Name _____ Date _____ Class _____

SKILL 73

Skills Readiness

Distance and Midpoint Formulas

Distance Formula	Midpoint Formula
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
Example: Find the length of the segment with endpoints (4, 3) and (−1, 1). Let (4, 3) be (x_1, y_1) and (−1, 1) be (x_2, y_2). $d = \sqrt{(-1 - 4)^2 + (1 - 3)^2} = \sqrt{(-5)^2 + (-2)^2}$ $= \sqrt{25 + 4} = \sqrt{29}$	Example: Find the midpoint of the segment with endpoints (4, 3) and (−1, 1). Let (4, 3) be (x_1, y_1) and (−1, 1) be (x_2, y_2). $M = \left(\frac{4 + -1}{2}, \frac{3 + 1}{2}\right) = \left(\frac{3}{2}, \frac{4}{2}\right) = \left(\frac{3}{2}, 2\right)$

Practice on Your Own

Find the length and the midpoint of the segment with the given endpoints.

1. $A(2, 3)$ and $B(5, 7)$

$M = (\quad , \quad)$, $d =$ _____

2. $C(1, -1)$ and $D(3, 2)$

$M = (\quad , \quad)$, $d =$ _____

3. $E(-5, 7)$ and $F(0, 2)$

$M = (\quad , \quad)$, $d =$ _____

4. $G(2, -3)$ and $H(-2, 5)$

$M = (\quad , \quad)$, $d =$ _____

5. $J(-4, -4)$ and $K(-2, 1)$

$M = (\quad , \quad)$, $d =$ _____

6. $L(-4, -3)$ and $M(0, 0)$

$M = (\quad , \quad)$, $d =$ _____

Check

Find the length and the midpoint of the segment with the given endpoints.

7. $A(2, -1)$ and $B(8, 7)$

$M = (\quad , \quad)$, $d =$ _____

8. $C(0, 2)$ and $D(5, -1)$

$M = (\quad , \quad)$, $d =$ _____

9. $E(-2, -5)$ and $F(1, -2)$

$M = (\quad , \quad)$, $d =$ _____

10. $G(3, -6)$ and $H(1, -2)$

$M = (\quad , \quad)$, $d =$ _____