Objective: Graph circles using the center and radius

Concept

Estimating Square Roots

To estimate the decimal value of a square root you compare it to where it falls on a number line relative to the square roots of the perfect squares that are less than and greater than the radicand.

$\sqrt{41} \approx ?$

$\sqrt{36} = 6$ $\quad \sqrt{41} \quad$ $\sqrt{49} = 7$

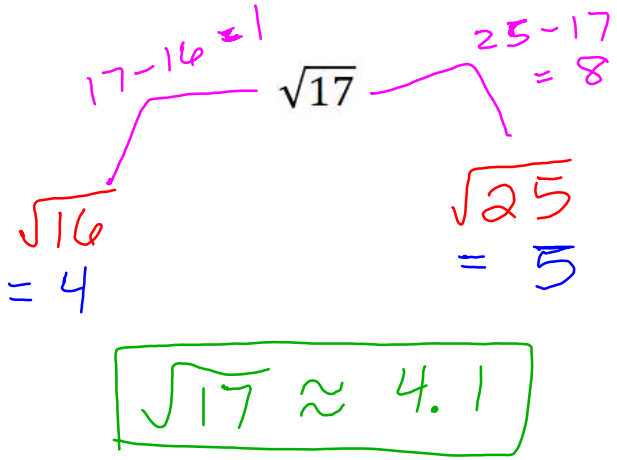
$41 - 36 = 5$ $\quad 49 - 41 = 8$

Since 41 is closer to 36 than to 49, $\sqrt{41}$ will be closer to 6 than to 7. Since the differences are almost equal, the $\sqrt{41}$ will be closer to 6.5 than to 6.

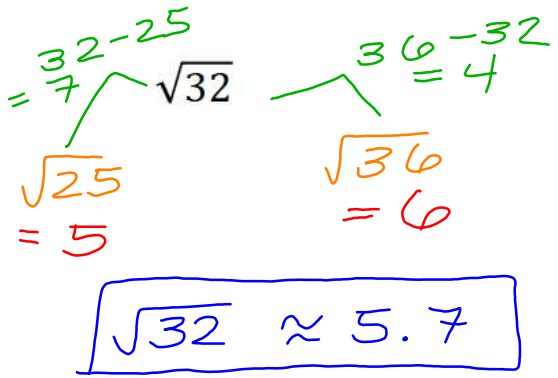
Conclusion: $\sqrt{41} \approx 6.4$

Objective: Graph circles using the center and radius

Ex) Estimate the value of each square root.

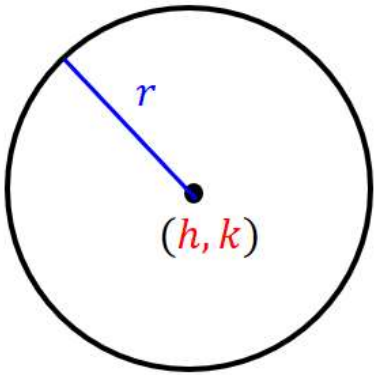


$\sqrt{17} \approx 4.1$



$\sqrt{32} \approx 5.7$

Objective: Graph circles using the center and radius



Concept

Equation of a Circle

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

with center $C(h,k)$ and radius r units

Steps for graphing a circle using the center and radius.

1. Identify and graph the center, (h,k).

2. Identify the radius, $\sqrt{r^2}=r$.

3. Graph the radius points by counting r units left, right, up, and down from the center.

4. Draw a round smooth curve through the four points.

Objective: Graph circles using the center and radius

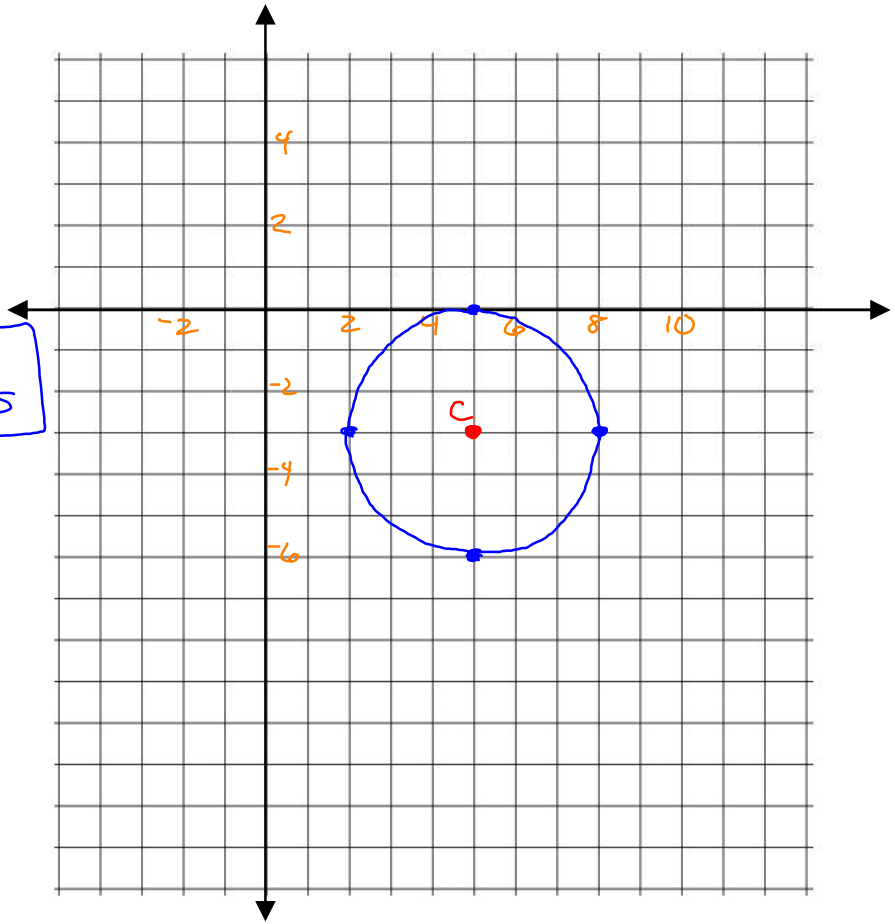
Ex) State the center and radius. Graph the circle.

$(x-5)^2+(y+3)^2=9$ (r^2)

opp = h opp = k

① Center: $(5,-3)$

② radius = $\sqrt{9}$ = 3 units



Objective: Graph circles using the center and radius

Ex) State the center and radius. Graph the circle.

$$(x+1)^2+(y-3)^2=23$$

r^2

opp $=h$ opp $=k$

① Center: $(-1, 3)$

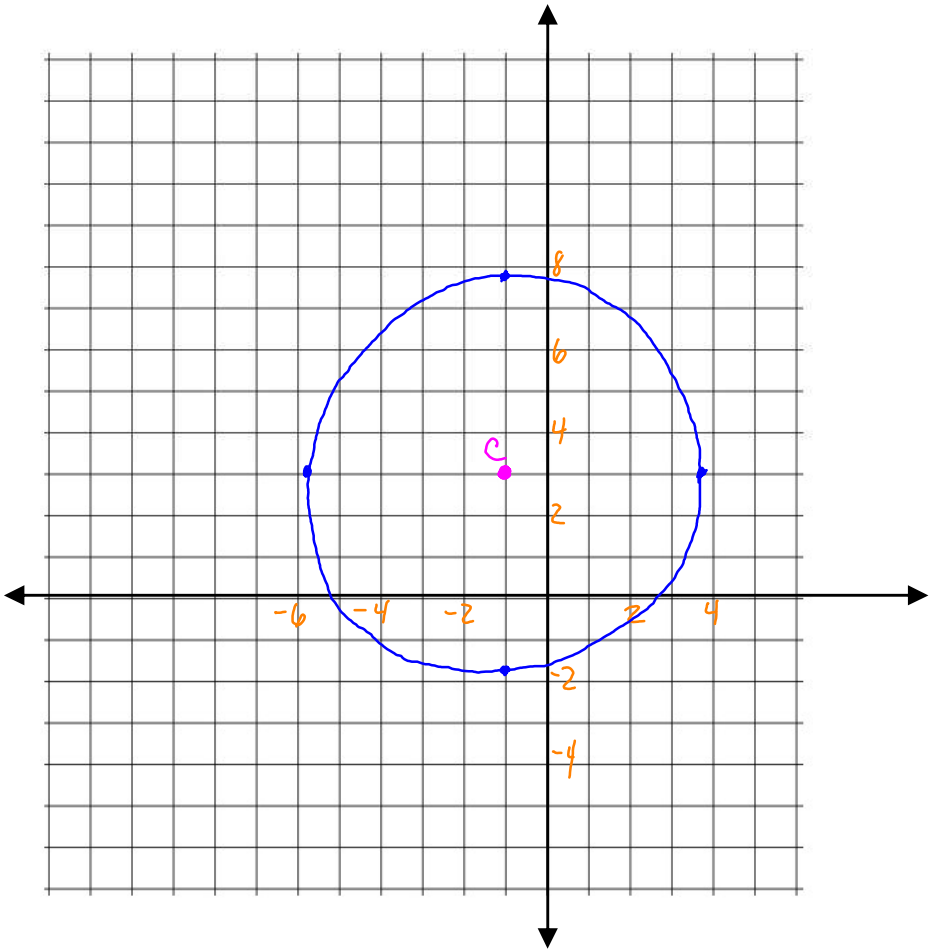
② radius $=\sqrt{23}$ units

≈ 4.8 units

$23-16=7$ $25-23=2$

$\sqrt{16}$ $\sqrt{23}$ $\sqrt{25}$

$=4$ ≈ 4.8 $=5$



Objective: Graph circles using the center and radius

Ex) State the center and radius. Graph the circle.

$$x^2 + (y-3)^2 = 30$$

① Center: (0, 3)

② radius = $\sqrt{30}$ units
≈ 5.5 units

$30 - 25 = 5$ $\quad$ $36 - 30 = 6$

$\sqrt{25}$ $\quad$ $\sqrt{30}$ $\quad$ $\sqrt{36}$

$= 5$ $\quad$ ≈ 5.5 $\quad$ $= 6$