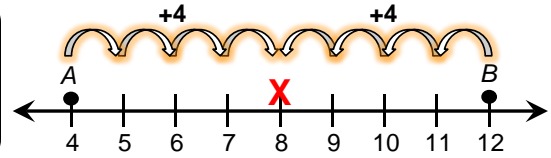


INTRODUCTION TO FINDING THE MIDPOINT

ANSWERS



SOMETIMES YOU WILL NEED TO FIND THE MIDDLE OF TWO POINTS OR CUT A LINE SEGMENT EXACTLY IN HALF. THIS IS CALLED THE **MIDPOINT**. THE MIDPOINT IS HALFWAY BETWEEN TWO POINTS. TAKE A LOOK AT THE EXAMPLE TO THE RIGHT.



THIS PROBLEM IS A LITTLE EASIER BECAUSE YOU CAN VISUALIZE THE HALFWAY POINT. YOU CAN SEE THAT 8 IS EXACTLY THE SAME DISTANCE FROM 4 AND 12. IT IS THE MIDPOINT BECAUSE IT IS 4 SPACES AWAY FROM EACH POINT.



BUT YOU CANNOT ALWAYS SEE THE MIDPOINT. THE MIDPOINT FORMULA HELPS US FIND THE MIDPOINT WITHOUT USING A GRAPH. IT'S ACTUALLY THE SAME AS FINDING THE AVERAGE OF TWO POINTS. CHECK OUT THE EXAMPLE BELOW. IT USES THE SAME TWO POINTS AS ABOVE.

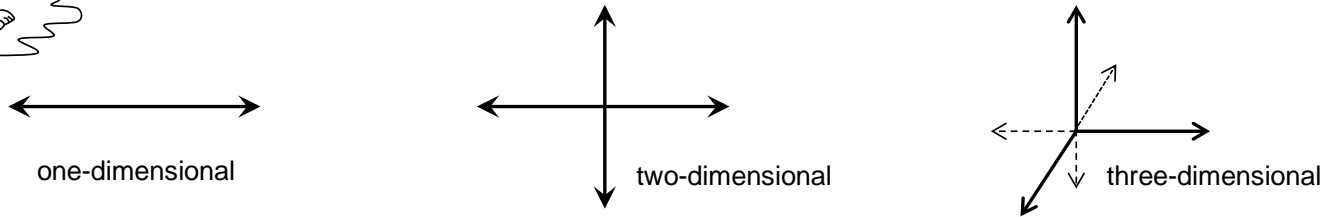
Point A: 4
Point B: 12

$$(4 + 12) \div 2 = 16 \div 2 = 8$$

YOU JUST ADD THE TWO NUMBERS AND DIVIDE BY TWO, AND YOU WILL GET THE SAME ANSWER AS ABOVE...8.



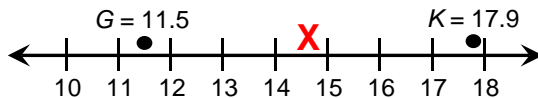
THE MIDPOINT FORMULA WORKS ON ANY TWO POINTS, WHICH MEANS THE POINTS COULD BE IN TWO-DIMENSIONAL OR EVEN THREE-DIMENSIONAL SPACE. BUT FOR NOW, LETS JUST STICK WITH POINTS ON A ONE-DIMENSIONAL NUMBER LINE SO WE CAN BETTER UNDERSTAND THE PROCESS.



Now your turn. Find the midpoint for each of the two points.

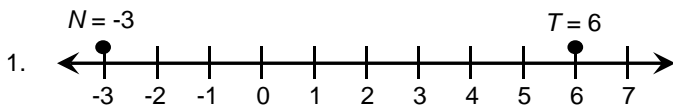
HELPFUL EXAMPLE

Point G: 11.5
Point K: 17.9

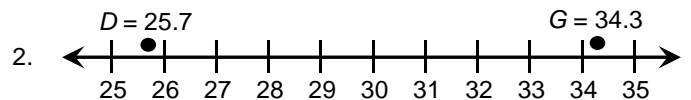


$$(11.5 + 17.9) \div 2 = (29.4) \div 2 = 14.7$$

IT IS TOO DIFFICULT TO SEE THE EXACT MIDPOINT OF THE TWO POINTS, SO WE WILL NEED TO USE THE MIDPOINT FORMULA. ADD THE TWO POINTS AND THEN DIVIDE BY TWO. THE MIDPOINT IS 14.7.



1.5



30

3. Point A: 18
Point B: 81

49.5

4. Point H: -12
Point Y: -5

-8.5

5. Point C: $2\frac{1}{4}$
Point F: $3\frac{1}{2}$

$2\frac{7}{8}$

6. Point W: 14.6
Point Y: 6.5

10.55

7. Point U: $6\frac{2}{3}$
Point X: $4\frac{1}{6}$

$5\frac{5}{12}$

8. Point D: -9
Point J: 10

0.5

9. Point M: 7.4
Point Z: 13.3

10.35

10. Point P: -23
Point R: -3

-13