## Unit 6 Lesson 15: Weighted Averages

### 1 Part Way: Points (Warm up)

#### Student Task Statement

For the questions in this activity, use the coordinate grid if it is helpful to you.



1. What is the midpoint of the segment connecting $\left(1,2\right)$ and $\left(5,2\right)$?
2. What is the midpoint of the segment connecting $\left(5,2\right)$ and $\left(5,10\right)$?
3. What is the midpoint of the segment connecting $\left(1,2\right)$ and $\left(5,10\right)$?

#### Activity Synthesis



### 2 Part Way: Segment

#### Images for Launch



#### Student Task Statement

Point $A$ has coordinates $\left(2,4\right)$. Point $B$ has coordinates $\left(8,1\right)$.



1. Find the point that partitions segment $AB$ in a $2:1$ ratio.
2. Calculate $C=\frac{1}{3}A+\frac{2}{3}B$.
3. What do you notice about your answers to the first 2 questions?
4. For 2 new points $K$ and $L$, write an expression for the point that partitions segment $KL$ in a $3:1$ ratio.

#### Activity Synthesis



### 3 Part Way: Quadrilateral

#### Student Task Statement

Here is quadrilateral $ABCD$.



1. Find the point that partitions segment $AB$ in a $1:4$ ratio. Label it $B^{′}$.
2. Find the point that partitions segment $AD$ in a $1:4$ ratio. Label it $D^{′}$.
3. Find the point that partitions segment $AC$ in a $1:4$ ratio. Label it $C^{′}$.
4. Is $AB^{′}C^{′}D^{′}$ a dilation of $ABCD$? Justify your answer.

#### Images for Activity Synthesis





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