

Name: \_\_\_\_\_ ( ) Class: \_\_\_\_\_ Date: \_\_\_\_\_

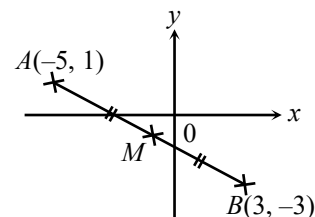
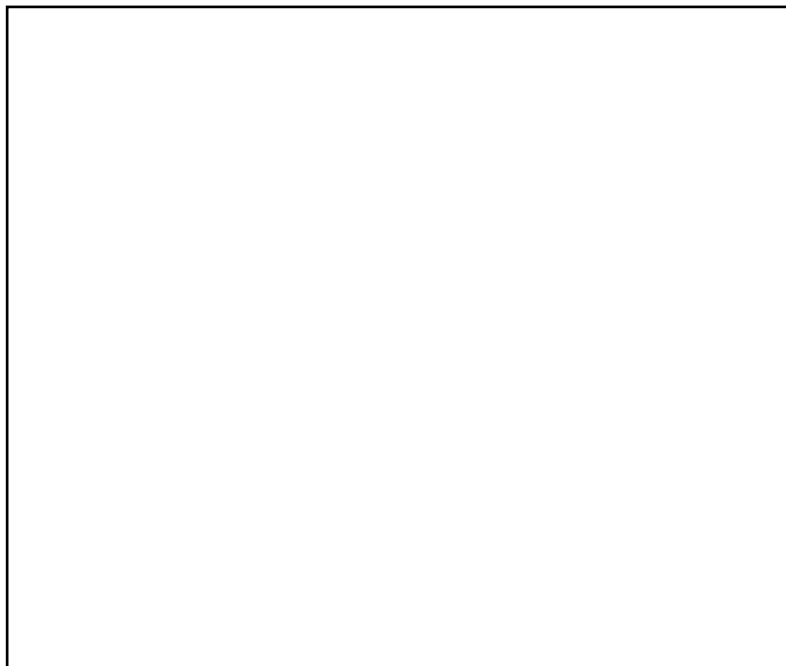
## Worksheet 10.4

Objective: To apply the mid-point formula.

If  $M(x, y)$  is the mid-point of the line segment joining the points  $A(x_1, y_1)$  and  $B(x_2, y_2)$ , then

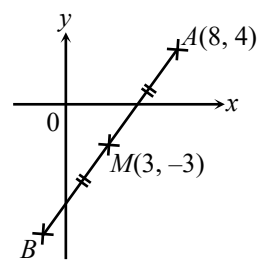
$$x = \frac{x_1 + x_2}{2} \quad \text{and} \quad y = \frac{y_1 + y_2}{2}$$

1. In the figure,  $M$  is the mid-point of the line segment joining  $A(-5, 1)$  and  $B(3, -3)$ . Find the coordinates of  $M$ .



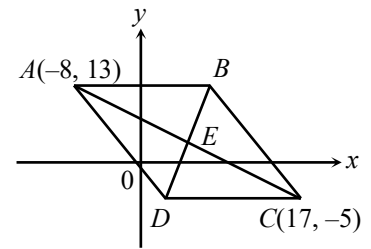
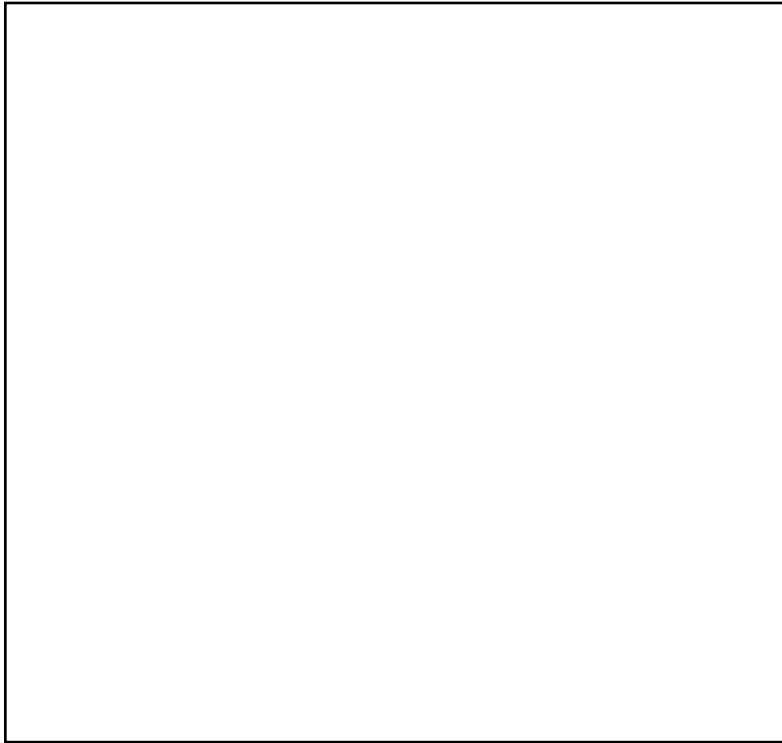
Use the mid-point formula to find the coordinates of  $M$ .

2. In the figure,  $M$  is the mid-point of the line segment  $AB$ . The coordinates of  $A$  and  $M$  are  $(8, 4)$  and  $(3, -3)$  respectively. Find the coordinates of  $B$ .



Set up equations by using the mid-point formula.

3. In the figure,  $ABCD$  is a parallelogram. The diagonals  $AC$  and  $BD$  intersect at  $E$ . The coordinates of  $A$  and  $C$  are  $(-8, 13)$  and  $(17, -5)$  respectively. Find the coordinates of  $E$ .



Is  $E$  the mid-point of  $AC$ ?

Try More

4. In the figure,  $ABCD$  is a parallelogram. The diagonals  $AC$  and  $BD$  intersect at  $E$ . The coordinates of  $A$ ,  $B$  and  $C$  are  $(-7, -6)$ ,  $(-1, 2)$  and  $(1, -8)$  respectively.
- (a) Find the coordinates of  $E$ .
- (b) Using the result of (a), find the coordinates of  $D$ .

