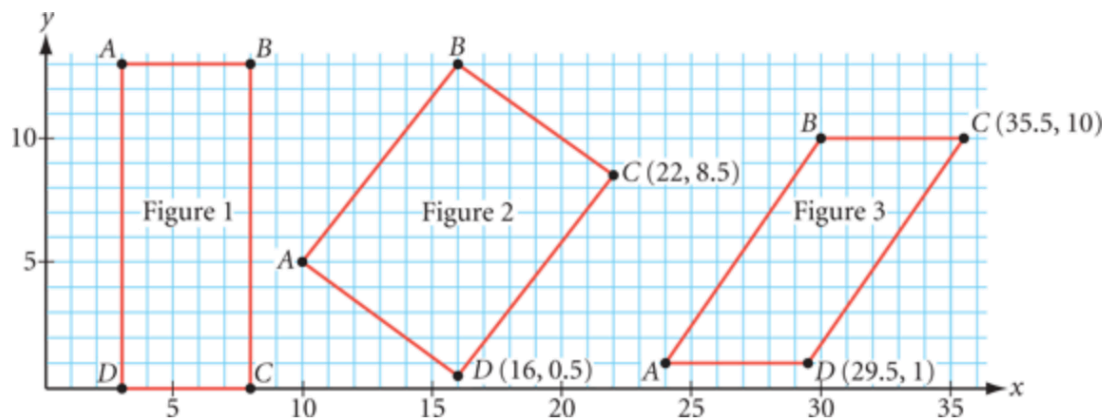


Honors

Geometry HW 9/13, due 9/16 *Please show all work to receive full credit. Use the solutions as a guide to check your work.

- One endpoint of a segment is $(12, -8)$. The midpoint is $(3, 18)$. Find the coordinates of the other endpoint.
- A classmate tells you, "Finding the coordinates of a midpoint is easy. You just find the averages." Is there any truth to it? Explain what you think your classmate means.
- Find the two points on \overline{AB} that divide the segment into three congruent parts. Point A has coordinates $(0, 0)$ and point B has coordinates $(9, 6)$. Explain your method.
- Describe a way to find points that divide a segment into fourths.
- In each figure below, imagine drawing the diagonals \overline{AC} and \overline{BD} .
 - Find the midpoint of \overline{AC} and the midpoint of \overline{BD} in each figure.
 - What do you notice about the midpoints?
- How many midpoints does a segment have? Explain your reasoning.
- How many segments have the midpoint $(2, -3)$? Explain your reasoning.



- $(-6, 44)$
- $(3, 2)$ and $(6, 4)$. To get the first point of trisection, sum the coordinates of points A and B to get $(9, 6)$, then multiply those coordinates by $1/3$ to get $(3, 2)$. To get the second point of trisection, sum the coordinates of points A and B to get $(9, 6)$, then multiply those coordinates by $2/3$ to get $(6, 4)$. This works because the coordinates of the first point are $(0, 0)$.
- See graphs. For these figures the midpoints of the two diagonals are the same point. $AC : (5.5, 6.5)$ $BD : (5.5, 6.5)$; $AC : (16, 6.75)$, $BD : (16, 6.75)$; $AC : (29.75, 5.5)$ $BD : (29.75, 5.5)$

*For #5 and #7 you should be able to come up with your own explanations.