°	28 m	420 m^2
Sector D	8.78 mm	101°	15.48 mm	68 mm^2
★ Sector E	7 in	130.96°	16 in	56 in^2

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3. 12.85 in^2

4. 57.81 in^2

5. 5.65 in^2

6. BE = 6 in.

7. BE = 2 cm
   BG = 1 cm

★ 8. BC = 5.2 cm
   AC = 4 cm or 4.5 cm
   CI = 16.5 cm or 16 cm
   } respectively

Lesson 6.3 Objectives:

I can write equations of circles in standard form and identify the center and the radius

Standard Form Equation of a Circle in the Coordinate Plane

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

Where the length of the radius is r and the center is at (h, k).

1. Write the standard form equation of the circle with center at $\underset{(h,k)}{(1,-2)}$ and radius 6.

$$\boxed{\begin{array}{c}(x-h)^2+(y-k)^2=r^2\\ \\ \text{Where the length of the radius is } r \text{ and the center is at } (h,k).\end{array}}$$

$(x-1)^2+(y+2)^2=6^2$

$(x-1)^2+(y+2)^2=36$

2. Identify the center and radius of the circle given by $(x-7)^2+(y+3)^2=100$

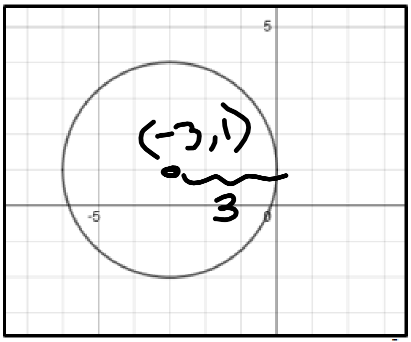
$(x-h)^2+(y-k)^2=r^2$

(h, k) r

$\boxed{\text{center: } (7,-3) \quad r=10}$

$\sqrt{100}=\sqrt{r^2}$

3. Write the equation of the circle shown in the graph.



3^2

$(x+3)^2+(y-1)^2=9$

Example of Converting Polynomial Form of a Circle to Standard Form

$$x^2+y^2+6x-10y-30=0$$

1. Rearrange the equation so that like variables are together and the constant is on the right side.

2. Add blanks after each group of like variables with corresponding blanks on the right side.

3. Fill in the blanks to create perfect square trinomials (half the linear coefficient, squared). Add the same to the right side.

4. Write each trinomial as a perfect square; combine all constants on the right side.

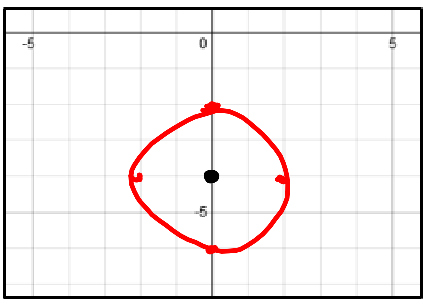
4. Identify the center and radius of the circle given by $x^2 + y^2 + 4x + 2y + \cancel{1} = 0 - 1$

$x^2 + 4x + \underline{4} + y^2 + 2y + \underline{1} = -1 + \underline{4} + \underline{1}$

$(x+2)^2 + (y+1)^2 = 4$

center: $(-2,-1)$ radius: 2 $\sqrt{4}$

5. Graph the circle: $x^2 + (y+4)^2 = 4$



center: $(0,-4)$

radius: $\sqrt{4} = 2$

6. Find the equation of the circle centered at (7, 10) and passing through (–4, 15).

h, k

x, y

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

$(-4-7)^2+(15-10)^2=r^2$

$(-11)^2+(5)^2=r^2$

$121+25=r^2$

$146=r^2$

$$\boxed{(x-7)^2+(y-10)^2=146}$$

11) $x^2+5x+\underline{25/4}+y^2+3y+\underline{9/4}=\frac{-3}{2}+\underline{25/4}$ $+\underline{9/4}$

$(x+\frac{5}{2})^2+(y+3/2)^2=7$

$\frac{34}{4}-\frac{6}{4}$

$\frac{34}{4}-\frac{3}{2}$

$\frac{17}{2}-\frac{3}{2}=\frac{14}{2}$