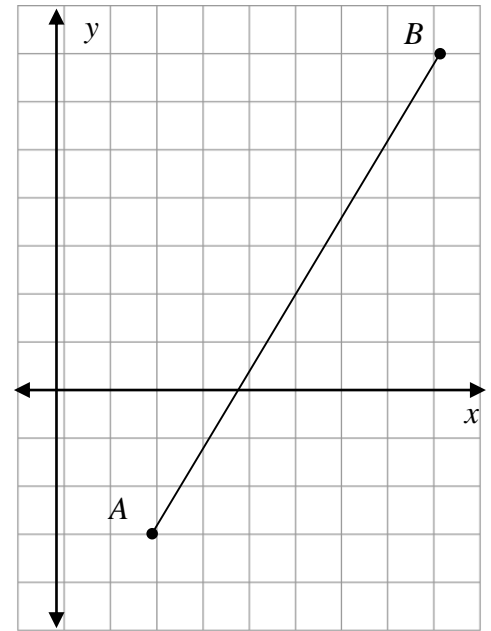


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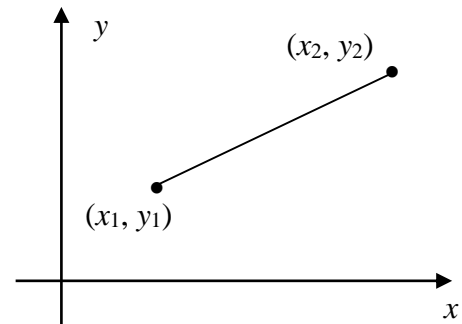
Date _____

Geometry Notes CG - 7: Midpoint Formula

Ex: What is the midpoint of \overline{AB} with $A(2, -3)$ and $B(8, 7)$?



Midpoint Formula

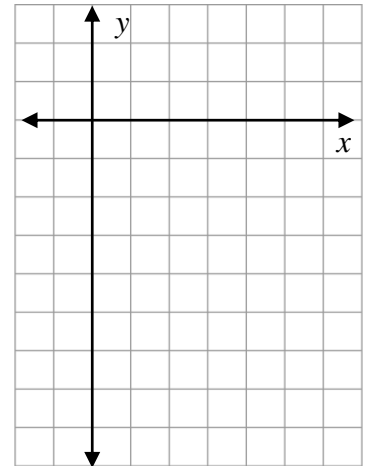


Ex: Find the midpoint of \overline{RS} if $R(a, a + 2)$ and $S(3a, a - 8)$.

Ex: Find the coordinates of $N(x, y)$ if $M(2, -3)$ is the midpoint of \overline{LN} and L has coordinates $(-1, 2)$.

1. Graphically

2. Algebraically



Summary of Formulas

1. Distance:

Answer:

2. Slope:

Answer:

3. Midpoint:

Answer:

Name: _____

Date _____

Geometry HW: CG - 7

1. Find the coordinates of the midpoint of the segment that joins each pair of points:
 - a. $(6, 8)$ and $(4, 10)$
 - b. $(58, -65)$ and $(-12, 94)$
 - c. $(5a, 2b)$ and $(a, 8b)$

2. $M(7, 4)$ is the midpoint of \overline{CD} . If the coordinates of C are $(4, 6)$, find the coordinates of D .

3. The midpoint of \overline{PQ} is $M(-1, 6)$. The coordinates of P are (x, y) and the coordinates of Q are $(x + 8, -3y)$. Find the values of x and y .

4. Segment \overline{AB} has $A(-2, 8)$ and $B(10, -2)$. Find the coordinates of point Q on \overline{AB} such that $AQ = \frac{1}{4}AB$.

- 5a. Give an appropriate conclusion for each of the following.
 - 1) \overline{AB} bisects \overline{CD} at M
 - 2) \overline{CD} bisects \overline{AB} at M

- b. Which of the conclusions from part (a) would be true if \overline{AB} and \overline{CD} bisect each other at M ?

6. Segment \overline{AB} has endpoints $A(1, 2)$ and $B(7, 4)$. Find the equation of the perpendicular bisector of \overline{AB} .

7. Verify using coordinate geometry that the line l with equation $y = \frac{3}{2}x + 2$ is the perpendicular bisector of the segment \overline{AB} with endpoints $A(-1, 7)$ and $B(5, 3)$. (Note: this problem has two separate parts: *perpendicular* and *bisector*. Proving one does not automatically prove the other.)