

**Distance Formula, Midpoint and Circles, Perpendicular Bisector -
Handout/Worksheet**

1. **The distance formula:** The distance d between the points (x_1, y_1) and (x_2, y_2) is

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

2. Find the distance between the points $(-4, -2)$ and $(2, -5)$.

3. The **standard equation of a circle**, centered at (h, k) with radius r , is given by

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

where $r > 0$.

Note: If a circle is centered at the origin $(0, 0)$, then $h = 0$ and $k = 0$, and the equation simplifies to $x^2 + y^2 = r^2$.

4. Find the center and radius of the circle with equation $(x + 1)^2 + (y - 2)^2 = 9$. Then graph the circle.

5. Identify the center and radius of the circle given by the equation

$$x^2 + y^2 - 10x + 4y - 7 = 0$$

6. The **midpoint formula** is

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

7. Find the equation of the perpendicular bisector of the line joining the pair of points $\left(-2, \frac{7}{2}\right)$ and $\left(-5, -\frac{5}{2}\right)$.