Problem 1 – Midpoints of Horizontal or Vertical Segments

On page 1.3, predict the coordinates of the midpoints of the segment.

Endpoints	Predicted Midpoint
(_____ , _____) and (_____ , _____)	(_____ , _____)
(_____ , _____) and (_____ , _____)	(_____ , _____)

Describe how you can predict the coordinates of the midpoint of a horizontal or vertical segment.

Problem 2 – Midpoints of Diagonal Segments

On page 2.2, make a predication about the coordinates of the midpoint of the segment.

Endpoints	Predicted Midpoint
(_____ , _____) and (_____ , _____)	(_____ , _____)
(_____ , _____) and (_____ , _____)	(_____ , _____)

Describe how you can predict the coordinates of the midpoint of a diagonal segment.

Apply The Math

What formula gives the midpoint of a segment with endpoints (x_1, y_1) and (x_2, y_2)?

Determine the midpoint of a segment with the following endpoints:

1. (3, 10) and (5, 10)

2. (1, 8) and (8, 9)

3. (7, 2) and (4, 4)

4. (–2, 3) and (5, –7)

5. (1.8, 4.9) and (7.2, 2.7)

6. (–3.3, 5.5) and (–5.5, 3.3)

Given an endpoint and midpoint of a segment, find the other endpoint:

7. Endpoint: (3, 1); Midpoint: (3, 4)

8. Endpoint: (2, 5); Midpoint: (5, 6)

9. Endpoint: (–4, 3); Midpoint: (1, 0)

Extension – Trisection Points

On page 3.2, segment *PQ* has two trisection points, which divide $\overline{PQ}$ into 3 equal parts. Drag *P* or *Q* to change the segments location. Find the coordinates of the endpoints and then make a prediction about the coordinates of the trisection points.

Endpoints	Predicted Trisection Points
(_____ , _____) and (_____ , _____)	(_____ , _____) and (_____ , _____)
(_____ , _____) and (_____ , _____)	(_____ , _____) and (_____ , _____)

Describe how you can predict the coordinates of the trisection points of a segment.