Lesson 1.5 Weighted Averages

Sunday, September 15, 2024 11:13 PM

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Lesson 1.5 Locating P...

Lesson 1.5 Locating Points Using Weighted Averages

Workbook pages 42-48

Content Objective

Students will locate points on a number line and a coordinate plane by using weighted averages.

MA.912.GR.3.1

Determine the weighted average of two or more points on a line.

MA.912.GR.3.3

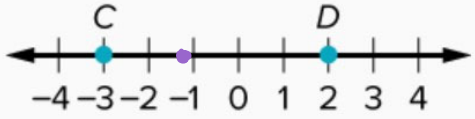
Use coordinate geometry to solve mathematical and real-world geometric problems involving lines, circles, triangles and quadrilaterals.

Example 1: Find a Weighted Average on a Number Line

Find the coordinate of P that represents the weighted average for each set of points with the given conditions.

a. Enter your answers.

Point C weighs twice as much as point D.



$-6 + 2 = \frac{-4}{2}$

−4 −3 −2 −1 0 1 2 3 4

$-1\frac{1}{3}$

$\frac{-6+2}{2+1} = \left(\frac{-4}{3}\right)$

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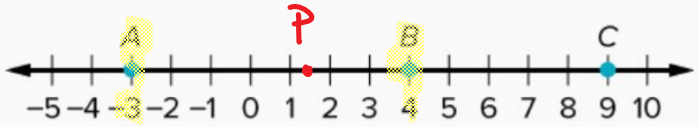
Example 1 Check

Find the coordinate of P that represents the weighted average for the point, based on the given conditions.



Point A has a weight of 2, and point B has a weight of 3.

-3 (2) and 4 (3)

$\frac{-6+12}{2+3}$

$\frac{6}{5} = 1\frac{1}{5}$

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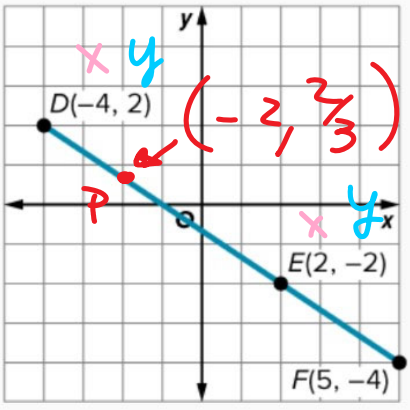
Example 2: Find a Weighted Average on the Coordinate Plane

Find the coordinate of P that represents the weighted average for the point, based on the given conditions.



$(-2, \frac{2}{3})$

-4 (2) and 2 (1)

2 (2) and -2 (1)

$\frac{-8+2}{2+1} = \frac{-6}{3}$

$x = -2$

$\frac{4-2}{2+1} = \frac{2}{3}$

$y = 2/3$

Point D weighs twice as much as point E.

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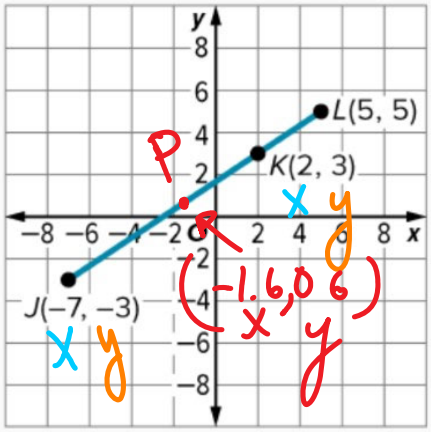
Example 2 Check

Find the coordinate of P that represents the weighted average for the point, based on the given conditions.



Point J

Point K

$\frac{-14+6}{2+3} = \frac{-8}{5}$

$x = -1.6$

Point J

Point K

$\frac{-6+9}{2+3} = \frac{3}{5}$

$y = 0.6$

Point J has a weight of 2, and point K has a weight of 3.

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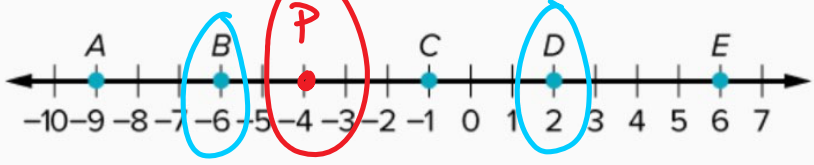
Practice

1. Use the number line to find the coordinate of P that represents the weighted average of each set of points with the given conditions. (Example 1)



Point B

Point D

$\frac{-18+2}{3+1} = \frac{-16}{4} = -4$

Point B weighs three times as much as point D.

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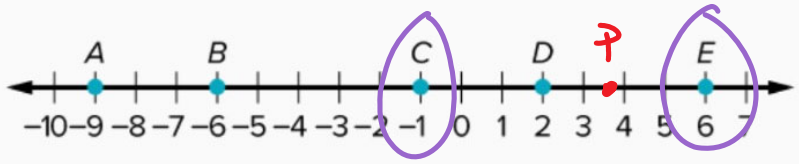
2. Use the number line to find the coordinate of P that represents the weighted average of each set of points with the given conditions. (Example 1)



Point C has a weight of 3, and point E has a weight of 5.

C E
−1 6
3 5

$\frac{-3+30}{3+5} = \frac{27}{8}$

3.375

Mc Graw Hill

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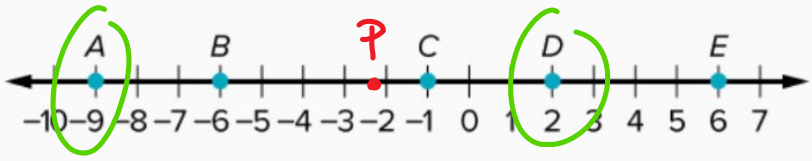
3. Use the number line to find the coordinate of P that represents the weighted average of each set of points with the given conditions. (Example 1)



Point A has a weight of 2, and point D has a weight of 3.

A D
−9 2
2 3

$\frac{-18+6}{2+3} = \frac{-12}{5}$

−2.4

Mc Graw Hill

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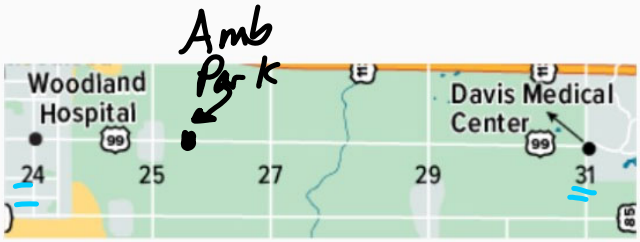
9. AMBULANCE

Some ambulances use weighted averages to find where to park between cities. The weight of a hospital is determined by the average number of emergent patients that

weight of a hospital is determined by the average number of emergent patients that need to be taken to the hospital on a daily basis. (Example 3)



$\frac{31+96}{1+4} = \frac{127}{5} = 25.4$

a. The Davis Medical Center usually has a weight 4 times that of Woodland Hospital. Where should the ambulance park?

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