For each of the following pairs of points:

- Graph the ordered pair and draw the segment formed by the two points and extend the segment to form a line
- Draw the right triangle that helps you to find the distance between the two points, and use it to find the slope of the line
- Use the slope and the endpoints to find two more points that will be on the line. Put the points into the chart, and show that both $\Delta y$ and $\Delta x$ are constant.
- Circle one of the points in your chart, and label that point $(x_1, y_1)$
- Write a statement about how the change in $y$ corresponds to the change in $x$
- In the 5th place on the chart, put in the generic point on the line, $(x, y)$ Show the calculations that result because the slope is constant; $\frac{\Delta y}{\Delta x} = \frac{y - y_1}{x - x_1}$ where $(x_1, y_1)$ is the point you labeled above.
- Use Algebra to simplify the equation $\frac{\Delta y}{\Delta x} = \frac{y - y_1}{x - x_1}$ , so that it is of the form $ax + by = c$.
- Solve that equation for $x = 0$ and for $y = 0$, and record those points in the chart
- Graph those points on the grid; they should be the $x$ and $y$- intercepts of the line

Example: $(-4, \ 7) \ and \ (6, -2)$
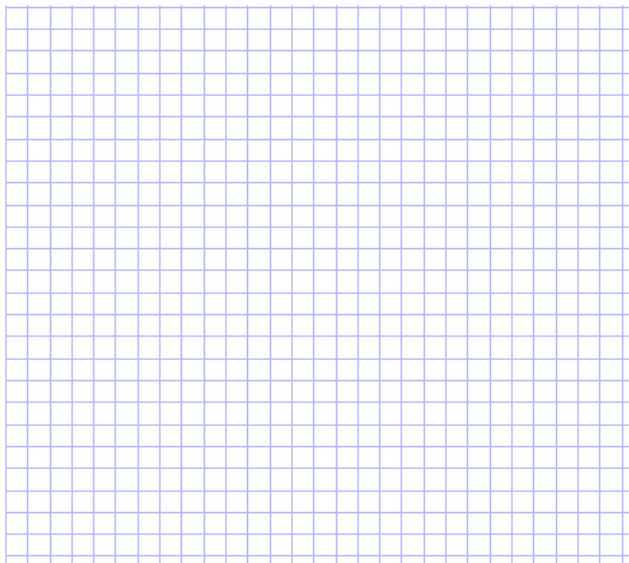
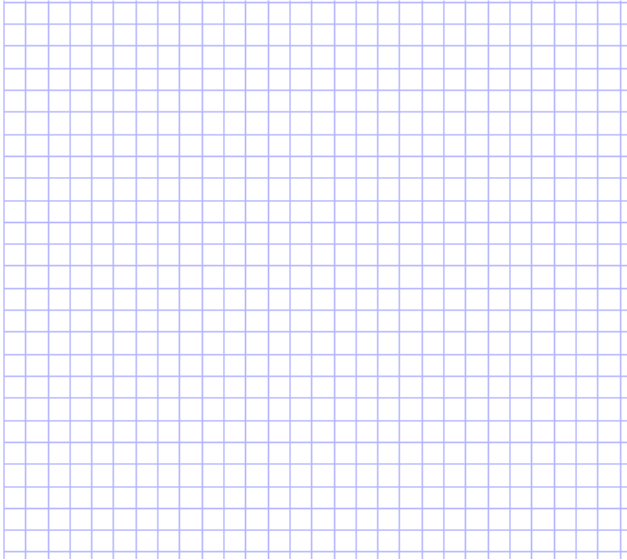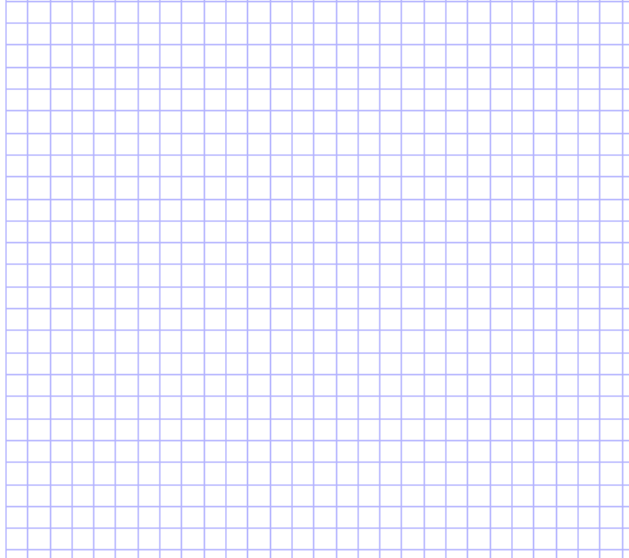| $x$ | $y$ |
|-----|-----|
|     |     |
|     |     |
|     |     |
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$$\frac{\Delta y}{\Delta x}$$

Use the format modeled above for the rest of your problems.  To receive full credit you must justify your work.
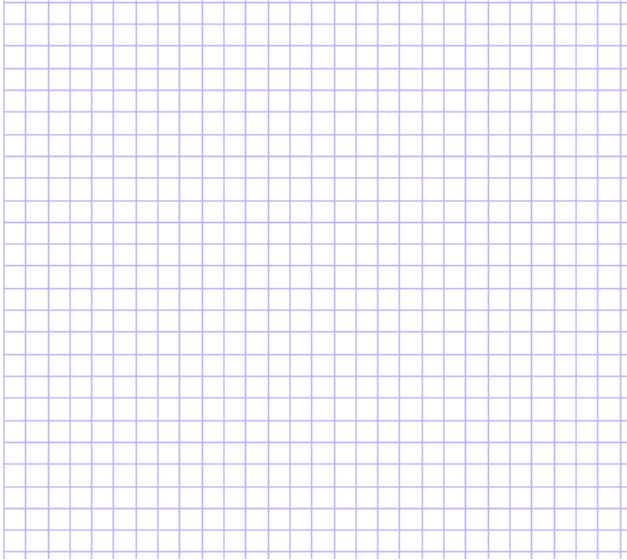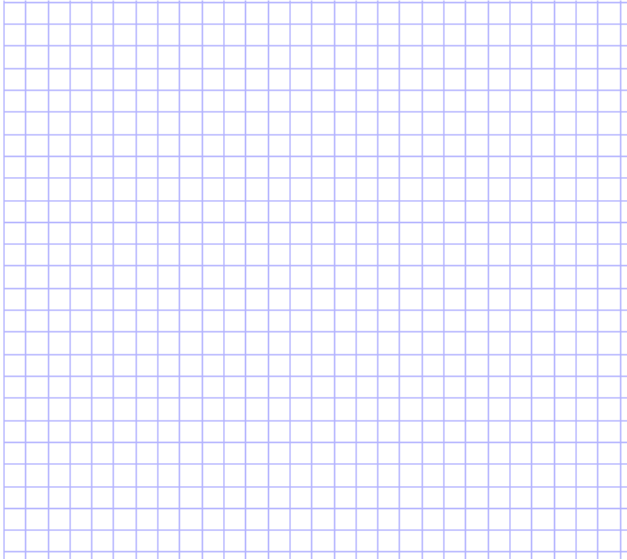
1)  $(2,\ 5)\ and\ (6, 13)$
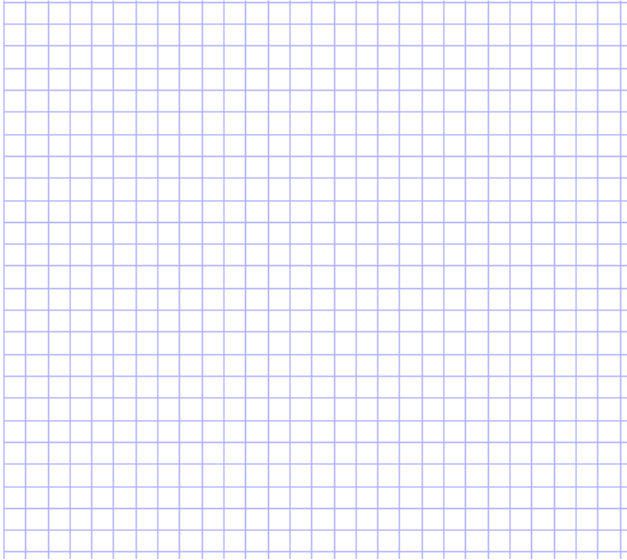
2)  $(2, -4)$ $and$ $(-3,\ 7)$
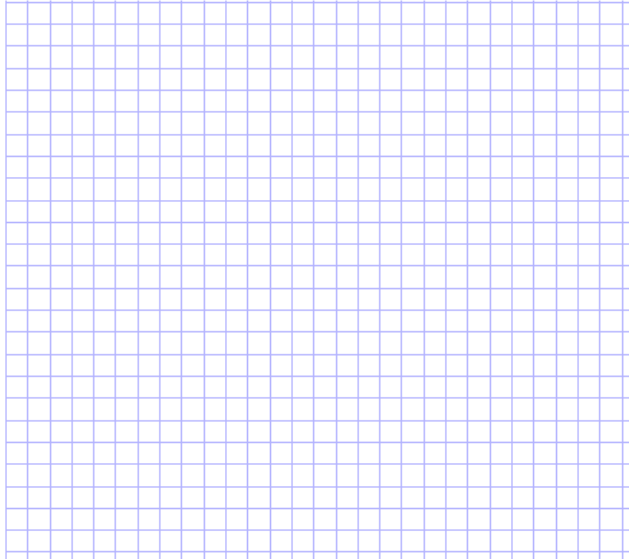
3)  $(-4,\ 5)\ and\ (6,5)$
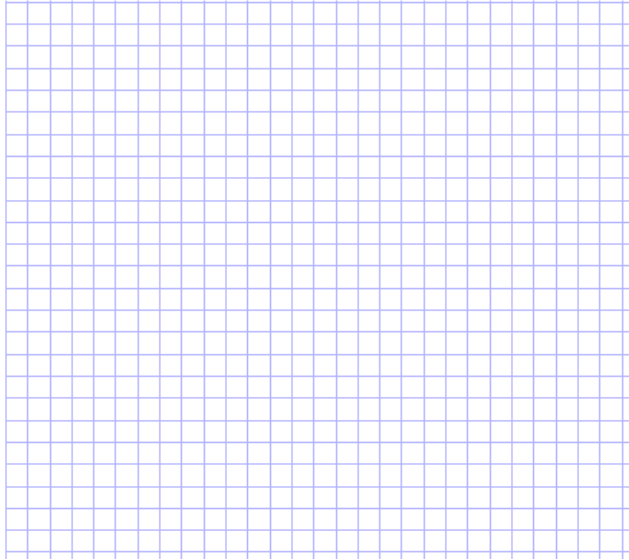
4) $(13,\ 5)\ and\ (-2, 13)$
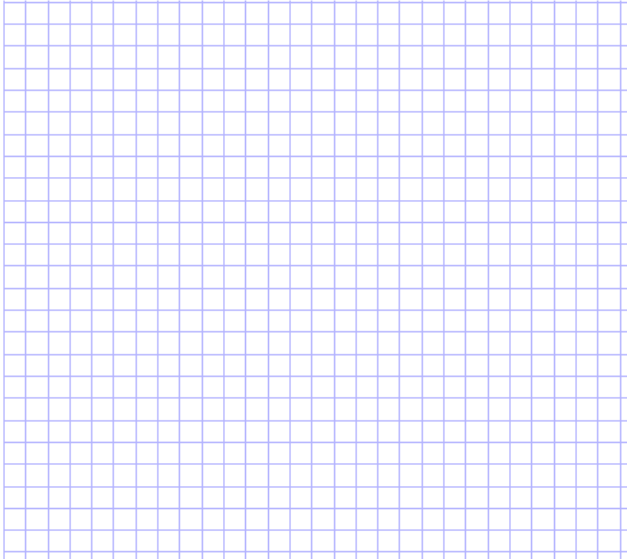
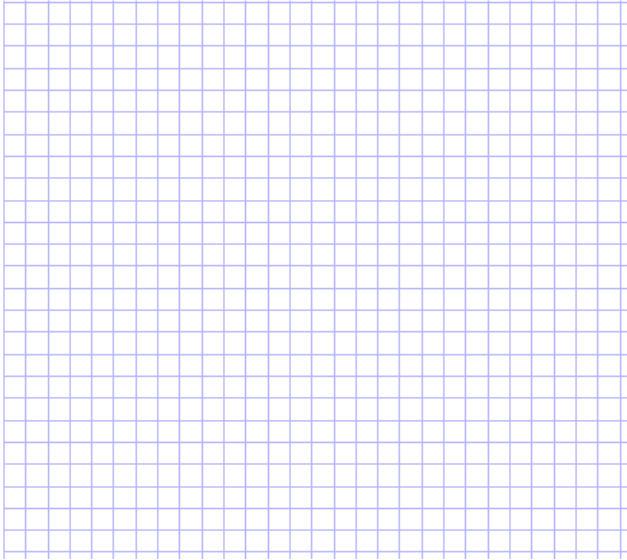5) $(5,\ 5)\ and\ (-4,-8)$

6)  $(2,\ 5)\ and\ (2,13)$

7)  $(-6, -3)$ $and$ $(-12, -2)$

8)  $(0,\ 5)\ and\ (6, 0)$

9)  $(-3,\ 7)\ and\ (-3,0)$

10)$(8, -5)$ $and$ $(10, 10)$