Geometry - Clark

Name Answer key ID: 1

Midpoint and Distance Formulas

Date _____ Period ____

Find the midpoint of the line segment with the given endpoints.

1) $(-4, -2)$, $(3, 3)$

$x_m = \frac{x_1 + x_2}{2} = \frac{-4 + 3}{2} = \frac{-1}{2}$

$y_m = \frac{y_1 + y_2}{2} = \frac{-2 + 3}{2} = \frac{1}{2}$

$M\left(-\frac{1}{2}, \frac{1}{2}\right)$

2) $(-1, 0)$, $(-3, -4)$

$x_m = \frac{x_1 + x_2}{2} = \frac{-1 + -3}{2} = \frac{-4}{2} = -2$

$y_m = \frac{y_1 + y_2}{2} = \frac{0 + -4}{2} = \frac{-4}{2} = -2$

$M(-2, -2)$

Find the other endpoint of the line segment with the given endpoint and midpoint.

3) Endpoint: $(-5, 4)$, midpoint: $(-10, -6)$

$x_m = \frac{x_1 + x_2}{2}$ $\quad y_m = \frac{y_1 + y_2}{2}$

$-10 = \frac{-5 + x_2}{2}$ $\quad -6 = \frac{4 + y_2}{2}$

$-20 = -5 + x_2$ $\quad -12 = 4 + y_2$

$-15 = x_2$ $\quad -16 = y_2$

Endpoint $(-15, -16)$

4) Endpoint: $(-8, 8)$, midpoint: $(5, -3)$

$x_m = \frac{x_1 + x_2}{2}$ $\quad y_m = \frac{y_1 + y_2}{2}$

$5 = \frac{-8 + x_2}{2}$ $\quad -3 = \frac{8 + y_2}{2}$

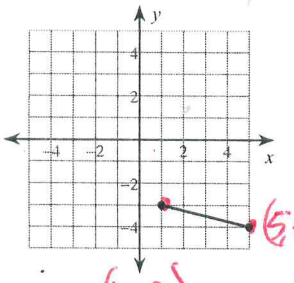
$10 = -8 + x_2$ $\quad -6 = 8 + y_2$

$18 = x_2$ $\quad -14 = y_2$

Endpoint $(18, -14)$

Find the midpoint of each line segment.

5)



$(5, -4)$

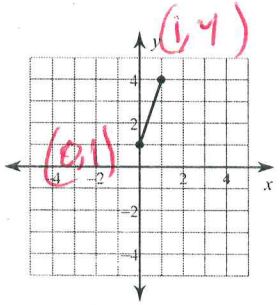
$(1, -3)$

$x_m = \frac{x_1 + x_2}{2} = \frac{1 + 5}{2} = \frac{6}{2} = 3$

$y_m = \frac{y_1 + y_2}{2} = \frac{-3 + -4}{2} = \frac{-7}{2}$

Midpoint $\left(3, -\frac{7}{2}\right)$

6)



$(1, 4)$

$(0, 1)$

$x_m = \frac{x_1 + x_2}{2} = \frac{0 + 1}{2} = \frac{1}{2}$

$y_m = \frac{y_1 + y_2}{2} = \frac{1 + 4}{2} = \frac{5}{2}$

$M\left(\frac{1}{2}, \frac{5}{2}\right)$