

Unit 5 Coordinate Geometry Quick Notes

Standard Equation of a circle

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

Centered at (h,k) r = radius

To Convert to General **Foil** and Rearrange!

Example: Convert to General

$$(x - 3)^2 + (y + 2)^2 = 18$$

General Form of a Circle:

$$Ax^2 + By^2 + Cx + Dy + E = 0$$

To convert to Standard, Complete the Square!

Ex:

$$x^2 + y^2 - 8x + 12y + 18 = 0$$

$$(x^2 + 8x + \underline{\quad}) + (y^2 + 12y + \underline{\quad}) = -18 + \underline{\quad} + \underline{\quad}$$

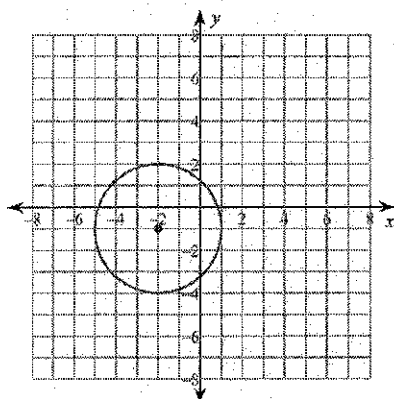
$$(x + 4)^2 + (y + 6)^2 = 34$$

Center:

Radius:

Graphing Circles: Plot Center, count out Radius Length in each direction

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



Important Formulas and How to Use them:

Distance: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Use to confirm side lengths are congruent.

Use to find the length of the radius.

Use to determine if a point is in, on our outside circle

Slope: $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$

Use to confirm that lines or side lengths are parallel (Same slope)

Use to confirm that lines or side lengths are perpendicular (opposite reciprocal slopes)

Use to find the slope of a line to put in Slope int. form.

Midpoint: $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$

Use to show that lines are bisecting each other.

Use to find the center of a circle if given the endpoints of the diameter.

Partitioning a Line Segment:

ratios are in the form of a:b

$$(x_1 + (x_2 - x_1) \frac{a}{a+b}, y_1 + (y_2 - y_1) \frac{a}{a+b})$$

Lines:

Put in the form of $y=mx+b$

M is the slope.

B is the y-int:

Find the equation: 1) the line parallel, 2) the line perpendicular to

$y=2x+7$ passing through (4,5)