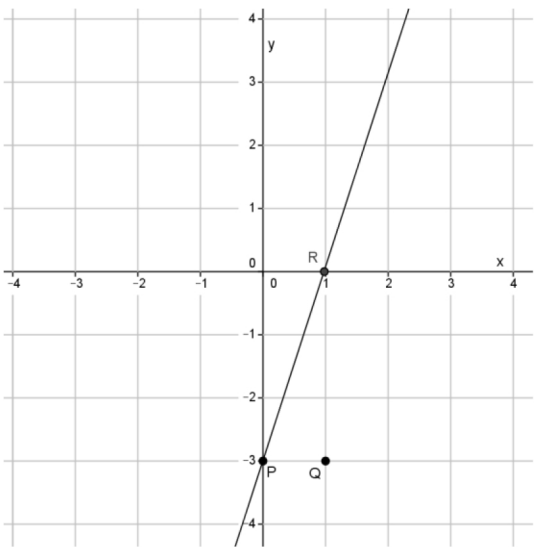
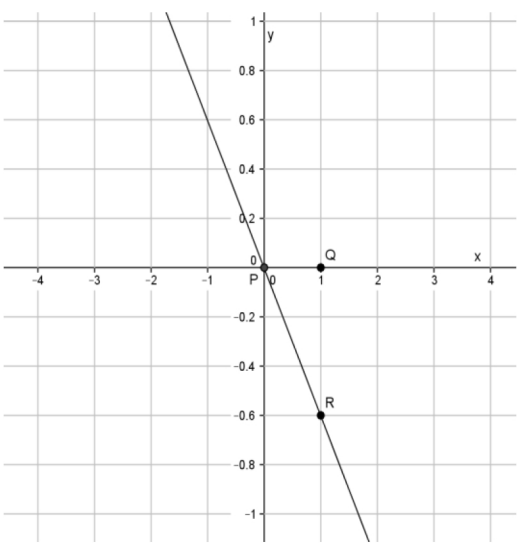
Name _____ Date _____

The Slope of a Non-Vertical Line

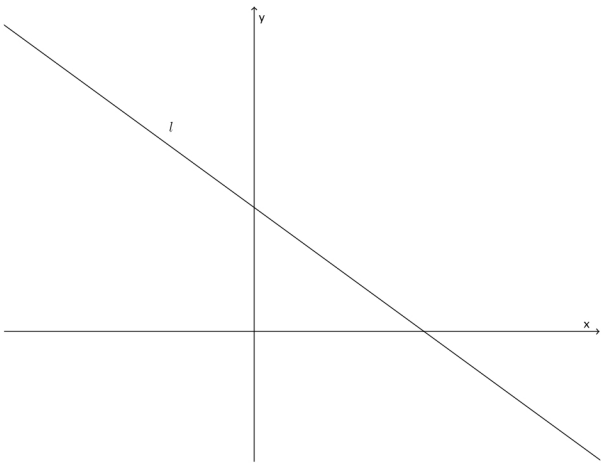
1. What is the slope of this non-vertical line? Use your transparency if needed.



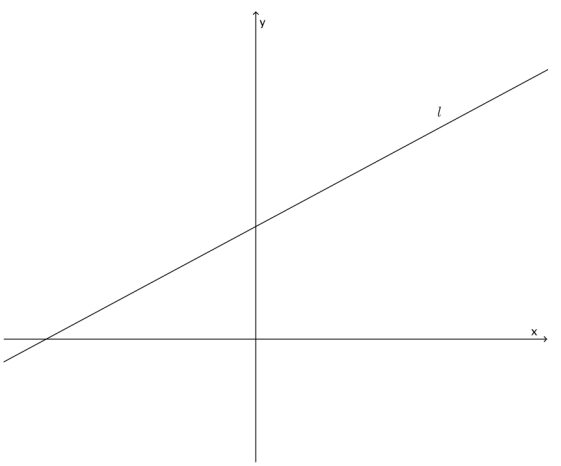
2. What is the slope of this non-vertical line? Use your transparency if needed.



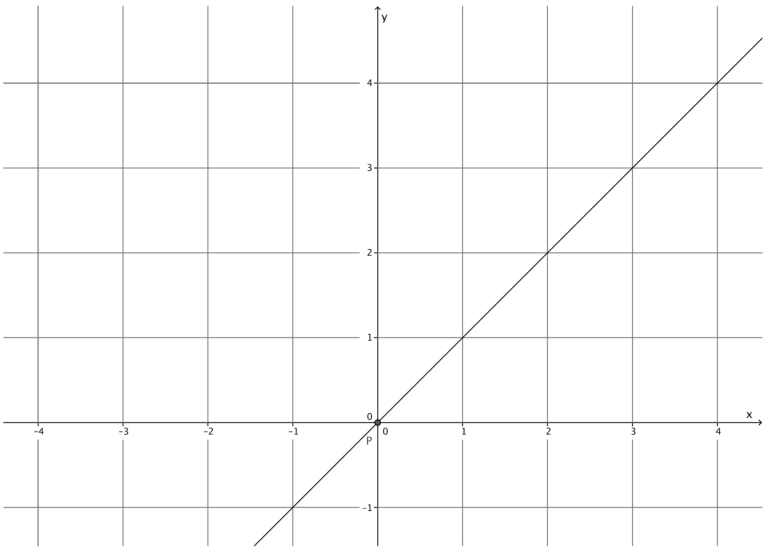
1. Does the graph of the line shown below have a positive or negative slope? Explain.



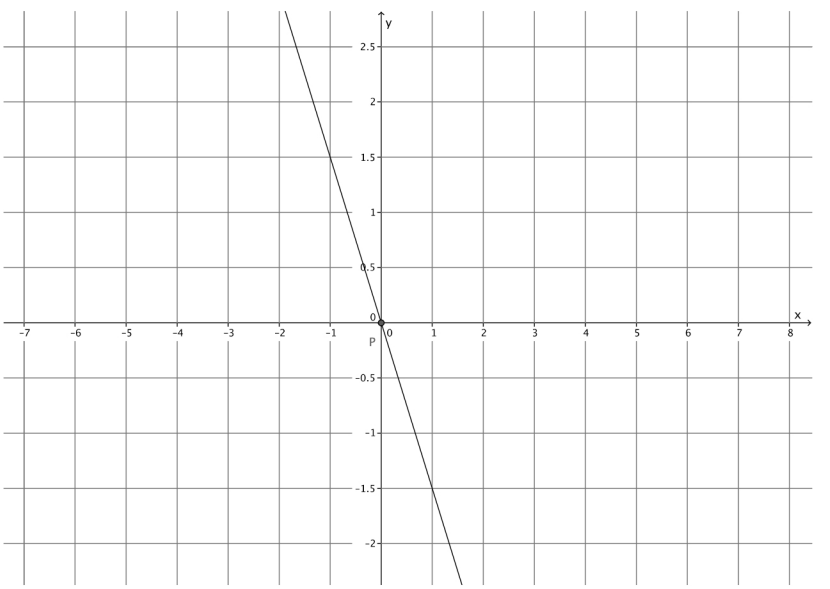
2. Does the graph of the line shown below have a positive or negative slope? Explain.



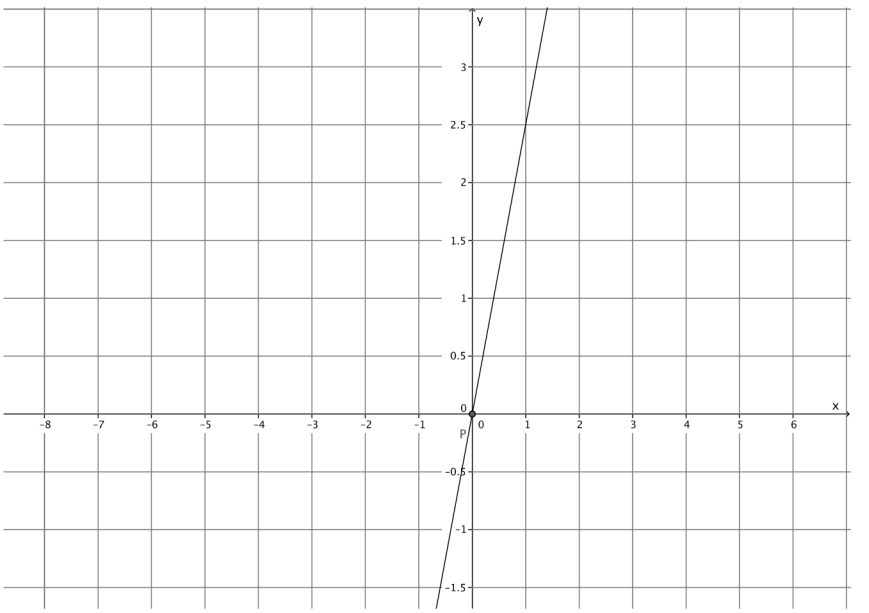
3. What is the slope of this non-vertical line? Use your transparency if needed.



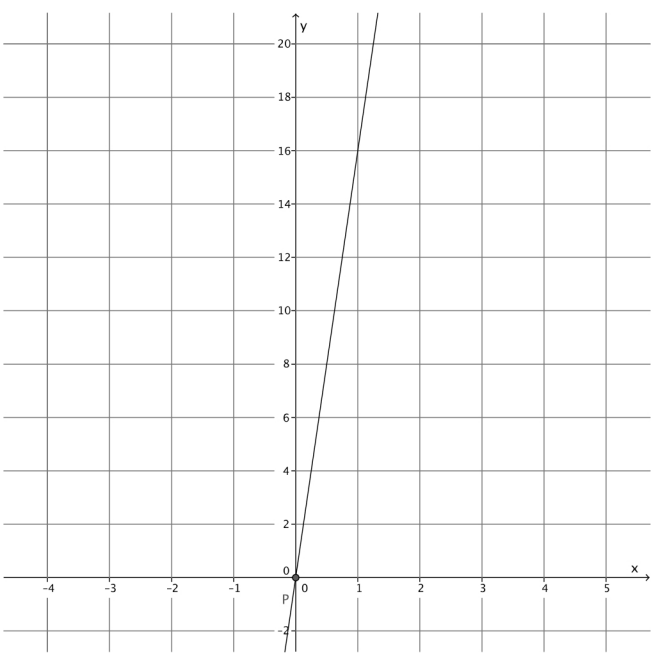
4. What is the slope of this non-vertical line? Use your transparency if needed.



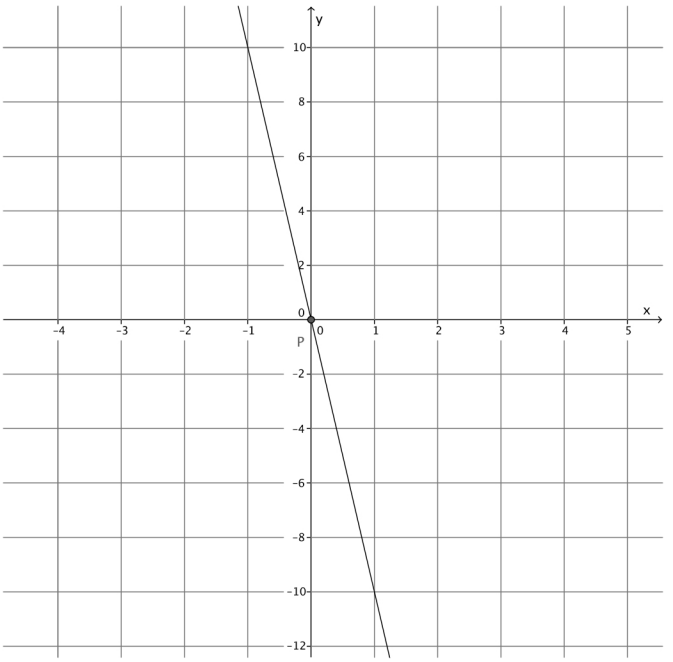
5. What is the slope of this non-vertical line? Use your transparency if needed.



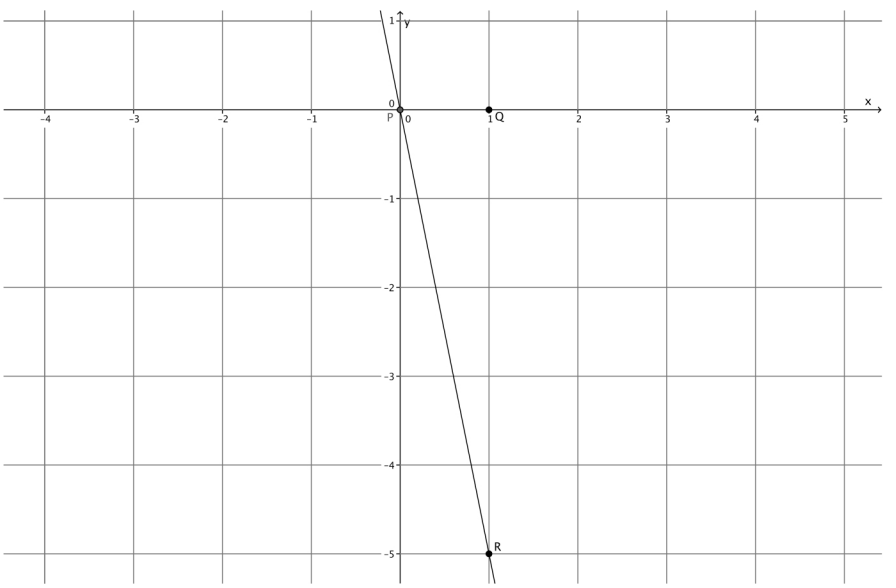
6. What is the slope of this non-vertical line? Use your transparency if needed.



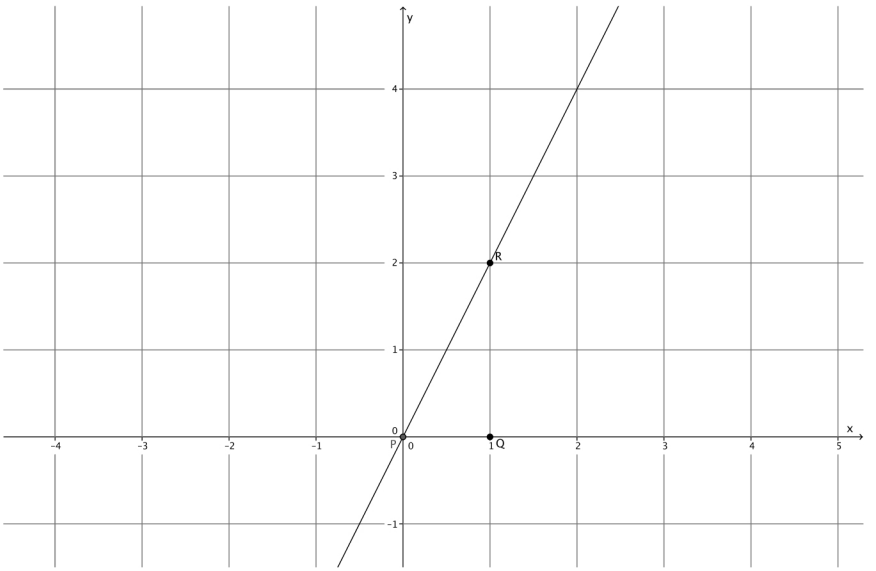
7. What is the slope of this non-vertical line? Use your transparency if needed.



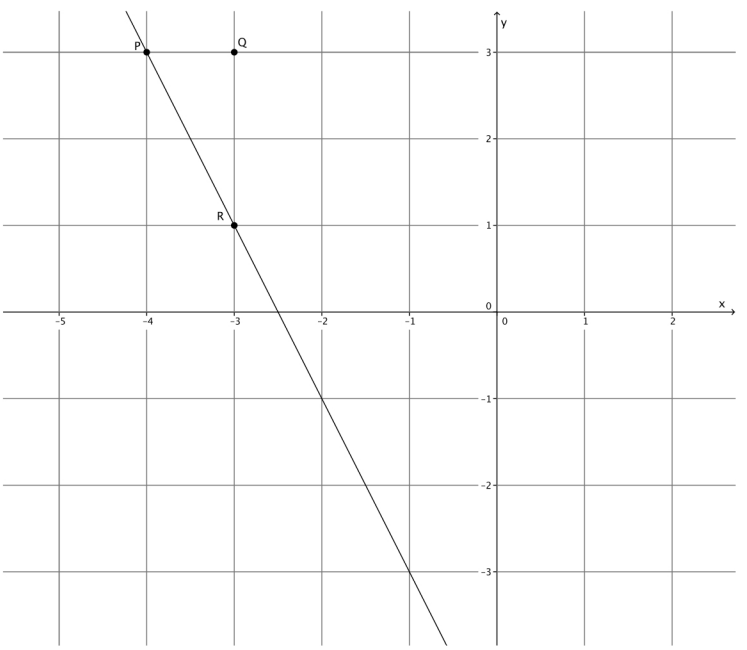
8. What is the slope of this non-vertical line? Use your transparency if needed.



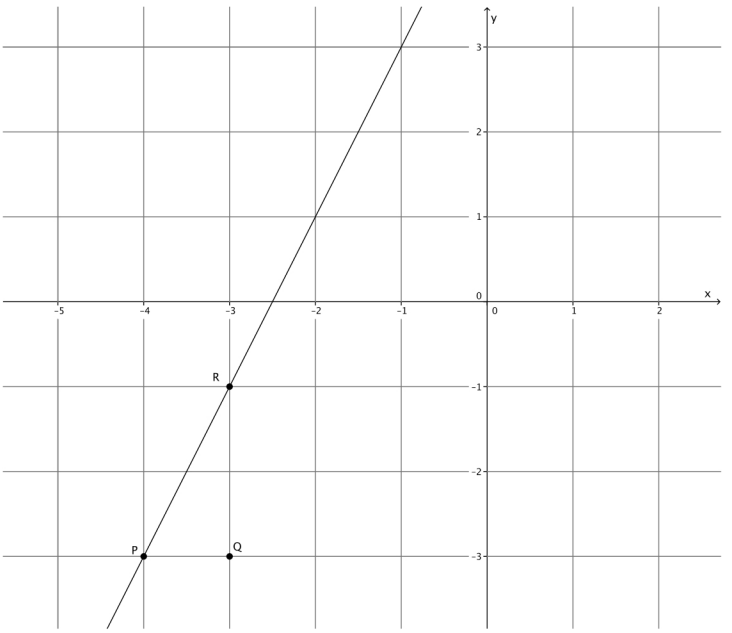
9. What is the slope of this non-vertical line? Use your transparency if needed.



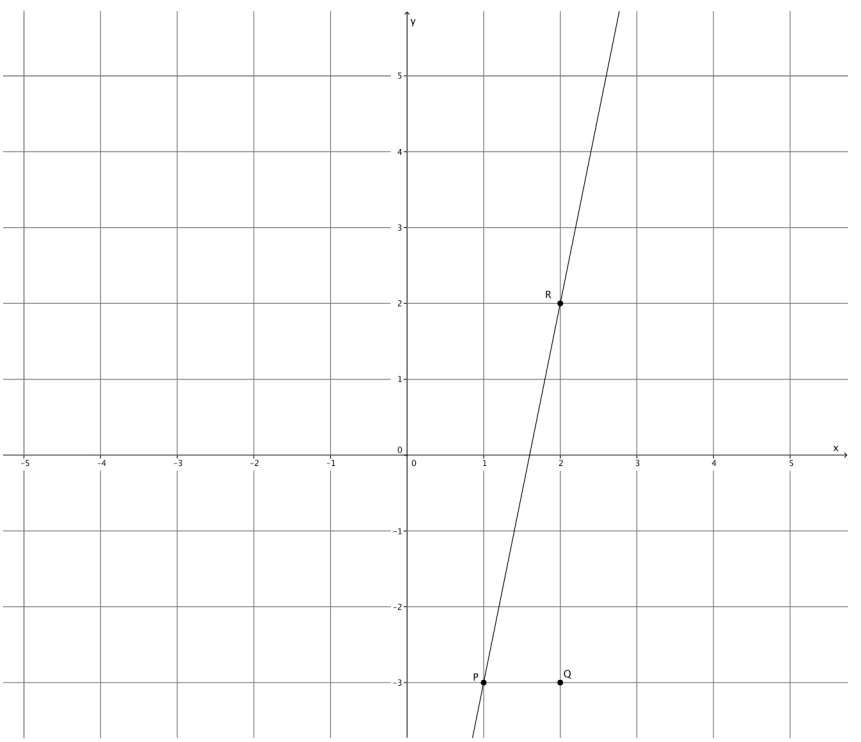
10. What is the slope of this non-vertical line? Use your transparency if needed.



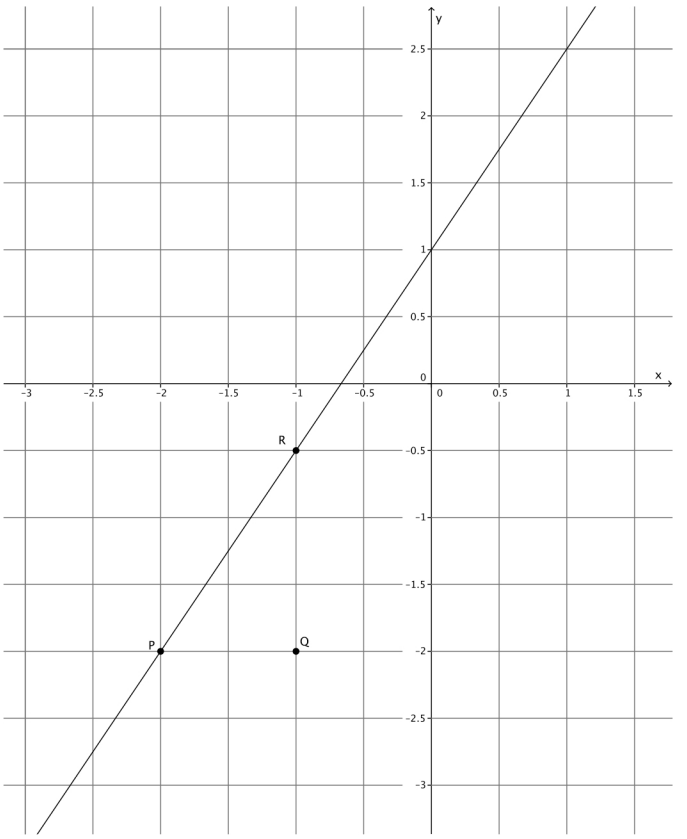
11. What is the slope of this non-vertical line? Use your transparency if needed.



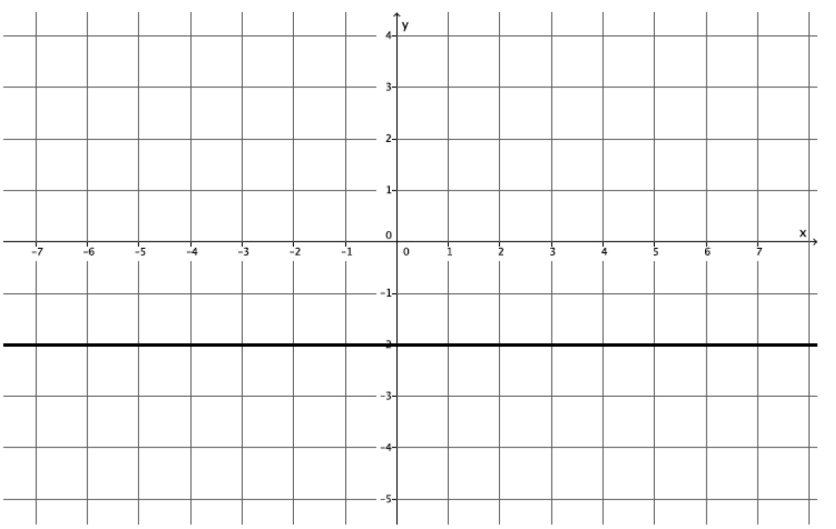
12. What is the slope of this non-vertical line? Use your transparency if needed.



13. What is the slope of this non-vertical line? Use your transparency if needed.



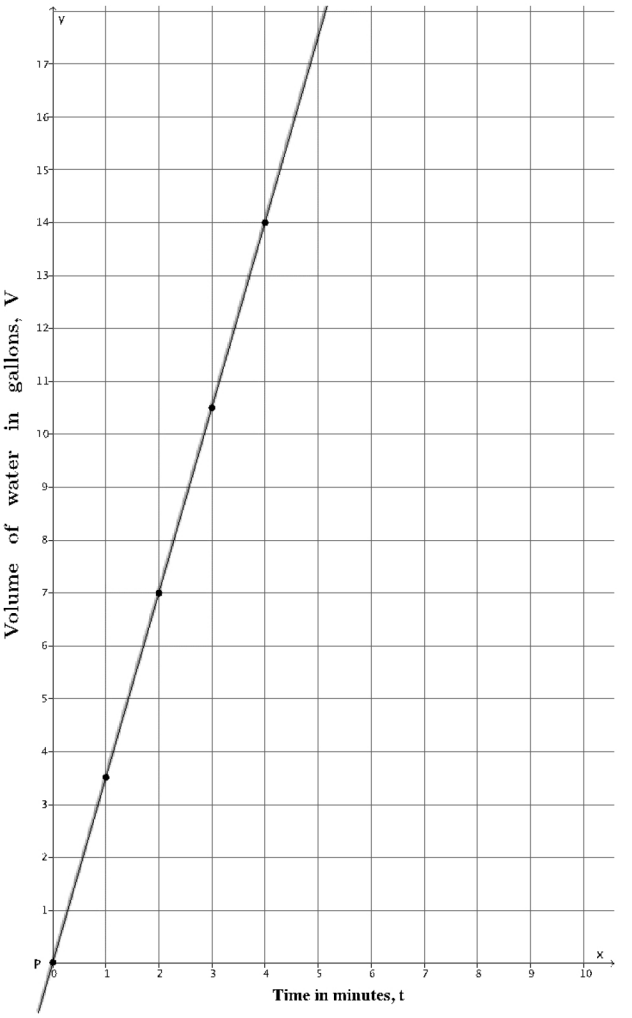
14. What is the slope of this non-vertical line? Use your transparency if needed.



In Lesson 11, you did the work below involving constant rate problems. Use the table and the graphs provided to answer the questions that follow.

15. Suppose the volume of water that comes out in three minutes is 10.5 gallons.

t (time in minutes)	Linear equation: $V = \frac{10.5}{3}t$	V (in gallons)
0	$V = \frac{10.5}{3}(0)$	0
1	$V = \frac{10.5}{3}(1)$	$\frac{10.5}{3} = 3.5$
2	$V = \frac{10.5}{3}(2)$	$\frac{21}{3} = 7$
3	$V = \frac{10.5}{3}(3)$	$\frac{31.5}{3} = 10.5$
4	$V = \frac{10.5}{3}(4)$	$\frac{42}{3} = 14$

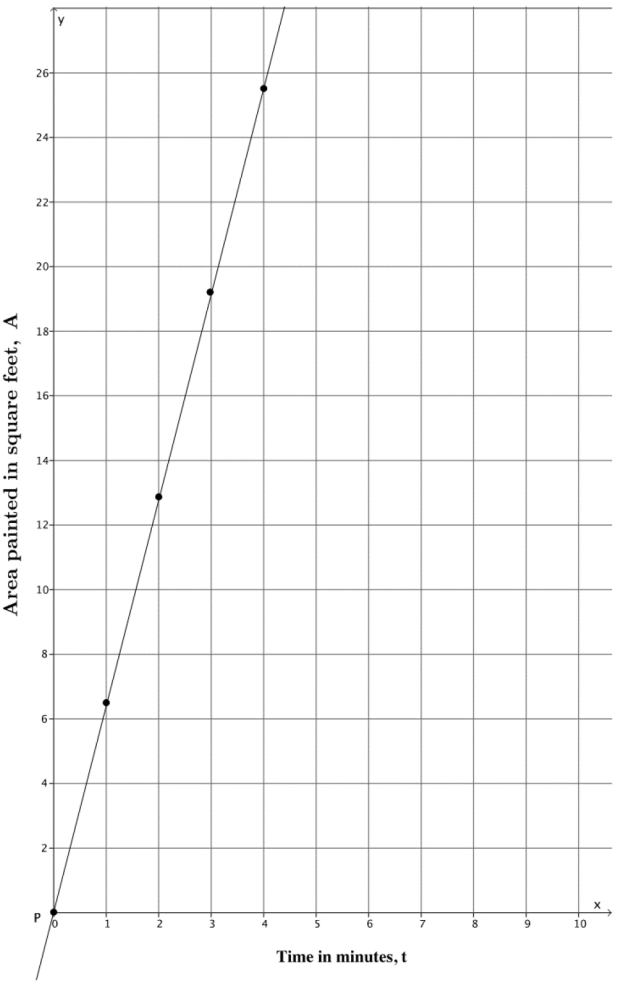


a. How many gallons of water flow out of the faucet per minute? In other words, what is the unit rate of water flow?

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

16. Emily paints at a constant rate. She can paint 32 square feet in five minutes.

t (time in minutes)	Linear equation: $A = \frac{32}{5}t$	A (area painted in square feet)
0	$A = \frac{32}{5}(0)$	0
1	$A = \frac{32}{5}(1)$	$\frac{32}{5} = 6.4$
2	$A = \frac{32}{5}(2)$	$\frac{64}{5} = 12.8$
3	$A = \frac{32}{5}(3)$	$\frac{96}{5} = 19.2$
4	$A = \frac{32}{5}(4)$	$\frac{128}{5} = 25.6$

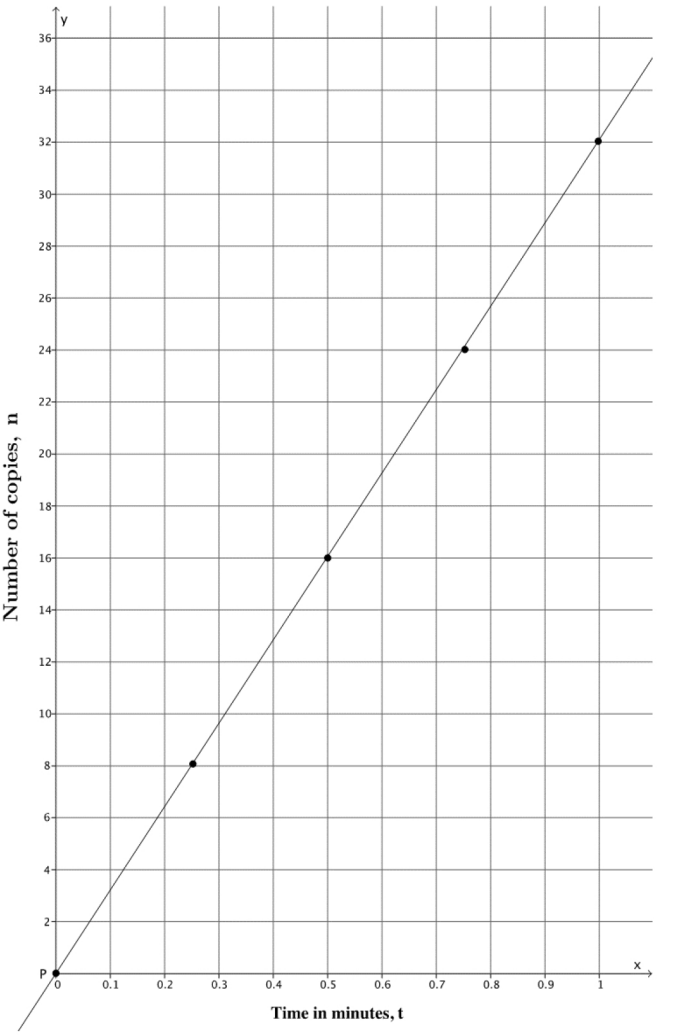


a. How many square feet can Emily paint in one minute? In other words, what is her unit rate of painting?

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

17. A copy machine makes copies at a constant rate. The machine can make 80 copies in $2\frac{1}{2}$ minutes.

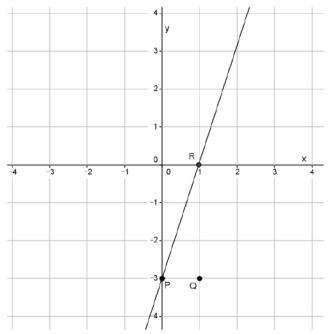
t (time in minutes)	Linear equation: $n = 32t$	n (number of copies)
0	$n = 32(0)$	0
0.25	$n = 32(0.25)$	8
0.5	$n = 32(0.5)$	16
0.75	$n = 32(0.75)$	24
1	$n = 32(1)$	32



a. How many copies can the machine make each minute? In other words, what is the unit rate of the copy machine?

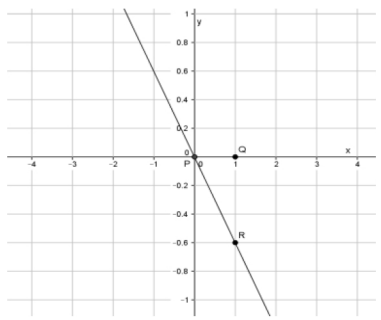
b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

1. What is the slope of this non-vertical line? Use your transparency if needed.



The slope of the line is 3, $m = 3$.

2. What is the slope of this non-vertical line? Use your transparency if needed.

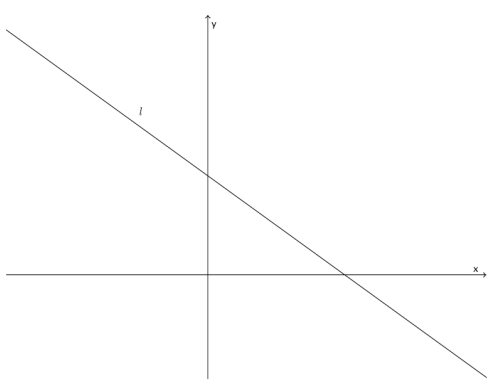


The slope of the line is -0.6, which is equal to $-\frac{3}{5}$, $m = -\frac{3}{5}$.

Problem Set Sample Solutions

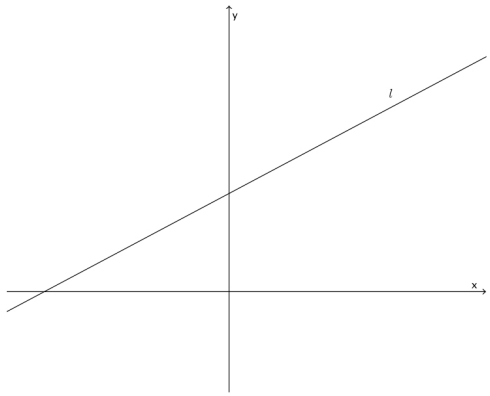
Students practice identifying lines as having positive or negative slope. Students interpret the unit rate of a graph as the slope of the graph.

1. Does the graph of the line shown below have a positive or negative slope? Explain.



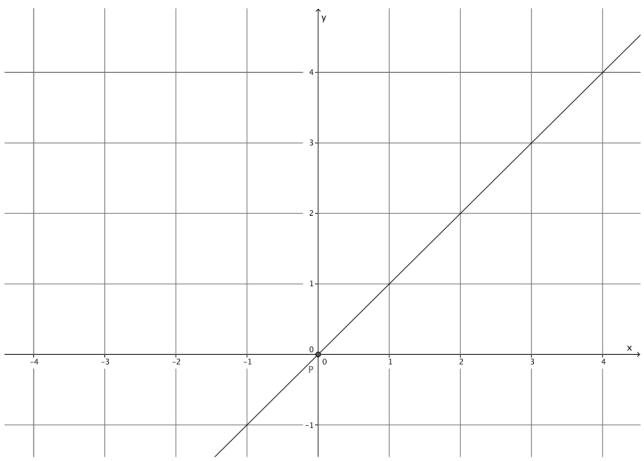
The graph of this line has a negative slope. First of all, it is left-to-right declining, which is an indication of negative slope. Also, if we were to mark a point P and a point Q one unit to the right of P, then draw a line parallel to the y-axis through Q, then the intersection of the two lines would be below Q, making the number that represents slope negative.

2. Does the graph of the line shown below have a positive or negative slope? Explain.



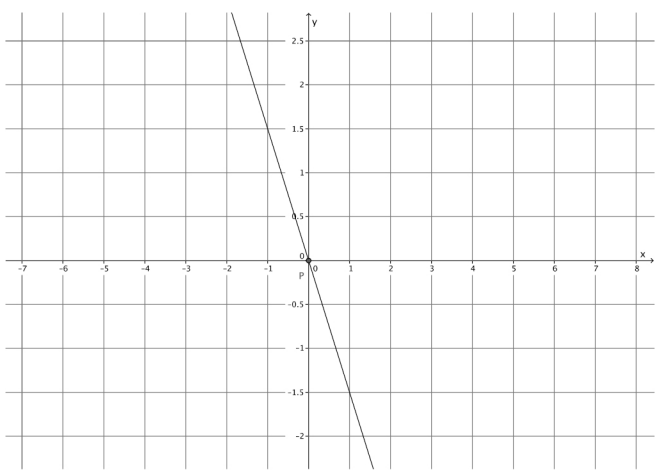
The graph of this line has a positive slope. First of all, it is left-to-right inclining, which is an indication of positive slope. Also, if we were to mark a point P and a point Q one unit to the right of P, then draw a line parallel to the y-axis through Q, then the intersection of the two lines would be above Q, making the number that represents slope positive.

3. What is the slope of this non-vertical line? Use your transparency if needed.



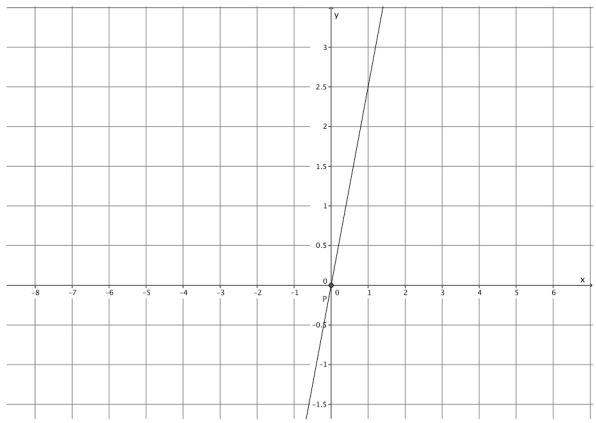
The slope of this line is 1, $m = 1$.

4. What is the slope of this non-vertical line? Use your transparency if needed.



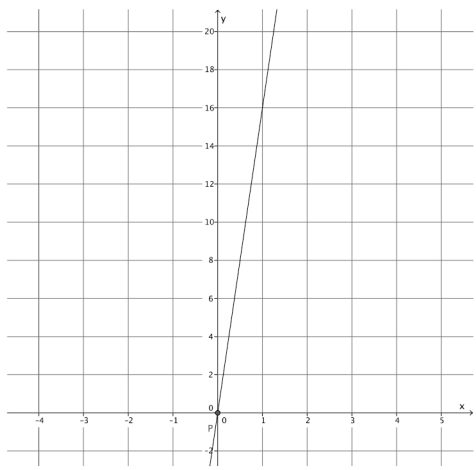
The slope of this line is $-\frac{3}{2}$, $m = -\frac{3}{2}$.

5. What is the slope of this non-vertical line? Use your transparency if needed.



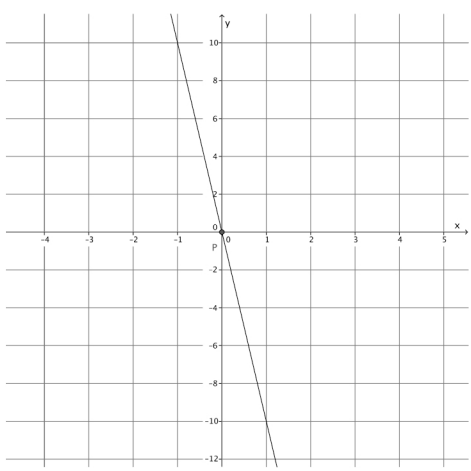
The slope of this line is $\frac{5}{2}$, $m = \frac{5}{2}$.

6. What is the slope of this non-vertical line? Use your transparency if needed.



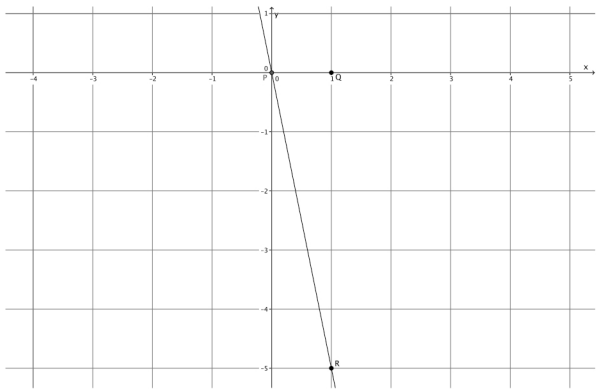
The slope of this line is 16, $m = 16$.

7. What is the slope of this non-vertical line? Use your transparency if needed.



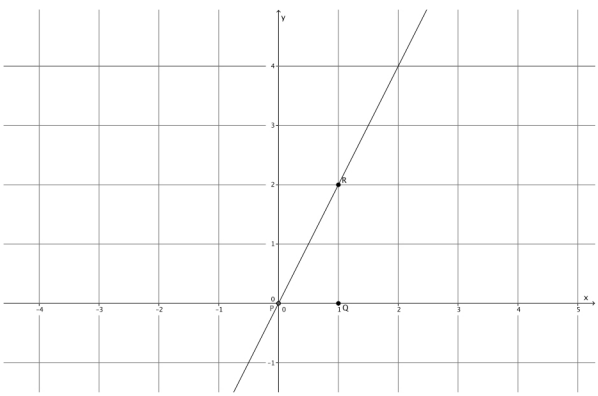
The slope of this line is -10, $m = -10$.

8. What is the slope of this non-vertical line? Use your transparency if needed.



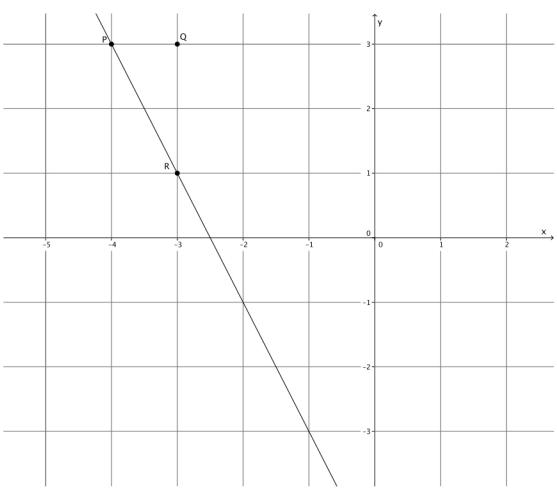
The slope of this line is -5, $m = -5$.

9. What is the slope of this non-vertical line? Use your transparency if needed.



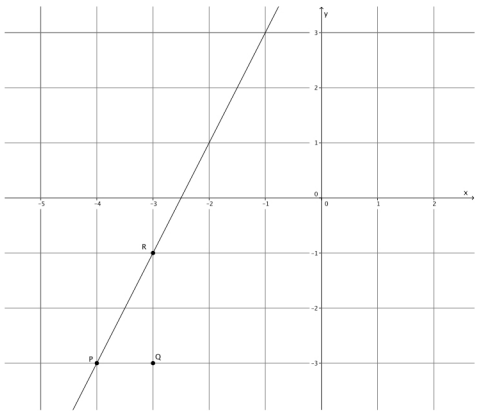
The slope of this line is 2, $m = 2$.

10. What is the slope of this non-vertical line? Use your transparency if needed.



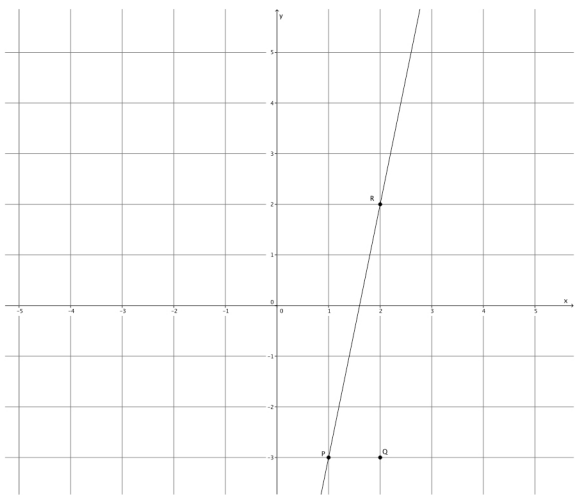
The slope of this line is -2, $m = -2$.

11. What is the slope of this non-vertical line? Use your transparency if needed.



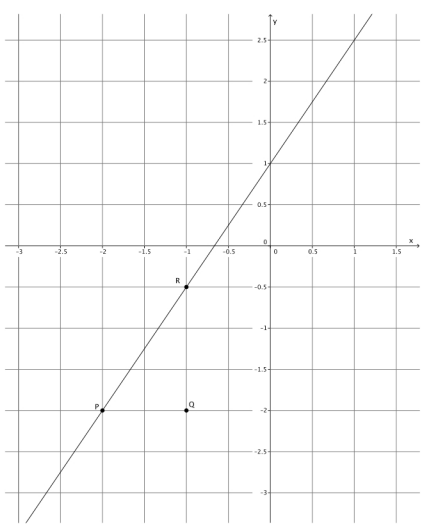
The slope of this line is 2, $m = 2$.

12. What is the slope of this non-vertical line? Use your transparency if needed.



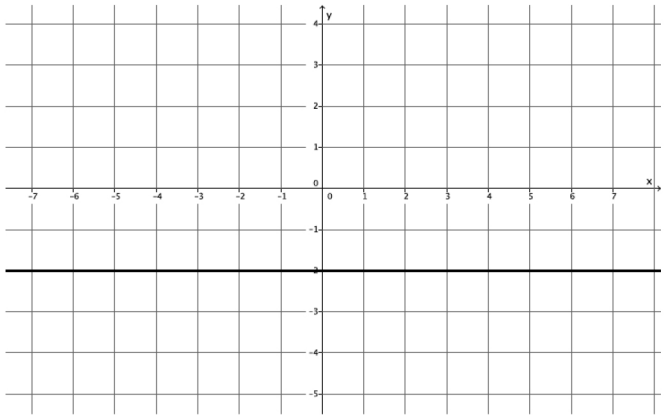
The slope of this line is 5, $m = 5$.

13. What is the slope of this non-vertical line? Use your transparency if needed.



The slope of this line is $\frac{3}{2}$, $m = \frac{3}{2}$.

14. What is the slope of this non-vertical line? Use your transparency if needed.

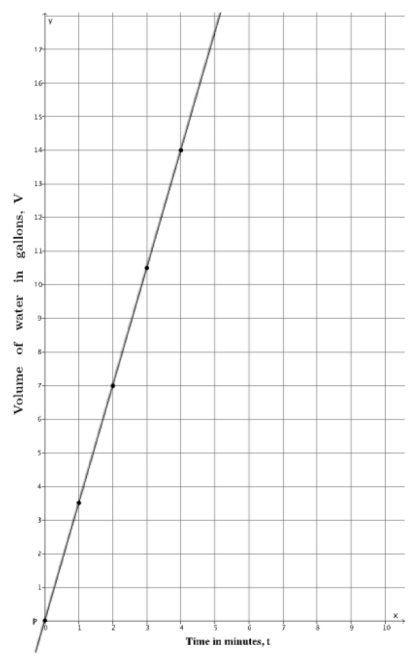


The slope of this line is 0, $m = 0$.

In Lesson 11, you did the work below involving constant rate problems. Use the table and the graphs provided to answer the questions that follow.

15. Suppose the volume of water that comes out in three minutes is 10.5 **gallons.**

t (time in minutes)	Linear equation: $V = \frac{10.5}{3}t$	V (in gallons)
0	$V = \frac{10.5}{3}(0)$	0
1	$V = \frac{10.5}{3}(1)$	$\frac{10.5}{3} = 3.5$
2	$V = \frac{10.5}{3}(2)$	$\frac{21}{3} = 7$
3	$V = \frac{10.5}{3}(3)$	$\frac{31.5}{3} = 10.5$
4	$V = \frac{10.5}{3}(4)$	$\frac{42}{3} = 14$



a. How many gallons of water flow out of the faucet per minute? In other words, what is the unit rate of water flow?

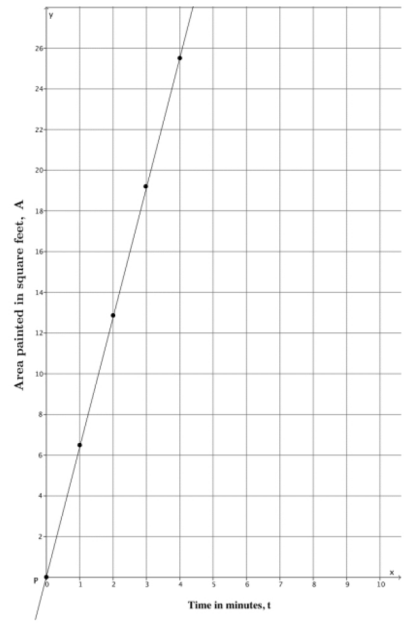
The unit rate of water flow is 3.5 *gallons per minute.*

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

The slope of the line is 3.5, $m = 3.5$.

16. Emily paints at a constant rate. She can paint 32 square feet in five minutes.

t (time in minutes)	Linear equation: $A = \frac{32}{5}t$	A (area painted in square feet)
0	$A = \frac{32}{5}(0)$	0
1	$A = \frac{32}{5}(1)$	$\frac{32}{5} = 6.4$
2	$A = \frac{32}{5}(2)$	$\frac{64}{5} = 12.8$
3	$A = \frac{32}{5}(3)$	$\frac{96}{5} = 19.2$
4	$A = \frac{32}{5}(4)$	$\frac{128}{5} = 25.6$



a. How many square feet can Emily paint in one minute? In other words, what is her unit rate of painting?

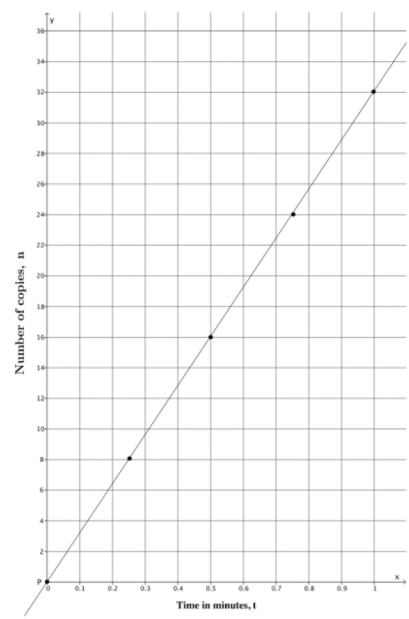
The unit rate at which Emily paints is 6.4 square feet per minute.

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

The slope of the line is 6.4, $m = 6.4$.

17. A copy machine makes copies at a constant rate. The machine can make 80 copies in $2\frac{1}{2}$ minutes.

t (time in minutes)	Linear equation: $n = 32t$	n (number of copies)
0	$n = 32(0)$	0
0.25	$n = 32(0.25)$	8
0.5	$n = 32(0.5)$	16
0.75	$n = 32(0.75)$	24
1	$n = 32(1)$	32



a. How many copies can the machine make each minute? In other words, what is the unit rate of the copy machine?

The unit rate of the copy machine is 32 copies per minute.

b. Assume that the graph of the situation is a line, as shown in the graph. What is the slope of the line?

The slope of the line is 32, $m = 32$.