Name _____ Date _____

1. Give the coordinates of each point.

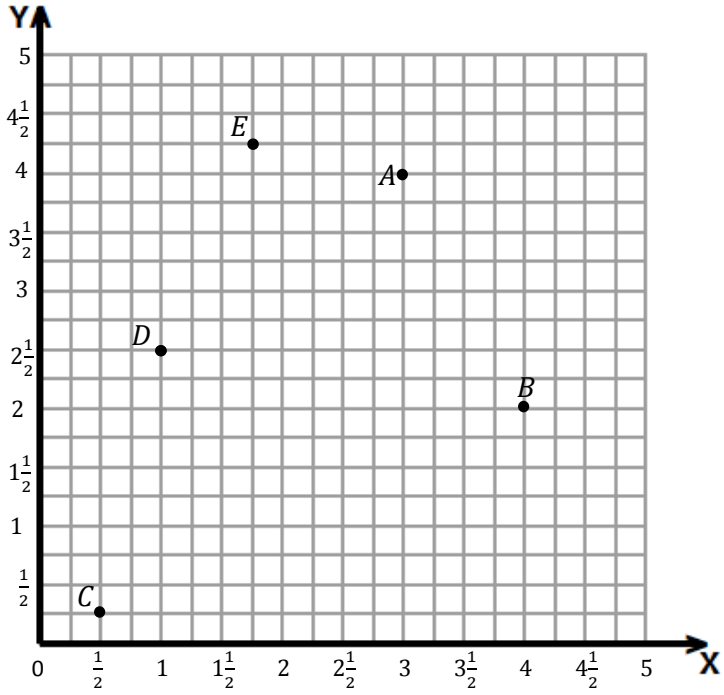
A _____

B _____

C _____

D _____

E _____



2. Plot each point in the coordinate plane above, and label each point with F, G, or H.

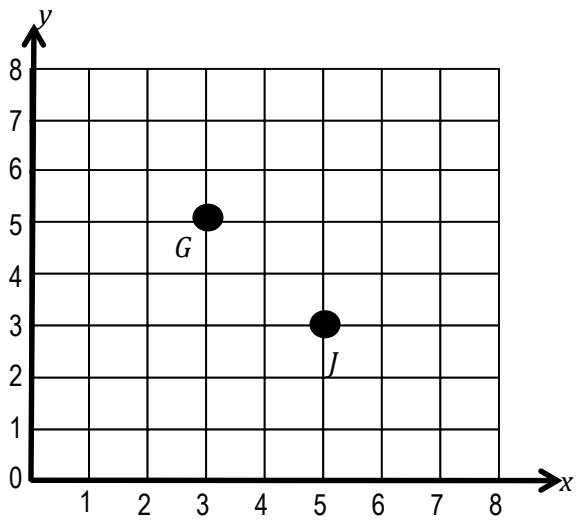
F (0, 4) G (2, 1) H $(4\frac{3}{4}, 3\frac{3}{4})$

3.

a. Give coordinates for any three points that are on the same vertical line. Include at least one point that has a mixed number as a coordinate.

b. Give coordinates for any three points that are on the same horizontal line. Include at least one point that has a fraction as a coordinate.

4. Garrett and Jeffrey are planning a treasure hunt. They decide to place a treasure at a point that is a distance of 5 units from the x-axis and 3 units from the y-axis. Jeffrey places a treasure at point J, and Garrett places one at point G. Who put the treasure in the right place? Explain how you know.



5.

a. Find the y-coordinates by following the rules given for each table.

Table A: Multiply by $\frac{1}{2}$.

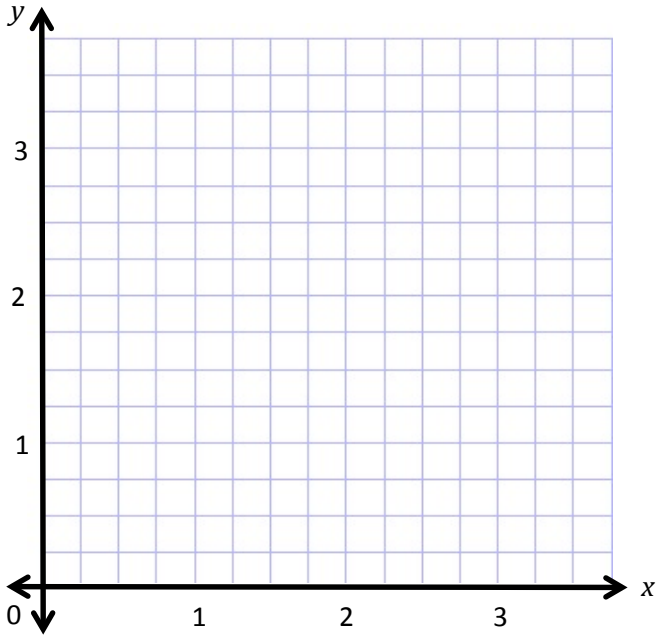
x	y
0	
1	
2	
3	

Table B: Multiply by $\frac{1}{4}$.

x	y
0	
1	
2	
3	

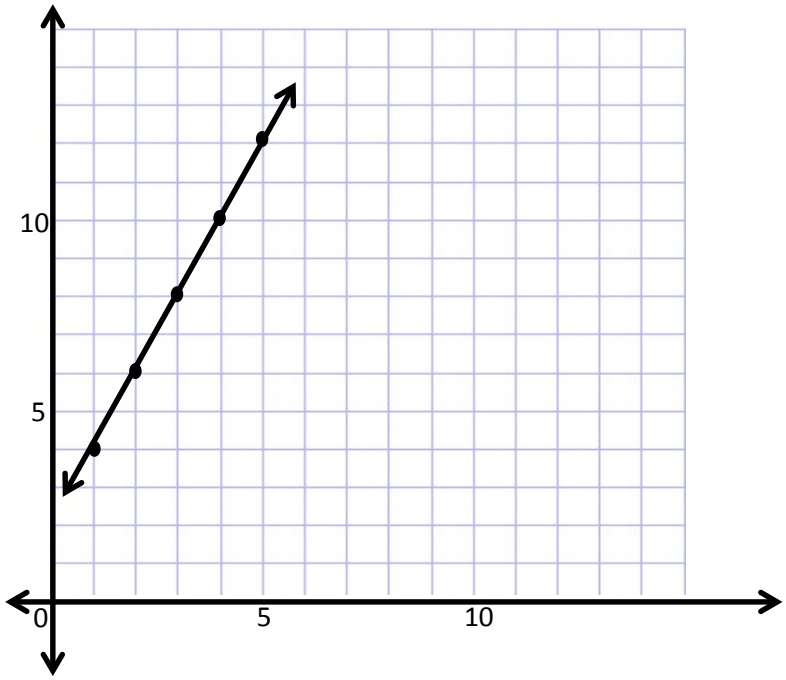
b. Graph and label the coordinate pairs from Table A. Connect the points, and label the line a. Graph and label the coordinate pairs from Table B. Connect the points, and label the line b.

c. Describe the relationship between the y-coordinates in Table A and Table B that have the same x-coordinate.



6.

a. Use the graph to give the coordinate pairs of the points marked on the line.



x	y

b. Using this rule, generate three more points that would be on this line but lie beyond the portion of the coordinate plane that is pictured.

_____ _____ _____

Mid-Module Assessment Task Standards Addressed	Topics A–B

Write and interpret numerical expressions.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.

5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Graph points on the coordinate plane to solve real-world and mathematical problems.

5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency.* In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery				
Assessment Task Item and Standards Assessed	**STEP 1 Little evidence of reasoning without a correct answer.** **(1 Point)**	**STEP 2 Evidence of some reasoning without a correct answer.** **(2 Points)**	**STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer.** **(3 Points)**	**STEP 4 Evidence of solid reasoning with a correct answer.** **(4 Points)**
1 **5.G.1**	Student gives the coordinates for one point on the plane and uses correct notation, including parentheses and a comma.	Student gives the coordinates for two points on the plane and uses correct notation, including parentheses and commas.	Student gives the coordinates for three points on the plane and uses correct notation, including parentheses and commas.	Student correctly gives the coordinates for four or five points using correct notation as: A (3, 4) B (4, 2) C $(\frac{1}{2}, \frac{1}{4})$ D $(1, 2\frac{1}{2})$ E $(1\frac{3}{4}, 4\frac{1}{4})$
2 **5.G.1**	Student correctly plots one point but does not label it.	Student correctly plots one point with a label or two points without labels.	Student is able to correctly plot three points but does not label them.	Student correctly: ▪ Plots three points. ▪ Labels the points on the coordinate plane.
3 **5.G.1** **5.OA.3**	Student is unable to give coordinates for points on the same vertical line or horizontal line.	Student gives coordinates for two points on the same vertical line or horizontal line.	Student gives coordinates for two points on the same vertical line and coordinates for two points on the same horizontal line.	Student: ▪ Gives three collinear points on a vertical line. (All three points have the same x-coordinate.) ▪ Gives three collinear points on a horizontal line. (All three points have the same y-coordinate.)
4 **5.G.1**	Student is unable to identify Garrett's placement as correct and is unable to explain the reasoning used.	Student is unable to identify Garrett's placement as correct but does explain the reasoning used.	Student identifies Garrett's placement as correct, but the explanation lacks clarity.	Student: ▪ Identifies Garrett's placement as correct. ▪ Clearly explains the reasoning used.

A Progression Toward Mastery				
5 **5.G.1** **5.OA.2** **5.OA.3**	Student: ▪ Partially completes the tables in part (a). ▪ Plots a few points correctly in part (b) but does not connect the points to make two lines. ▪ In part (c), makes no attempt to describe the relationship between the corresponding terms.	Student: ▪ Correctly completes the tables in part (a). ▪ Plots some points correctly in part (b) but does not connect the points to make two lines. ▪ In part (c), correctly describes the relationship between corresponding terms.	Student: ▪ Correctly completes the tables in part (a). ▪ Plots all points in part (b) correctly; connects the points to make two lines, and labels both lines. ▪ In part (c), describes the relationship between corresponding terms, but the explanation lacks clarity.	Student: ▪ Correctly completes the tables in part (a). Table A: (0, 0); (1, $\frac{1}{2}$); (2, 1); (3, $1\frac{1}{2}$) Table B: (0,0); (1, $\frac{1}{4}$); (2, $\frac{1}{2}$); (3, $\frac{3}{4}$) Note: The fractions in the tables do not need to be simplified. ▪ Plots all points in part (b) correctly, connects the points to make two lines, and labels both lines. ▪ Correctly describes the relationship between corresponding terms such that terms in Table A are twice the terms in Table B or that B is half of A using words or notation (e.g., Multiply B by 2, A is twice as much as B, B is half of A, $2 \times B = A$ or $\frac{1}{2} A = B$).
6 **5.G.1** **5.OA.3**	Student is able to identify some of the ordered pairs from the graph but is unable to generate other collinear points.	Student either correctly identifies the ordered pairs from the graph or generates other collinear points.	Student correctly identifies the ordered pairs from the graph but generates collinear points that lie on the portion of the grid that is pictured.	Student: ▪ Correctly identifies the ordered pairs from the graph as (1,4); (2,6); (3,8); (4,10); (5,12). ▪ Generates three collinear points whose x- and y-coordinates are both greater than 15.

Name Allison Date _____

1. Give the coordinates of each point.

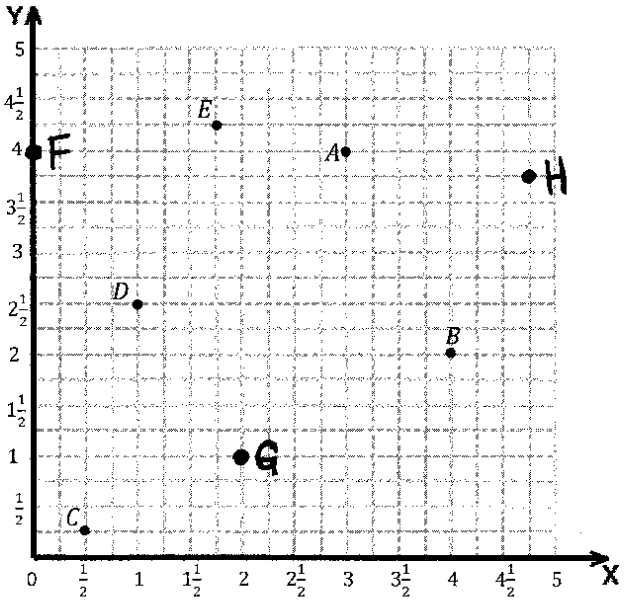
A (3,4)

B (4,2)

C $(\frac{1}{2}, \frac{1}{4})$

D $(1, 2\frac{1}{2})$

E $(1\frac{3}{4}, 4\frac{1}{4})$



2. Plot each point in the coordinate plane above, and label each point with F, G, or H.

F (0,4) G (2, 1) H $(4\frac{3}{4}, 3\frac{3}{4})$

3.

a. Give coordinates for any three points that are on the same vertical line. Include at least one point that has a mixed number as a coordinate.

(1,2) $(1, 3\frac{1}{2})$ (1,4)

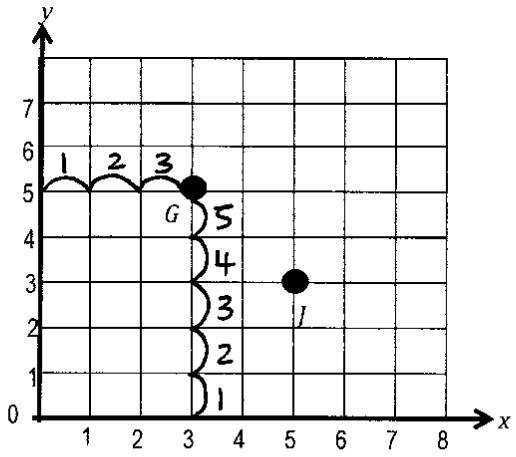
b. Give coordinates for any three points that are on the same horizontal line. Include at least one point that has a fraction as a coordinate.

$(\frac{3}{4}, 2)$ (2,2) (9,2)

4. Garrett and Jeffrey are planning a treasure hunt. They decide to place a treasure at a point that is a distance of 5 units from the x-axis and 3 units from the y-axis. Jeffrey places a treasure at point J and Garrett places one at point G. Who put the treasure in the right place? Explain how you know.

Garrett put the treasure in the right place. When you measure out to point G from the y-axis it is 3 units. Point G is 5 units up from the x-axis.

Jeffrey's treasure is 3 units from the x-axis and 5 units from the y-axis.



5.

a. Find the y coordinates by following the rules given for each table.

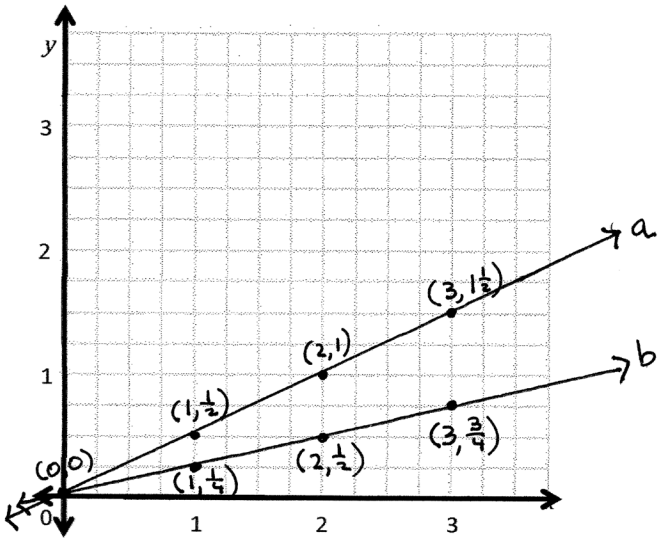
Table A: Multiply by $\frac{1}{2}$

x	y
0	0
1	$\frac{1}{2}$
2	1
3	$1\frac{1}{2}$

Table B: Multiply by $\frac{1}{4}$

x	y
0	0
1	$\frac{1}{4}$
2	$\frac{1}{2}$
3	$\frac{3}{4}$

b. Graph and label the coordinate pairs from Table A. Connect the points and label the line a. Graph and label the coordinate pairs from Table B. Connect the points and label the line b.

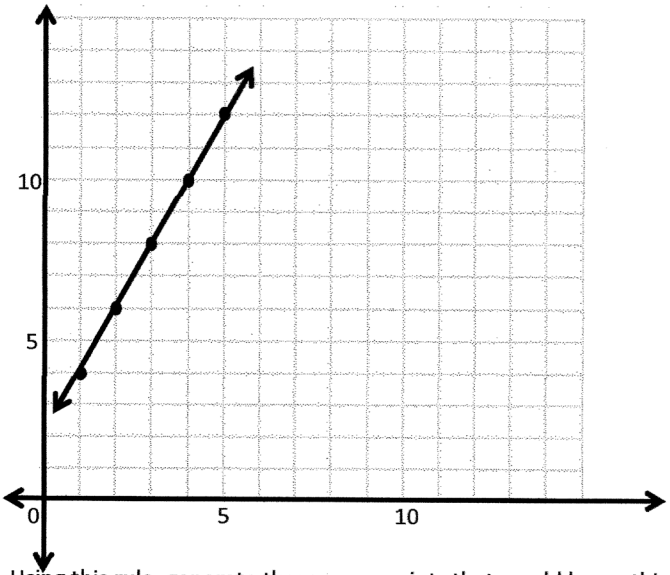


c. Describe the relationship between the y-coordinates in Table A and Table B that have the same x-coordinate.

The y-coordinates in Table A are twice as much as Table B. They are two times bigger in Table A.

6.

a. Use the graph to give the coordinate pairs of the points marked on the line.



x	y
1	4
2	6
3	8
4	10
5	12

b. Using this rule, generate three more points that would be on this line but lie beyond the portion of the coordinate plane that is pictured.

The rule is multiply by 2, and then add 2 to get the y-coordinates. (16, 34) (17, 36) (18, 38)

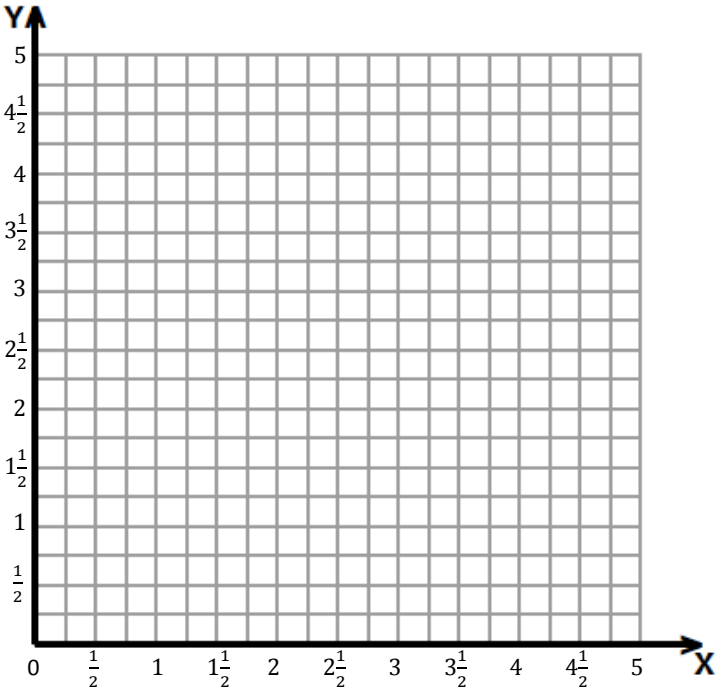
Name _____ Date _____

1. Follow the directions.

   a. Draw a ray that starts at point L at $(1\frac{1}{2}, 3)$ and includes point K at (5, 3). Label points K and L.

   b. Give the coordinates of three other points on the ray.

   c. Draw a second ray with the same initial point and containing point M with coordinates $(3\frac{1}{2}, 4\frac{1}{4})$. Label point M.

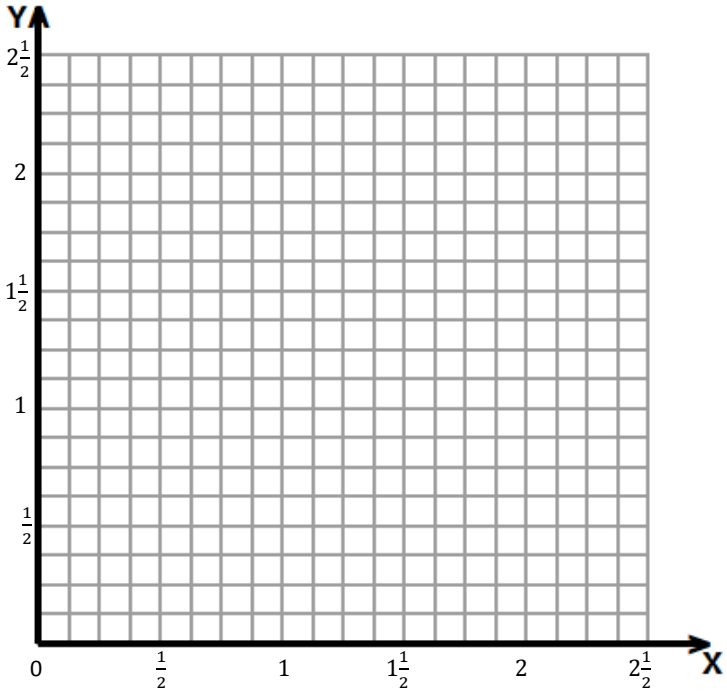


2. David draws a line segment from point Q $(\frac{1}{4}, \frac{7}{8})$ to point R $(\frac{5}{8}, \frac{1}{2})$. He then draws a line perpendicular to the first segment that intersects segment $\overline{QR}$ and includes point S $(\frac{3}{4}, 1)$.

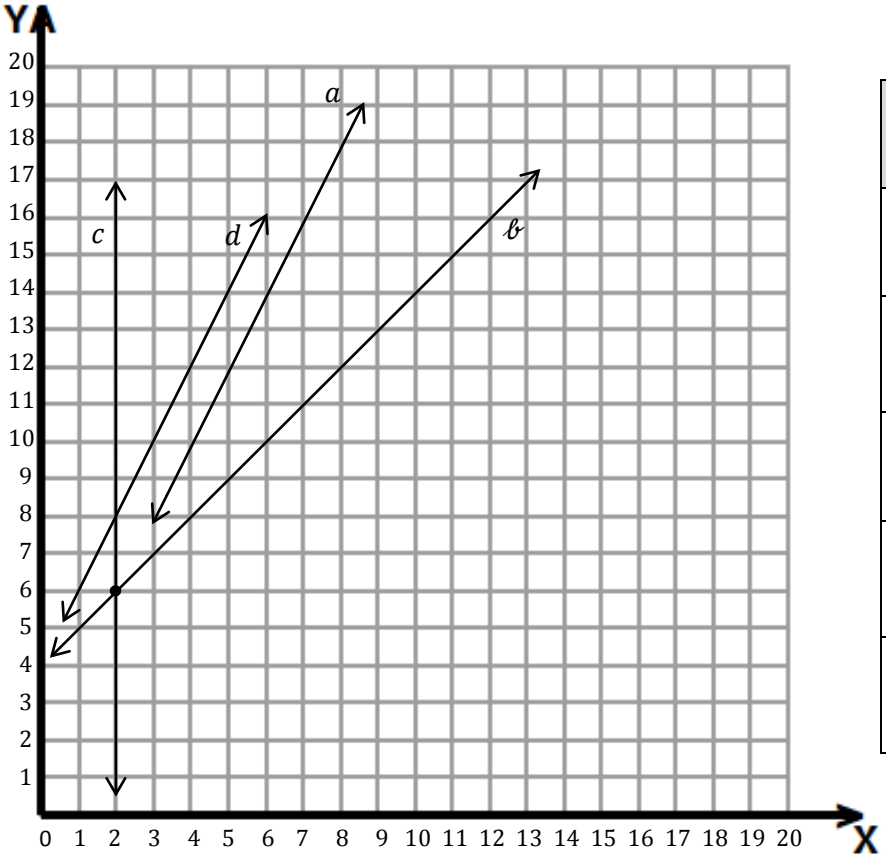
   a. Draw $\overline{QR}$, and label the endpoints on the grid.

   b. Draw the perpendicular line, and label point S.

   c. Name another point that lies on the perpendicular line whose x-coordinate is between 1 and $1\frac{1}{2}$.



3. Complete the table for the rule *multiply by 2 and then add 2* for the values of x from 0 to 4. Then, use the coordinate plane to answer the questions.



x	y	(x, y)
0		
1		
2		
3		
4		

a. Which line shows the rule in the table?

b. Give the coordinates for the intersection of lines b and c.

c. Draw a line on the graph such that any point on the line has a y-coordinate of 2. Label your line as e.

d. Which coordinate is 2 for any point on line c?

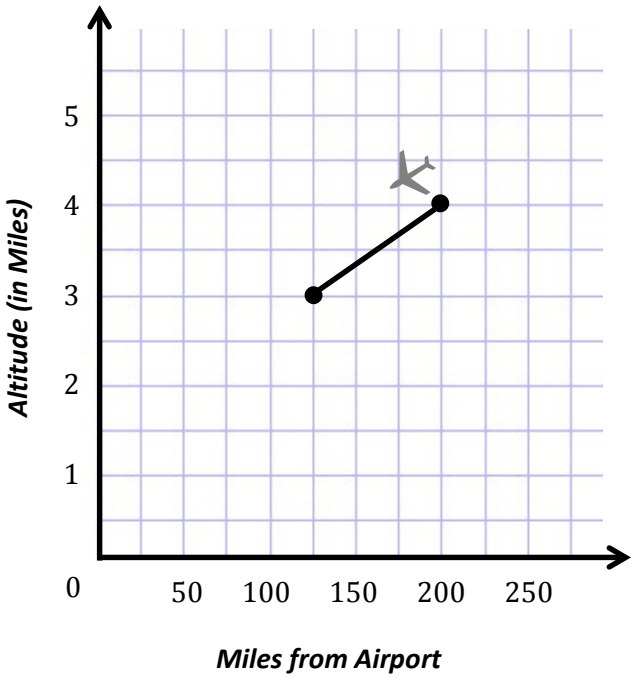
e. Write a rule that tells how to find the y-coordinate when the x-coordinate is given for the points on line $\mathscr{b}$.

f. Kim and Lacy want to draw a line on the coordinate plane that is parallel to line a. Kim uses the rule *multiply by 4 and add 2* to generate her y-coordinates. Lacy uses the rule *multiply by 2 and add 4* to generate her y-coordinates. Which girl's line will be parallel to line a? Without graphing the lines, explain how you know.

4. An airplane is descending into an airport. When its altitude is 5 miles, it is 275 miles from the airport. When its altitude is 4 miles, it is 200 miles from the airport. At 3 miles, it is 125 miles from the airport.

a. If the pilot follows the same pattern, what will the plane's altitude be at 50 miles from the airport?

b. For the plane to land at the airport, the altitude will need to be 0, and the distance from the airport will need to be 0. Should the pilot continue this pattern? Why or why not?



End-of-Module Assessment Standards Addressed	Topics A–D

Write and interpret numerical expressions.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product*.

Analyze patterns and relationships.

5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Graph points on the coordinate plane to solve real-world and mathematical problems.

5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop *on their way to proficiency.* In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery				
Assessment Task Item and Standards Assessed	**STEP 1 Little evidence of reasoning without a correct answer. (1 Point)**	**STEP 2 Evidence of some reasoning without a correct answer. (2 Points)**	**STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)**	**STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)**
1 **5.G.1**	Student accurately completes at least three of the tasks embedded in the question.	Student accurately completes at least four of the tasks embedded in the question.	Student accurately completes at least five of the tasks embedded in the question.	Student accurately completes each task embedded in the question. ▪ Draws a ray with points at coordinates $(1\frac{1}{2}, 3)$ and $(5, 3)$. ▪ Labels point L. ▪ Labels point K. ▪ Gives the coordinates of three other points on the ray. (Correct answers are any two coordinates with the y-coordinate of 3.) ▪ Draws a second ray with one point at the coordinates $(1\frac{1}{2}, 3)$ and point M at $(3\frac{1}{2}, 4\frac{1}{4})$. ▪ Labels point M.
2 **5.G.1** **5.G.2**	Student accurately completes at least two of the tasks embedded in the question.	Student accurately completes at least three of the tasks embedded in the question.	Student accurately completes at least four of the tasks embedded in the question.	Student accurately completes all of the tasks embedded in the question: ▪ Draws $\overline{QR}$. ▪ Labels $\overline{QR}$. ▪ Draws a line perpendicular to $\overline{QR}$.

A Progression Toward Mastery				
				▪ Labels point S. ▪ Names one of the following coordinates: $1\frac{1}{8}, 1\frac{3}{8}$ $1\frac{1}{4}, 1\frac{1}{2}$ or equivalent $1\frac{3}{8}, 1\frac{5}{8}$.
3 **5.G.1** **5.OA.2** **5.OA.3**	Student accurately completes at least two of the tasks embedded in the question. The table counts as one task.	Student accurately completes at least three of the tasks embedded in the question. The table counts as one task.	Student accurately completes at least five of the tasks embedded in the question. The table counts as one task.	Student accurately completes all of the tasks embedded in the question and gives correct responses. ▪ Completes the table: x | y | (x, y) 0 | 2 | (0,2) 1 | 4 | (1,4) 2 | 6 | (2,6) 3 | 8 | (3,8) 4 | 10 | (4,10) a. Line a. b. (2, 6). c. Draws and labels line e parallel to the x-axis, and the y-coordinates are 2 for any point. d. The x-coordinate. e. Add 4 or plus 4. f. Lacy's rule will make a line parallel to line a. The rule for line a is *multiply x by 2, and then add 2.* The rule for Lacy's line is *multiply x-coordinate by 2, and then add 4.*

A Progression Toward Mastery				
				Lacy's line is parallel because the steepness of the line is the same. (That is, the multiplication part of the rule is the same.) The adding part of the rule will make the y-coordinates two more than those in line a.)
4 **5.G.1** **5.G.2** **5.OA.3**	Student has no correct answers for either part (a) or part (b).	Student has correctly answered either part (a) or part (b) but may not have a clear answer of *why* for part (b).	Student has correctly answered both part (a) and part (b) but lacks a clear answer of *why* for part (b).	Student has accurately completed part (a) and part (b), including a clear explanation of *why* for part (b). a. The plane's altitude will be 2 miles. b. No. The pilot should not continue this pattern. If he continues this pattern, his plane will have 0 altitude between 1 and 2 miles past the airport (or other correct response).

Name Julian Date _____

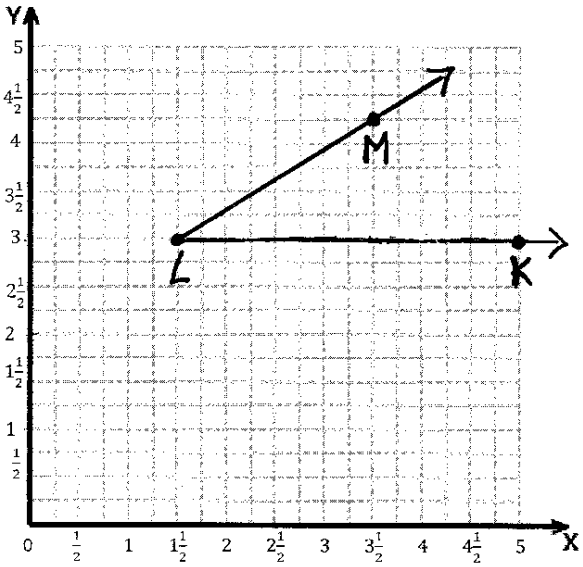
1. Follow the directions.

   a. Draw a ray that starts at point L at $(1\frac{1}{2}, 3)$ and includes point K at (5, 3). Label points K and L.

   b. Give the coordinates of three other points on the ray.

   $(2\frac{1}{3}, 3)$ $(4, 3)$ $(4\frac{3}{4}, 3)$

   c. Draw a second ray with the same initial point and containing point M with coordinates $(3\frac{1}{2}, 4\frac{1}{4})$. Label point M.



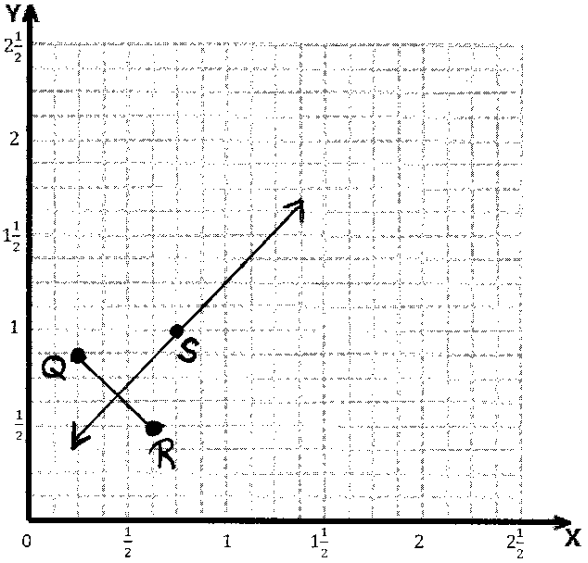
2. David draws a line segment from point Q $(\frac{1}{4}, \frac{7}{8})$ to point R $(\frac{5}{8}, \frac{1}{2})$. He then draws a line perpendicular to the first segment that intersects segment $\overline{QR}$ and includes point S $(\frac{3}{4}, 1)$.

   a. Draw $\overline{QR}$ and label the endpoints on the grid.

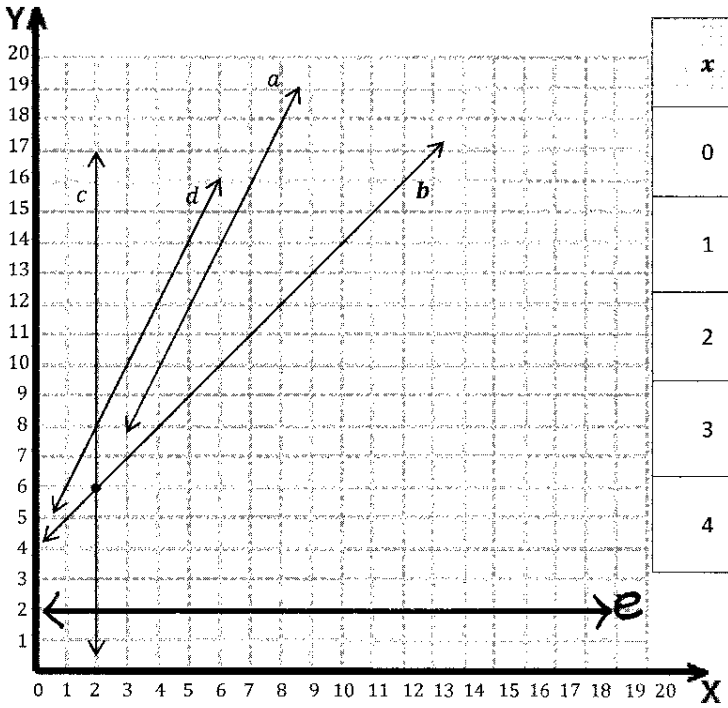
   b. Draw the perpendicular line and label point S.

   c. Name another point that lies on the perpendicular line whose x-coordinate is between 1 and $1\frac{1}{2}$.

   $(1\frac{1}{8}, 1\frac{3}{8})$



3. Complete the table for the rule *multiply by 2 then add 2* for the values of x from 0 to 4. Then use the coordinate plane to answer the questions.



x	y	(x, y)
0	2	(0,2)
1	4	(1,4)
2	6	(2,6)
3	8	(3,8)
4	10	(4,10)

a. Which line shows the rule in the table?

Line a

b. Give the coordinates for the intersection of lines ***b*** and ***c***.

(2,6)

c. Draw a line on the graph such that any point on the line has a y-coordinate of 2. Label your line as ***e***.

d. Which coordinate is 2 for any point on line ***c***?

x-Coordinate

e. Write a rule that tells how to find the y-coordinate when the x-coordinate is given for the points on line b.

(1,5)
(2,6)
(3,7)

Add 4 to the x-coordinate to get the y-coordinate.

f. Kim and Lacy want to draw a line on the coordinate plane that is parallel to line a. Kim uses the rule, *multiply by 4 and add 2* to generate her y-coordinates. Lacy uses the rule *multiply by 2 and add 4* to generate her y-coordinates. Which girl's line will be parallel to line a? Without graphing the lines, explain how you know.

Lacy's line will be parallel, because Line a's rule is to multiply by 2, then add 2. Lacy kept the multiplication the same (x 2), so the new line will be the same steepness as Line a. Lacy only changed the addition part of the rule. That's going to make the new line above Line a on the plane if she graphs it.

4. An airplane is descending into an airport. When its altitude is 5 miles, it is 275 miles from the airport. When its altitude is 4 miles, it is 200 miles from the airport. At 3 miles, it is 125 miles from the airport.

a. If the pilot follows the same pattern, what will the plane's altitude be at 50 miles from the airport?

The plane's altitude will be 2 miles when it's 50 miles from the airport.

b. For the plane to land at the airport, the altitude will need to be 0 and the distance from the airport will need to be 0. Should the pilot continue this pattern? Why or why not?

The pilot should not keep this pattern. He will be way past the airport when his altitude is 0 miles.