

FINDING THE MIDPOINT

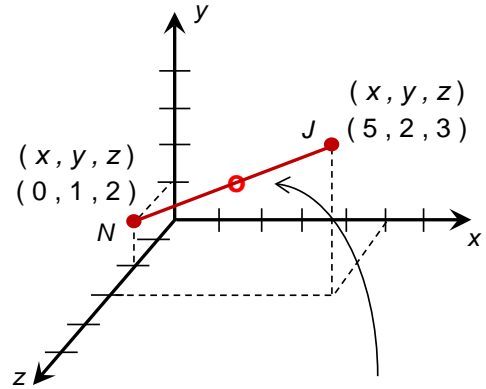
Helpful Example

THE MIDPOINT FORMULA HELPS US FIND THE MIDPOINT. ALL YOU NEED TO DO IS ADD THE COORDINATES AND DIVIDE THEM BY TWO. IT IS LIKE FINDING THE AVERAGE OF THE TWO POINTS.

IN THREE DIMENSIONAL SPACE YOU WILL NEED TO FIND THE AVERAGE OF THE X-VALUES, THE Y-VALUES, AND THE Z-VALUES.

Midpoint Formula

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}, \frac{z_1 + z_2}{2} \right)$$



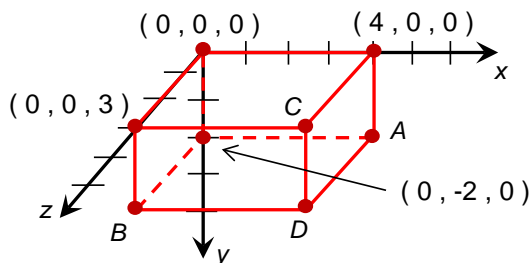
ANSWERS

	Add	Divide by 2	Midpoint
$\begin{array}{l} \text{Point J: } (5, 2, 3) \\ \text{Point N: } (0, 1, 2) \end{array}$	$\begin{array}{r} \begin{array}{ccc} x & y & z \\ (5, & 2, & 3) \\ + & (0, & 1, & 2) \\ \hline (5, & 3, & 5) \end{array} \end{array}$	$\begin{array}{r} \begin{array}{ccc} x & y & z \\ (5 & 3 & 5) \\ (2, & 2, & 2) \end{array} \end{array}$	$\begin{array}{r} \begin{array}{ccc} x & y & z \\ (2.5, & 1.5, & 2.5) \end{array} \end{array}$

Now your turn. Find the midpoints for the given coordinates.

- Point H: (13, -5)
Point Y: (-2, -2)
(5.5, -3.5)
- Point M: (0, 10)
Point Z: (9, 14)
(4.5, 12)
- Point U: $(-4\frac{2}{5}, -6)$
Point X: $(7, 11\frac{3}{8})$
 $(1\frac{3}{10}, 2\frac{11}{16})$
- Point D: (3.5, -5.1)
Point J: (-16, -1.4)
(-6.25, -3.25)
- Point A: $(-\frac{5}{9}, 27)$
Point B: $(-\frac{1}{2}, 40)$
 $(-\frac{19}{36}, 33\frac{1}{2})$
- Point P: (4.7, -1.2)
Point R: (-8, 9.4)
(-1.65, 4.1)
- Point W: (15.2, 31)
Point Y: (12, 44.1)
(13.6, 37.55)
- Point C: (-19, -14)
Point F: (-3, -28)
(-11, -21)
- (2, 3, 13.5)**
- (-3.5, -0.5, -8)**
- (5.5, -6.5, 4.5)**
- (10.5, 11, -2.5)**
- (-12.5, -7.5, 0)**
- (8.5, 12, 8)**

Use the 3-demisional graph to find the midpoints.



- Find the midpoint of \overline{AC} .
(4, -1, 1.5)
- What is the midpoint of the line segment connecting point B to the midpoint of \overline{AC} ?
(2, -1.5, 2.5)