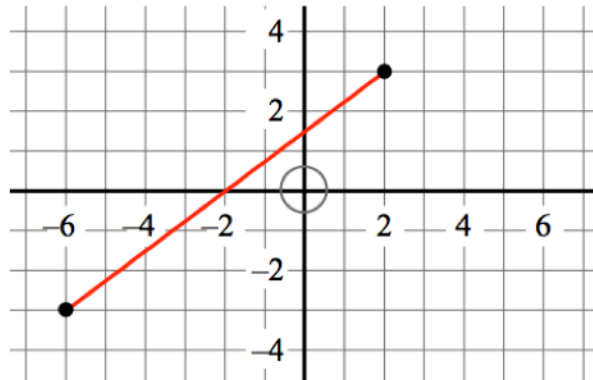## LINE SEGMENTS
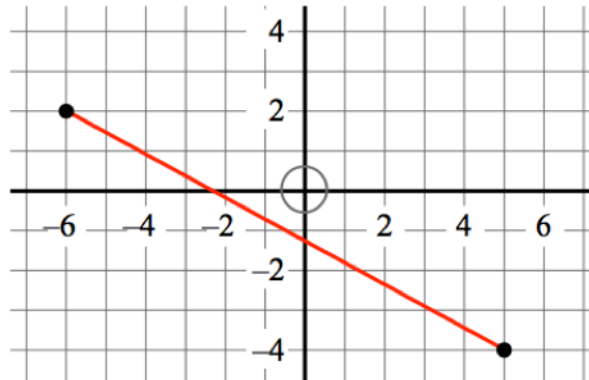### MID-POINTS

Ref: G2B1. **5E1**

A1 Find the coordinates of the midpoint of the line:

A2 Find the coordinates of the midpoint of the line:

A3 Point A has coordinates $(-3, 1)$ and point B has coordinates $(9, -5)$

Find the midpoint of AB.

B1 The midpoint of CD is $(-3, 3)$

Point D has coordinates $(4, 9)$

Find the coordinates of point C.

B2 Point P has coordinates $(1, 6)$
point Q has coordinates $(7, 3)$
point R has coordinates $(13, 13)$
M is the midpoint of PQ
N is the midpoint of PR
Find the midpoint of MN.

B3 EF is a straight line.
Point E has coordinates $(2, 2)$
Point F has coordinates $(14, 11)$
X is the point on EF such that $EX:XF = 2:1$
Find the coordinates of point X.
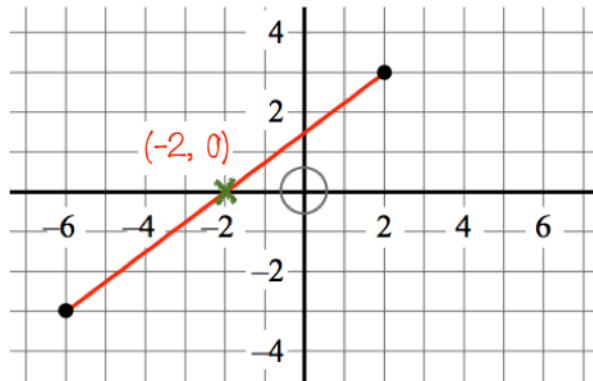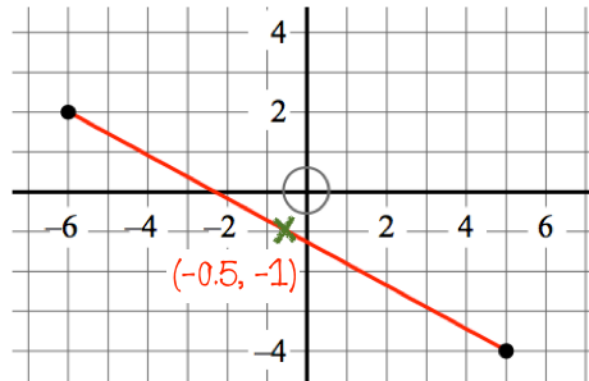

EXTEND

LINE SEGMENTS
MID-POINTS

Note that there are several different methods that can be used to get the midpoint – I choose different methods for different types of question.

Ref: G2B1.**5E1**

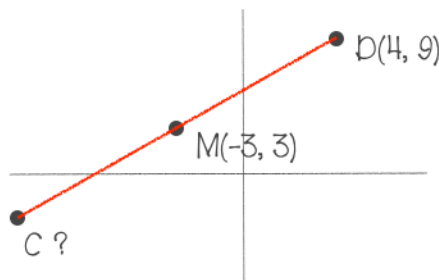**A1** Find the coordinates of the midpoint of the line:

$(-2, 0)$

A2 Find the coordinates of the midpoint of the line:

$(-0.5, -1)$

A3 Point A has coordinates $(-3, 1)$ and point B has coordinates $(9, -5)$

Find the midpoint of AB.
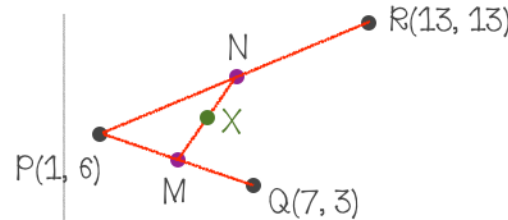
$$\left(\frac{-3+9}{2}, \frac{1+ -5}{2}\right) = (3, -2)$$

B1 The midpoint of CD is $(-3, 3)$
  Point D has coordinates $(4, 9)$
  Find the coordinates of point C.

C is point $(-3-7, 3-6) = (-10, -3)$

B2 Point P has coordinates $(1, 6)$
  point Q has coordinates $(7, 3)$
  point R has coordinates $(13, 13)$
  M is the midpoint of PQ
  N is the midpoint of PR
  Find the midpoint of MN.

$N = (7, 9.5)$, $M = (4, 4.5)$, so $X = (5.5, 7)$

B3 EF is a straight line.
  Point E has coordinates $(2, 2)$
  Point F has coordinates $(14, 11)$
  X is the point on EF such that $EX:XF = 2:1$
  Find the coordinates of point X.

$X = (10, 8)$