1. Write a rule for the line that contains the points $(0, \frac{3}{4})$ and $(2\frac{1}{2}, 3\frac{1}{4})$.

y is $\frac{3}{4}$ more than x

a. Identify 2 more points on this line, then draw it on the grid below.

Point	x	y	(x, y)
B	$\frac{1}{4}$	1	$(\frac{1}{4}, 1)$
C	1	$1\frac{3}{4}$	$(1, 1\frac{3}{4})$

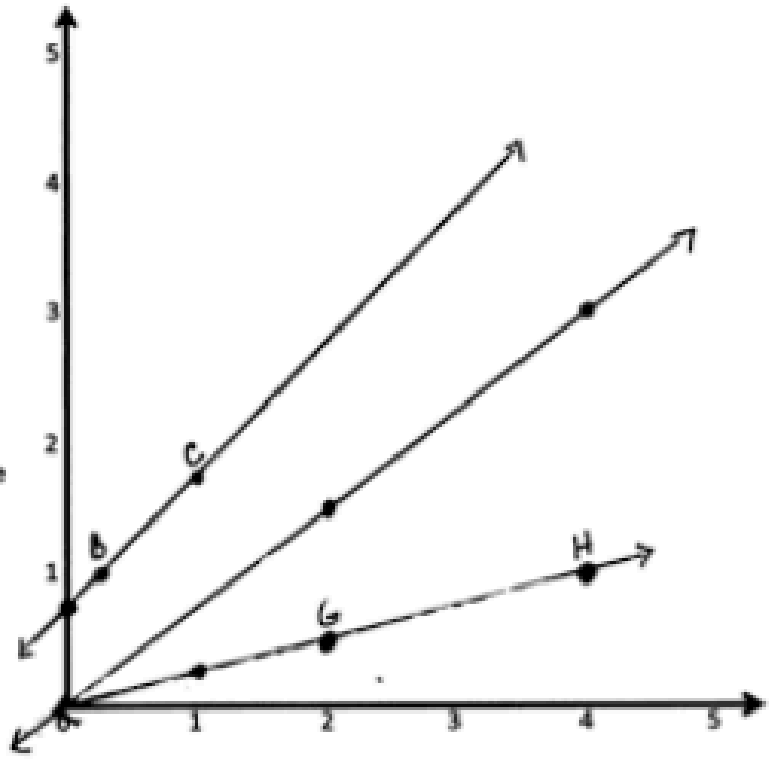
b. Write a rule for a line that is parallel to $\overleftrightarrow{BC}$, and goes through point $(1, \frac{1}{4})$.

x is $\frac{3}{4}$ less than y.

2. Create a rule for the line that contains the points $(1, \frac{1}{4})$ and $(3, \frac{3}{4})$.

y is $\frac{1}{4}$ x

a. Identify 2 more points on this line, then draw it on the grid at right.



Point	x	y	(x, y)
G	2	$\frac{1}{2}$	$(2, \frac{1}{2})$
H	4	1	(4, 1)

b. Write a rule for a line that passes through the origin and lies between $\overleftrightarrow{BC}$ and $\overleftrightarrow{GH}$.

multiply x by $\frac{3}{4}$

3. Create a rule for a line that contains the point $(\frac{1}{4}, 1\frac{1}{4})$ using the operation or description below. Then name 2 other points that would fall on each line.

a. Addition: add 1 to x

Point	x	y	(x, y)
T	2	3	(2,3)
U	4	5	(4,5)

b. A line parallel to the x-axis: y is always $1\frac{1}{4}$

Point	x	y	(x, y)
G	$\frac{1}{2}$	$1\frac{1}{4}$	$(\frac{1}{2}, 1\frac{1}{4})$
H	$2\frac{1}{2}$	$1\frac{1}{4}$	$(2\frac{1}{2}, 1\frac{1}{4})$

c. Multiplication: multiply x by 5

Point	x	y	(x, y)
A	$\frac{1}{2}$	$2\frac{1}{2}$	$(\frac{1}{2}, 2\frac{1}{2})$
B	1	5	(1,5)

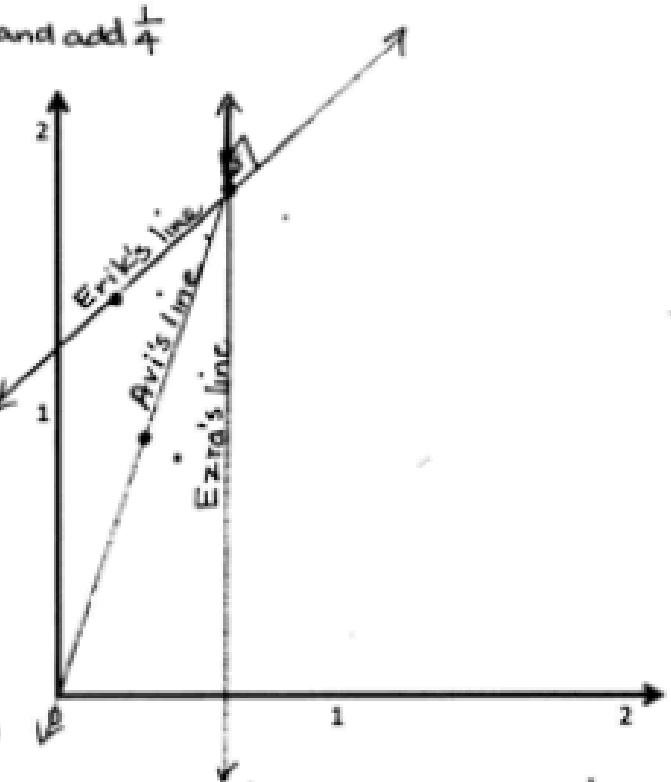
d. A line parallel to the y-axis: x is always $\frac{1}{4}$

Point	x	y	(x, y)
V	$\frac{1}{4}$	6	$(\frac{1}{4}, 6)$
W	$\frac{1}{4}$	12	$(\frac{1}{4}, 12)$

e. Multiplication with addition: multiply x by 4 and add $\frac{1}{4}$

Point	x	y	(x, y)
R	2	$8\frac{1}{4}$	$(2, 8\frac{1}{4})$
S	$\frac{1}{2}$	$2\frac{1}{4}$	$(\frac{1}{2}, 2\frac{1}{4})$

4. Mrs. Boyd asked her students to give a rule that could describe a line that contains the point (0.6, 1.8). Avi said the rule could be, "multiply x by 3". Ezra claims this could be a vertical line and the rule could be, "x is always 0.6". Erik thinks the rule could be, "Add 1.2 to x". Mrs. Boyd says that all the lines they are describing could describe a line that contains the point she gave. Explain how that is possible and draw on the coordinate plane to support your response.



Mrs. Boyd only gave 1 point (B) on the line. Lots of lines could contain that point. Without 2 points you can't tell the rule for the line

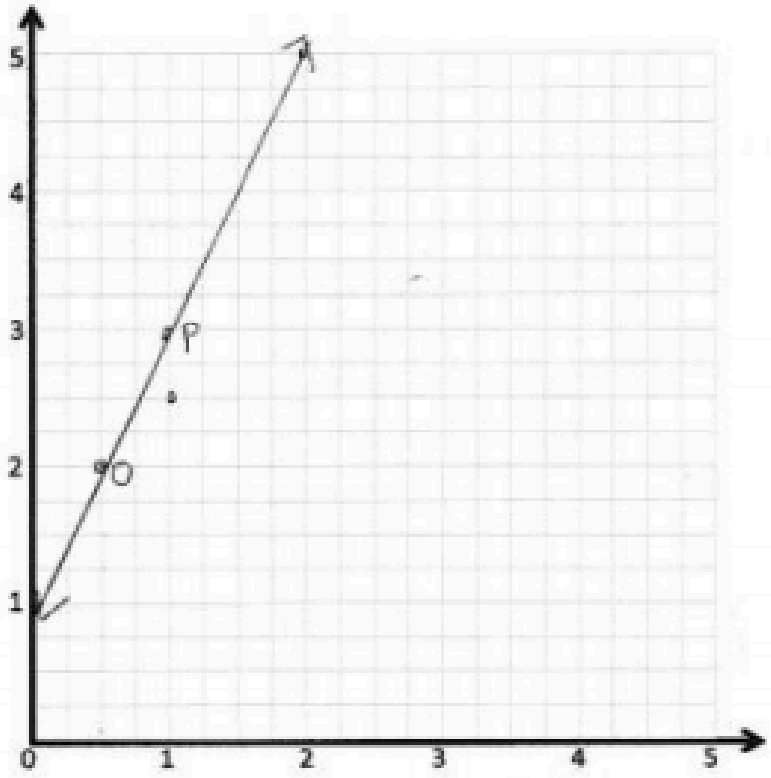
Challenge:

5. Create a mixed operation rule for the line that contains the points (0, 1) and (1, 3).

multiply x by 2 and add 1

Point	x	y	(x, y)
O	$\frac{1}{2}$	2	$(\frac{1}{2}, 2)$
P	2	5	(2, 5)

a. Identify 2 more points, *O* and *P*, on this line. Then draw it on the grid.



b. Write a rule for a line that is parallel to $\overrightarrow{OP}$, and goes through point $(1, 2\frac{1}{2})$.

multiply x by 2 and add $\frac{1}{2}$