The rules of the game:

• The game will only accept coordinates in whole numbers.

• The last two coordinates of the asteroid’s center were (13, 12) and (10, 9) and it is currently at (7, 6). It will continue at a constant rate on this linear path.

• The spaceship must move on a linear path with a positive slope, and it must move at a constant rate.

• The maximum move of the spaceship is 5 units in any direction.

• Your ship’s coordinates should correspond to its “nose” currently at (1, 1).
Math in Videogames: Take the Challenge

Name: ______________________________ Date: __________________

Solving the Challenge: Use the coordinate graph on the next page to plot all points.

1. **What is your mission?** What do you need to figure out to complete it?

2. **Identify the path of the asteroid.**
   a. Use the graph on the next page to plot the points you know. The last two coordinates of the asteroid’s center were (13, 12) and (10, 9) and it is currently at (7, 6).
   b. The asteroid will continue at a constant rate on this linear path. Plot the next three points to show the location of the asteroid, and then write the coordinates in the chart below the graph.
   c. What is the rate of change (known as “slope”) of the asteroid’s path? Explain how you know in the space below. (*Helpful hint: Draw a line on the graph to see the path.*)
   d. Write an expression or equation to represent the asteroid’s linear path.

3. **Plan a path for your spaceship, making sure to follow the rules of the game.**
   a. Plot the current location of the ship (1,1) on the graph.
   b. Choose at least the next two moves for your ship and plot them on the graph. Write the coordinates of your moves in the chart below the graph.
   c. What is the rate of change (known as “slope”) of the ship’s path? Explain how you know in the space below. (*Helpful hint: Draw a line on the graph to see the path.*)
   d. Write an expression or equation to represent the ship’s linear path.
Math in Videogames: Take the Challenge

Name: ______________________________ Date: ________________

Plot the coordinates and paths of both the asteroid and spaceship using the graph below:

WRITE YOUR COORDINATES BELOW:

<table>
<thead>
<tr>
<th>Last Move:</th>
<th>Asteroid (7, 6)</th>
<th>Spaceship (1, 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next Move to:</td>
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<td>Next Move to:</td>
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<tr>
<td>Next Move to:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Explain the strategy/plan you used to avoid the collision.

5. Was your plan to avoid a collision successful? Why or why not?

6. Is there only one path to avoid a collision? How do you know? Explain your reasoning.