Lesson Plans to Introduce the Graphing Linear Equations Unit

Susan Mercer

1) Introducing the pattern.

- ❒ Hand out a piece of graph paper to each student.
- ❒ Put the transparency of pattern #1 on the overhead. Show only steps 0 and 1, cover the rest with a paper.
- ❒ Ask students to describe what they see: how many squares do you see in the pattern step 0? how many squares do you see in the pattern step 1?
- ❒ Ask students what do they think comes next: what do you think step 2 will look like? how many squares will you need?
- ❒ Uncover step 2.
- ❒ Ask students what do they think comes next: what do you think step 3 will look like? how many squares will you need?
- ❒ Uncover step 3.
- ❒ Ask students what do they think comes next: what do you think step 4 will look like? how many squares will you need?
- ❒ Uncover step 4.
- ❒ Tell students to copy the pattern on their graph paper, clearly labeling each step.
- ❒ Ask students to describe the pattern: what do you notice about the pattern? does it go up or down? how many squares do you need to add each time? are the number of squares odd or even?

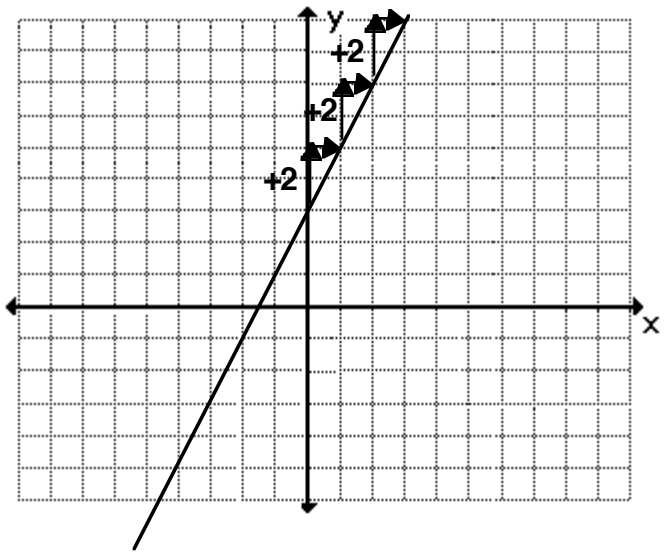
2) Creating a table.

- ❒ Put the table #1 transparency on the overhead and ask students to copy it on their graph paper.
- ❒ Tell students that step 0 is where the pattern starts.
- ❒ Have students complete the table based on the pattern and the number of squares.
- ❒ Ask different students to give you the number of squares they wrote down for each step and complete the table on the overhead. This will provide students with immediate feed back.
- ❒ Ask students for patterns they notice on the table: what do you notice about the numbers on the table? is there a pattern? how many squares would you have on step 5? how do you know?
- ❒ Based on the students' responses extend the table to steps 5, 6 and 7.
- ❒ Tell students to write the increment of squares from one step to the next.
- ❒ The finished table should look like this:

step	number of squares	
0	3	
		+2
1	5	
		+2
2	7	
		+2
3	9	
		+2
4	11	
		+2
5	13	
		+2
6	15	
		+2
7	17	

3) Graphing the pattern

- ❒ On the same graph paper students draw a graph. Show students how to do a graph by drawing the x axis, then the y axis and label each one using a scale of one. Make sure they label the origin.
- ❒ Show students how to plot ordered pairs. Show them where zero step is and ask: how many squares are in the pattern in step 0? students can use the table or the pattern to answer. Mark the ordered pair on the overhead graph and students plot it on their graphs. Repeat this modeling process for steps 1, 2 and 3.
- ❒ Next, ask: what do you notice about the first four points you plotted? students may respond that the points are in a straight line or evenly distributed. These observations are very important.
- ❒ Ask students: can you plot step 4, 5, 6 or 7? why not?
- ❒ Ask students to connect the ordered pairs with a straight line, using a ruler.
- ❒ Ask students: can you identify on the graph the +2 from the table? Show students how to label the +2 on the graph.
- ❒ Each student should have the following graph.



4) Introduction to vocabulary words

- ❒ Ask students: how many squares did you add from one step to another?
- ❒ Tell the students that the number of squares you add from one step to another is called the SLOPE.
- ❒ Ask students to identify the slope on the table and the graph and and model how to label it on the overhead.
- ❒ Students identify and label SLOPE on their pattern, the table and the graph.

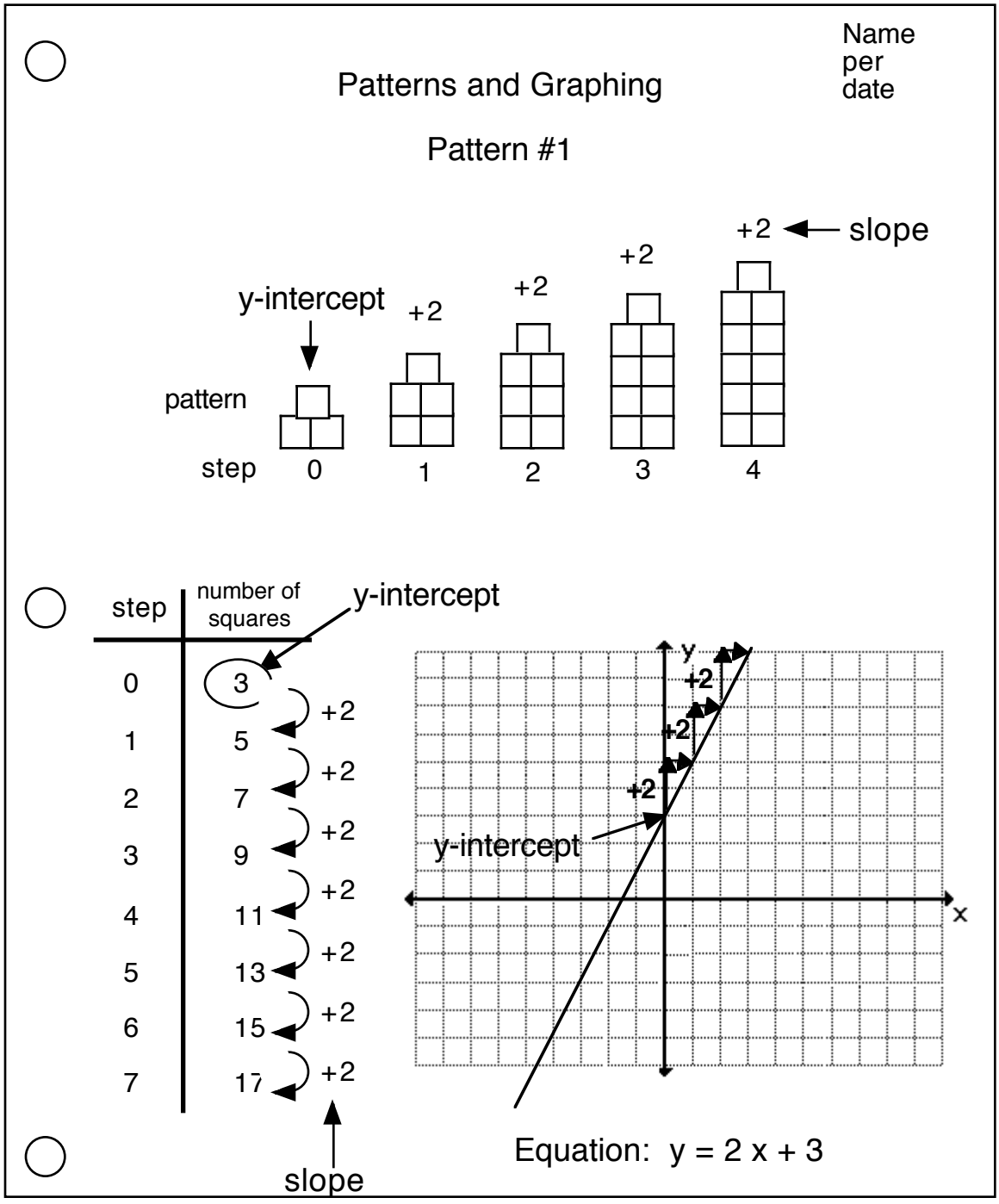
- ❒ Ask students: how many squares did the pattern start with?
- ❒ Tell the students that the number of squares the pattern started with is called the Y-INTERCEPT.
- ❒ Ask students to identify the y-intercept on the table and the graph and model how to label it on the overhead.
- ❒ Students identify and label Y-INTERCEPT on their pattern, the table and the graph.

5) Writing equations

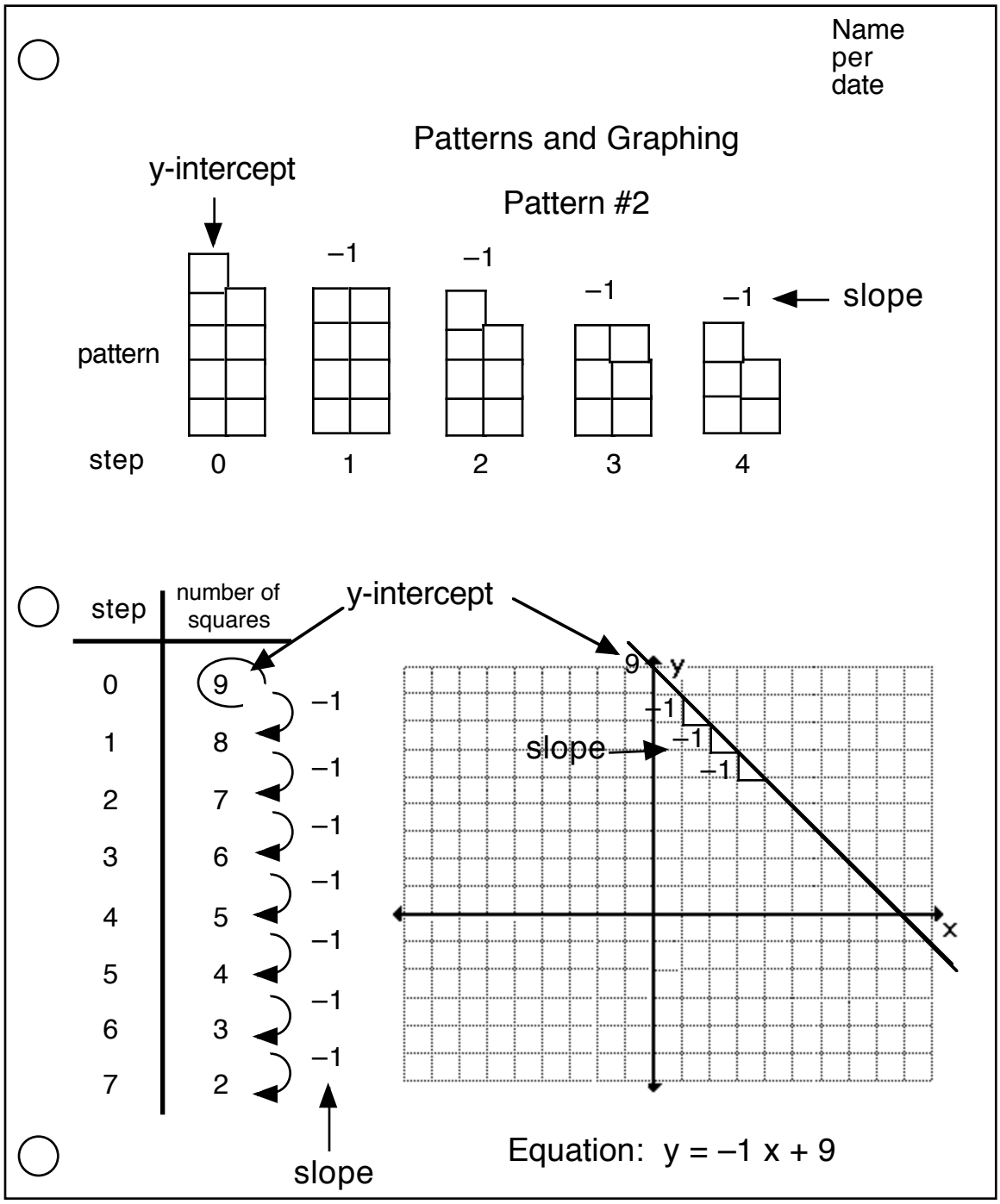
- ❒ Using the slope and the y-intercept, model for the students how to write the equation for the pattern (y=slope x + y-intercept).
- ❒ Explain to the students that the equation describes the pattern using numbers and can be used to calculate the number of squares that a specific step will have. For example: step 10 or step 1000)

6) When you finish introducing **pattern #1**, repeat steps 1 to 5 for **pattern #2**.

At the end of Pattern #1 students' page should look as follows:

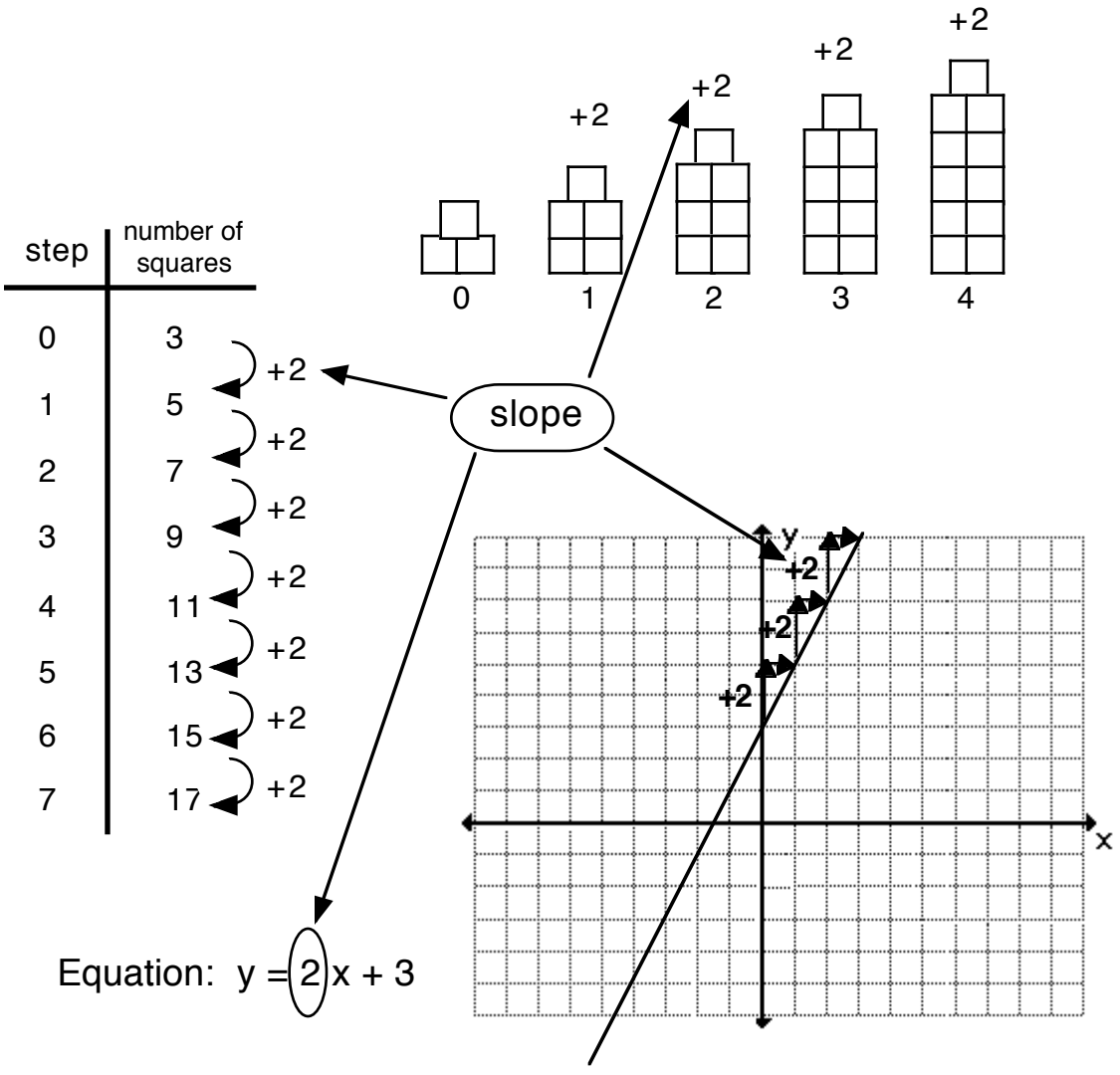


At the end of Pattern #2 students' page should look as follows:



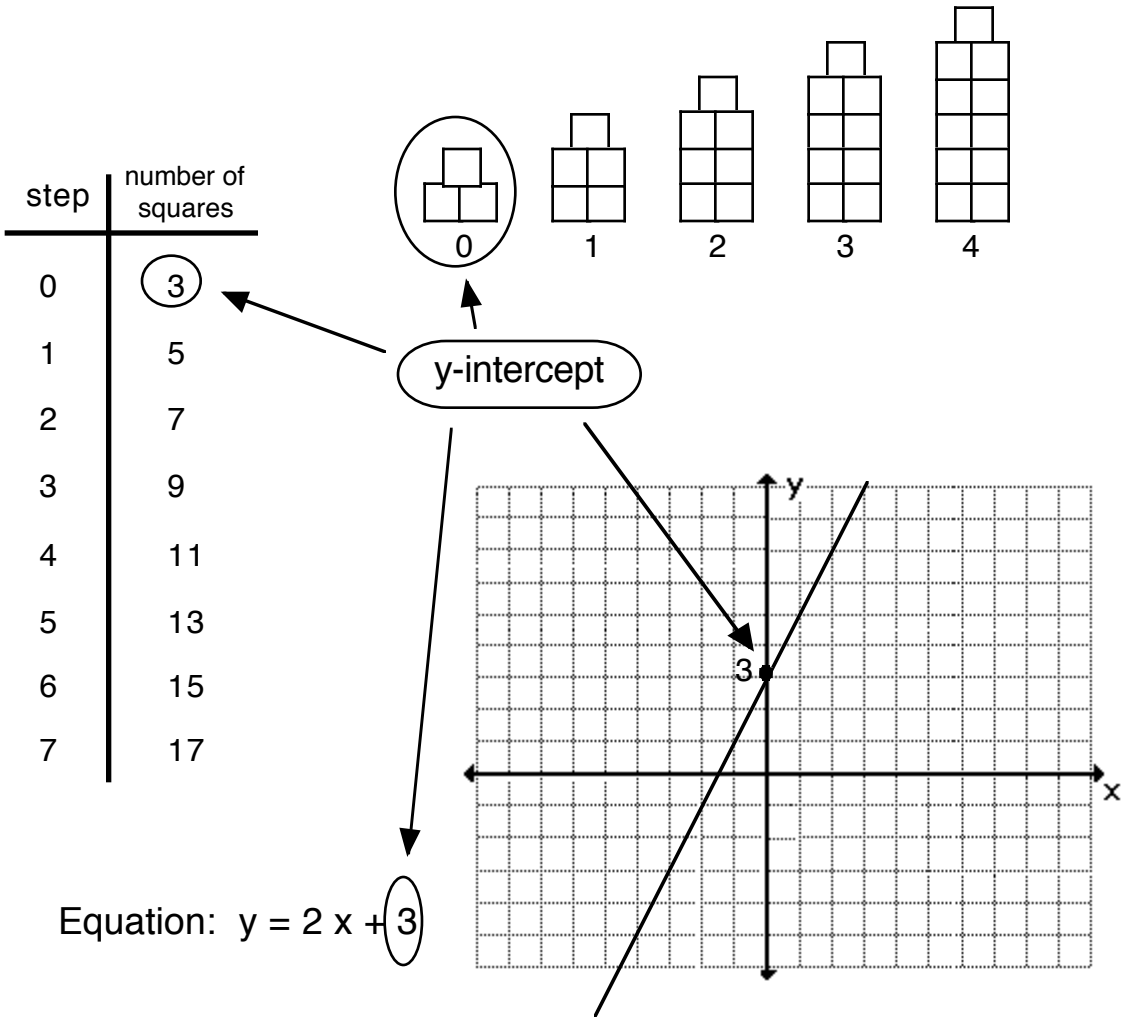
Teacher's notes: Connecting the pattern, the table, the graph and the equation.

✏ **Slope**: the steepness of the line;
On the pattern, the slope is the number of squares you add or subtract to obtain the next step;
On the table, the slope is the number you add or subtract from the previous step to obtain the next step;
On the graph, you can recognize the slope by observing how many squares you have to go up for every one that you go across.



Teacher's notes: Connecting the pattern, the table, the graph and the equation. (cont)

✏ **y-intercept**: the value of y when x=0;
On the pattern, the y-intercept is the number of squares for step 0;
On the table, the y-intercept is the number of squares for step 0;
On the graph, the y-intercept is where the line crosses the y-axes.



Teacher's notes: Connecting the pattern, the table, the graph and the equation. (cont)

✏ **linear or non linear**: the graph is a straight line;
On the pattern, you always add or subtract the same number of squares;
On the table, you always add or subtract the same number from step to step;
On the graph, you can observe a straight line.

✏ **ascending**: the graph is a straight line going up;
On the pattern, you always add the same number of squares;
On the table, you always add the same number from step to step;
On the graph, you can observe a straight line going up;
Slope is positive.

✏ **descending**: the graph is a straight line going down;
On the pattern, you always subtract the same number of squares;
On the table, you always subtract the same number from step to step;
On the graph, you can observe a straight line going down;
Slope is negative.

✏ **horizontal**: the graph is a straight line that does not go up or down;
On the pattern, you add zero squares from one step to another;
On the table, you add zero from step to step;
On the graph, you can observe a horizontal line;
Slope is zero.

✏ **equation**: a numerical description of the pattern given by Y = slope X + y-intercept
the x is the step in the pattern;
the y is the number of squares in the pattern for step x;
slope is the number of squares we add or subtract from one step to another;
y-intercept is how many squares you start with.

Transparencies

Pattern #1

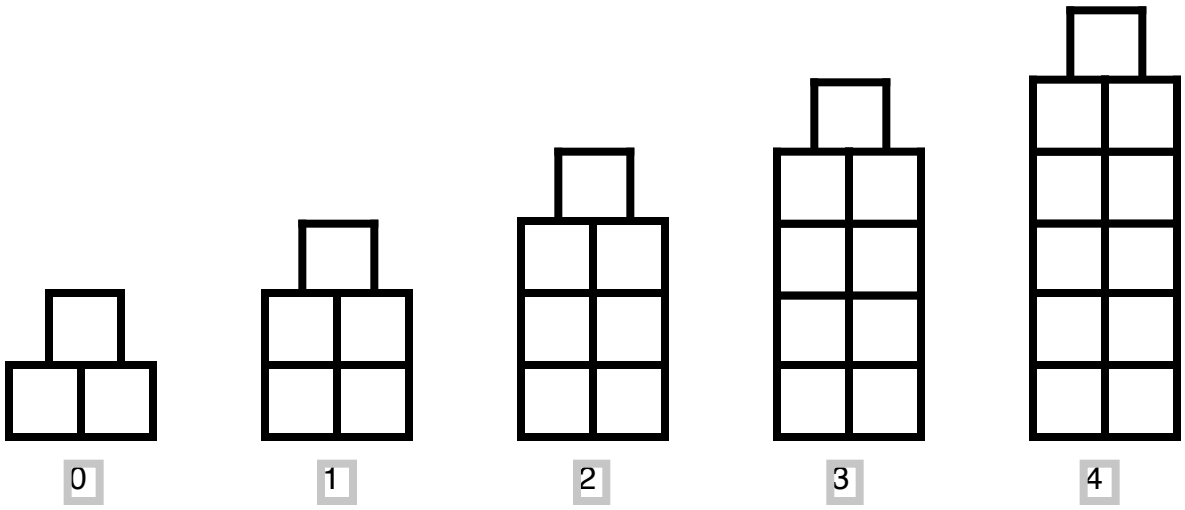
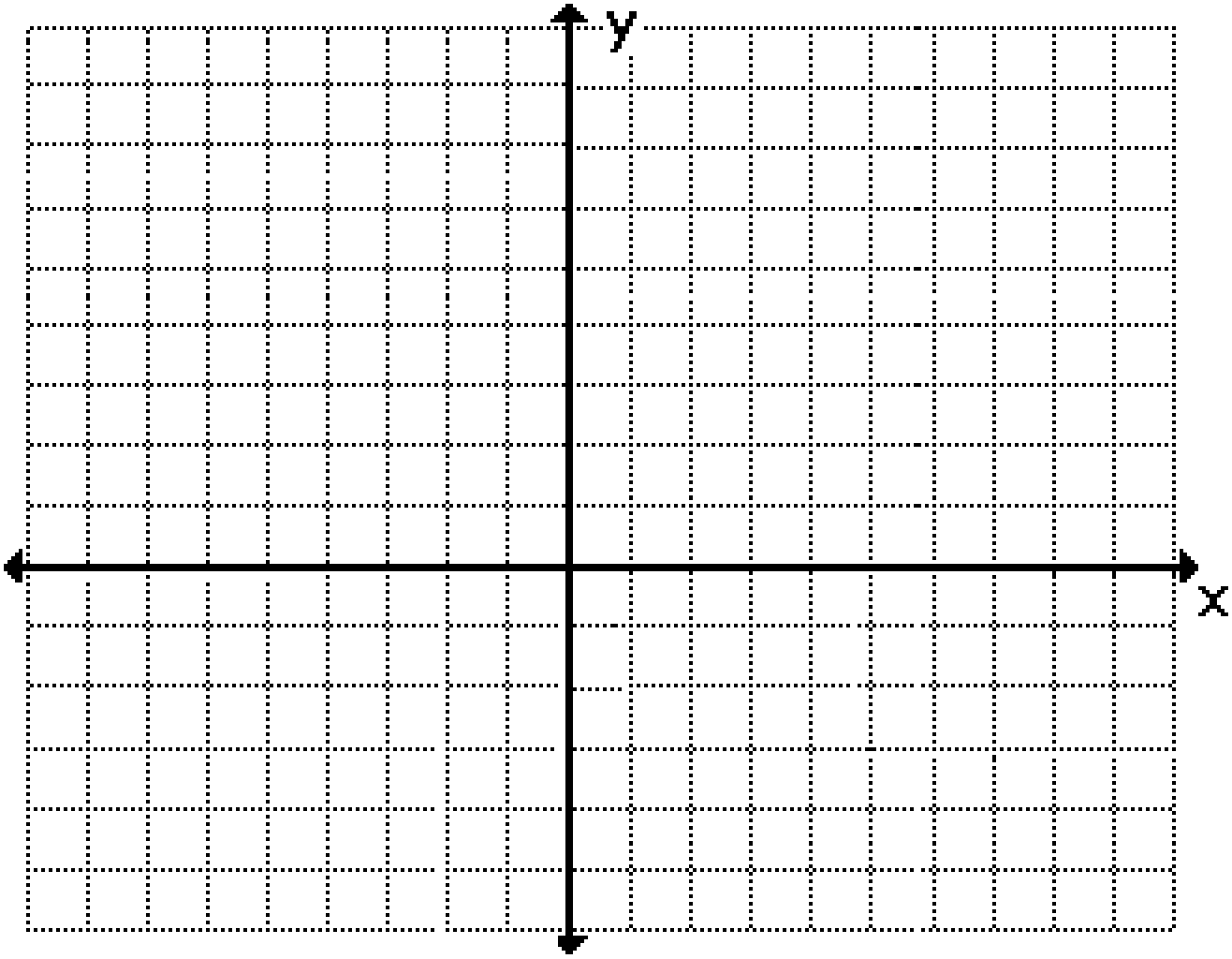


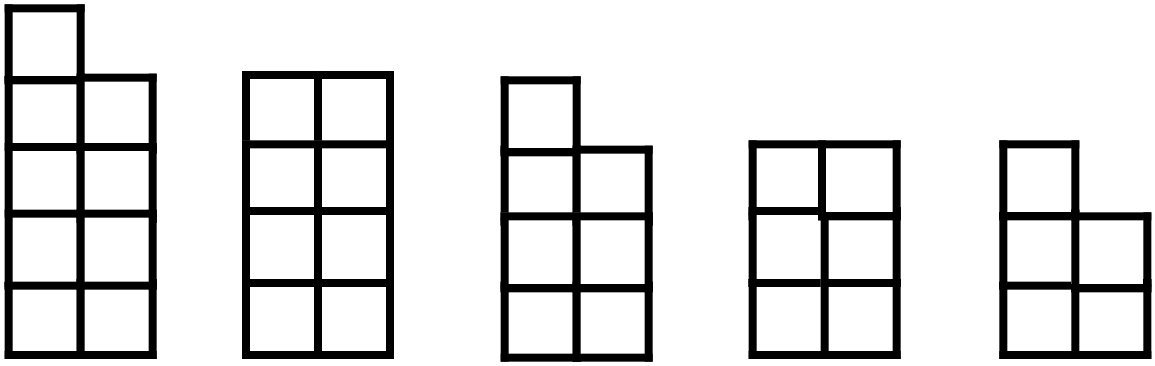
Table #1

step	number of squares
0	
1	
2	
3	
4	
5	

Graph #1



Pattern #2



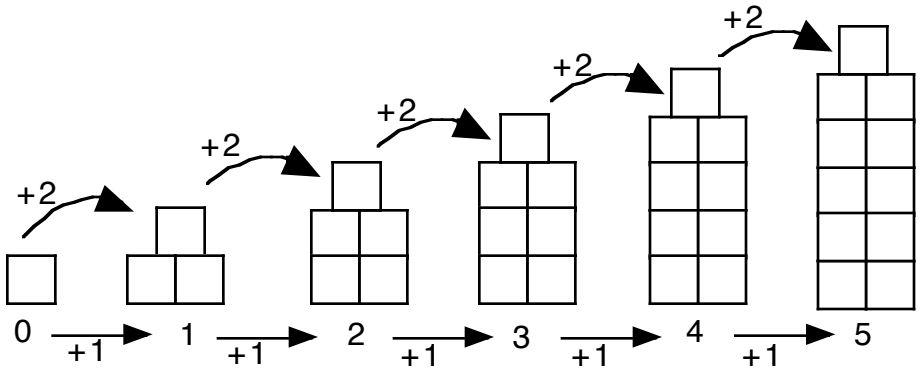
Introducing Graphing Linear Equations

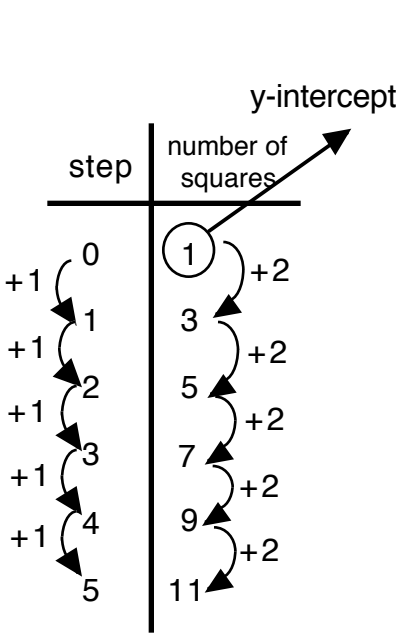
Answer Key

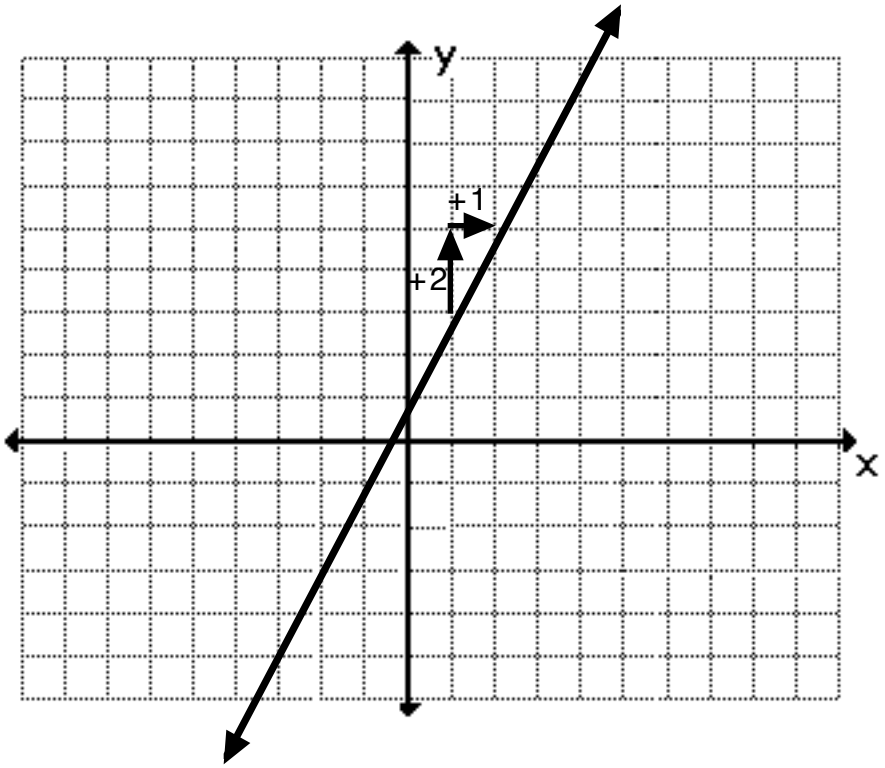
Susan Mercer

Graphing Patterns

1) Study and complete the pattern.
2) Complete the table.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.







What is the slope? ___2___ Show the slope on the pattern, table and graph.

What is the y-intercept? ___1___ Show the y-intercept on the pattern, table and graph.

Use the slope and y-intercept to write the equation: ___y = 2x + 1___

Is the pattern linear or non-linear? ___linear___

Is the pattern ascending, descending, or horizontal? ___ascending___

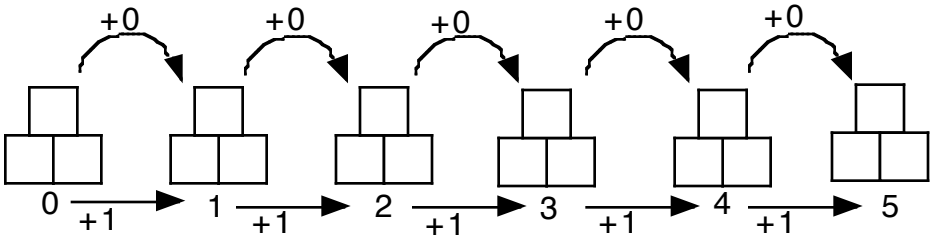
Graphing Patterns

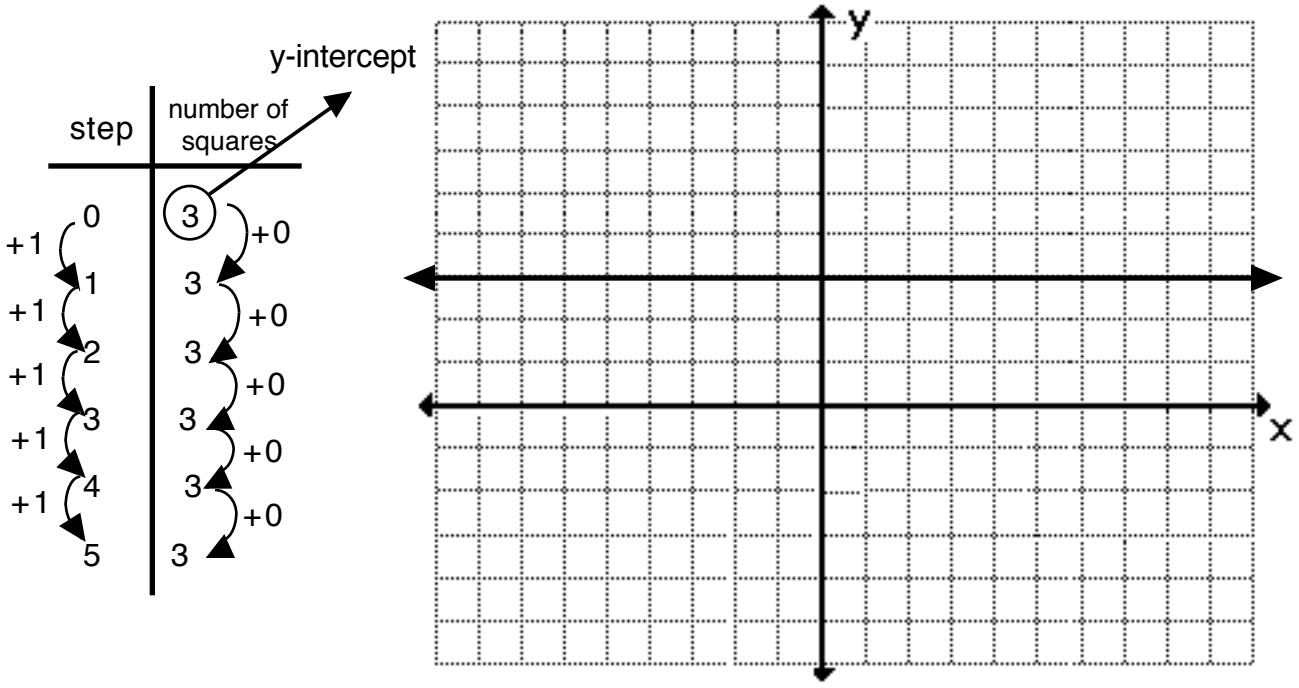
1) Study and comple
2) Complete the tabl
3) Label the X and Y
4) Answer the questi

Key Question:

How is this problem different from the previous one?

You are not adding squares from one step to the next.





What is the slope? ___0_____ Show the slope on the pattern, table and graph.

What is the y-intercept? ___3____ Show the y-intercept on the pattern, table and graph.

Use the slope and y-intercept to write the equation: ____y = 0x + 3_____

Is the pattern linear or non-linear? _____linear_____

Is the pattern ascending, descending, or horizontal? ___horizontal__

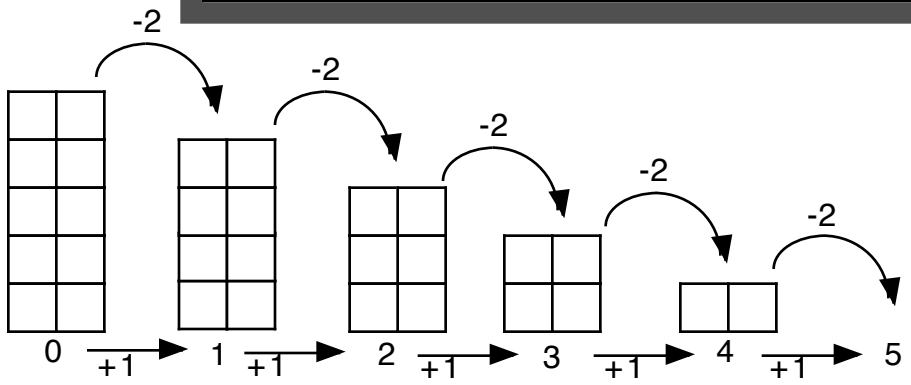
Graphing Patterns

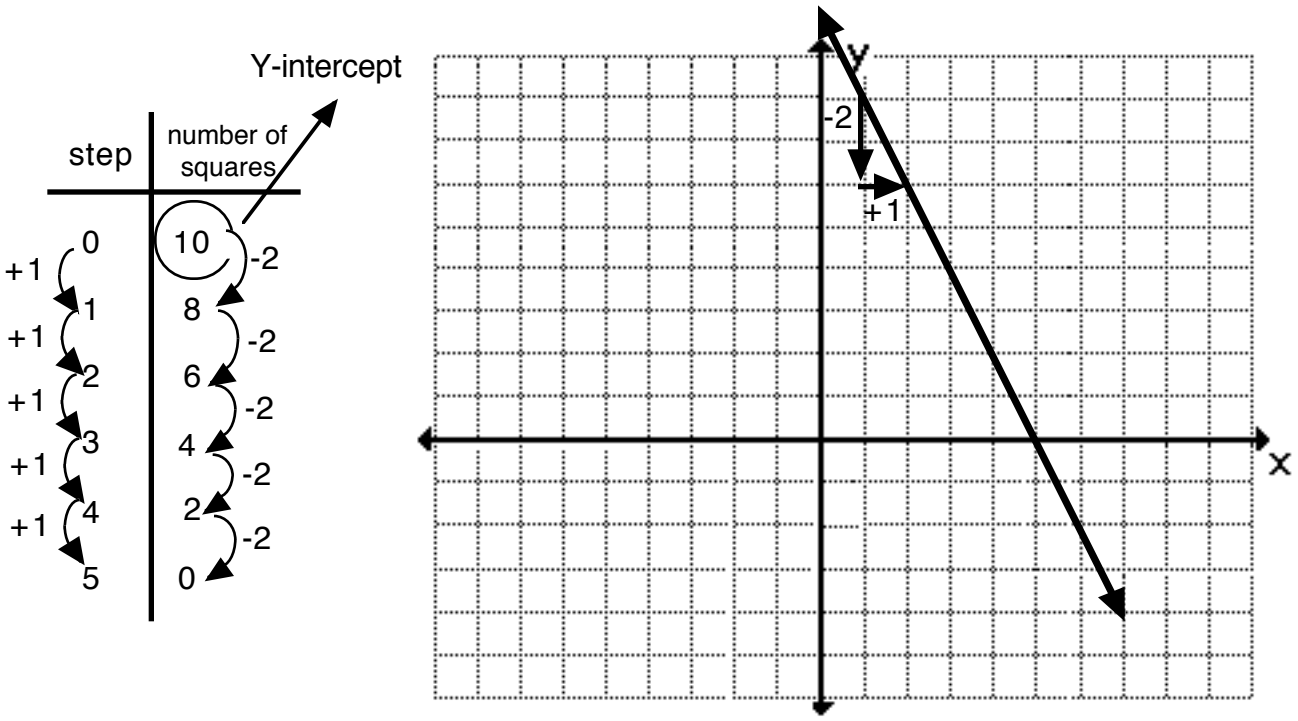
1) Study and complet
2) Complete the tabl
3) Label the X and Y
4) Answer the questi

Key Question:

How is this problem different from the previous one?

You are taking away squares from one step to the next.





What is the slope? _____-2__ Show the slope on the pattern, table and graph.

What is the y-intercept? __10___ Show the y-intercept on the pattern, table and graph.

Use the slope and y-intercept to write the equation: ____y = -2x + 10_____

Is the pattern linear or non-linear? ___linear_____

Is the pattern ascending, descending, or horizontal? __descending___

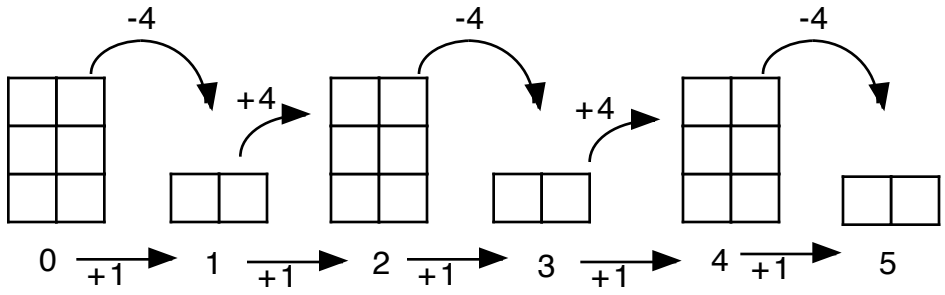
Graphing Patterns

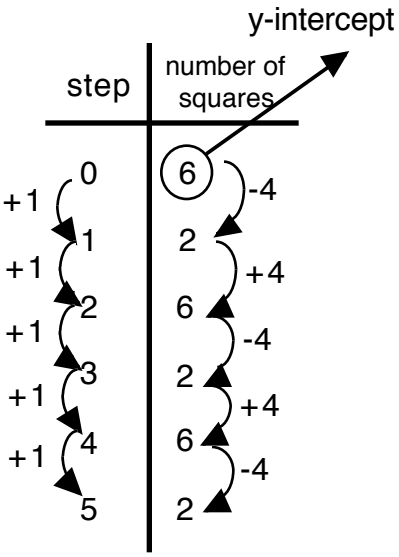
1) Study and comple
2) Complete the tabl
3) Label the X and Y
4) Answer the questi

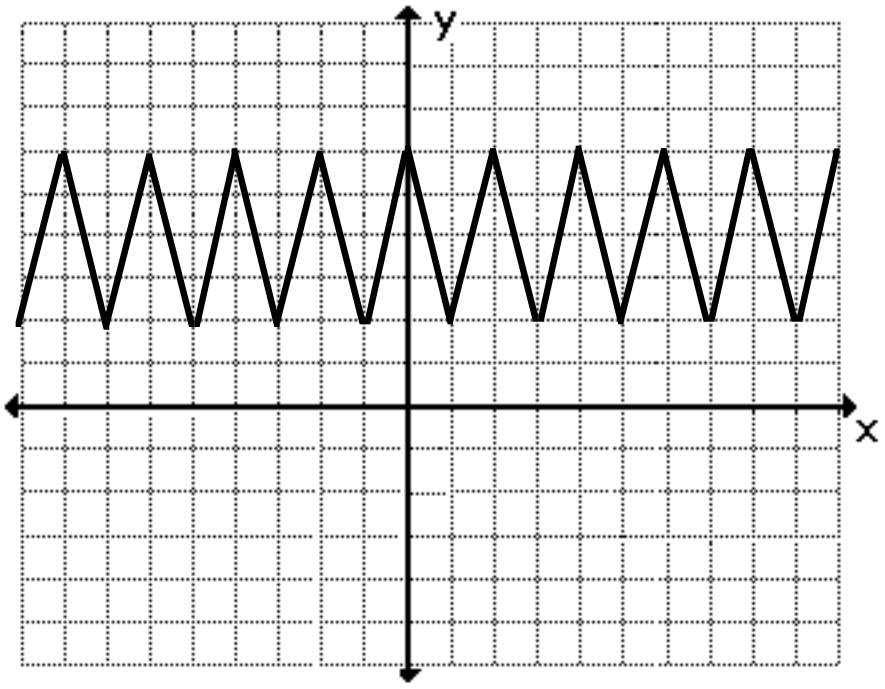
Key Question:

How is this problem different from the previous one?

Fisrt you take away four squares and next you add four squares.







Can you determine a slope? __no__ Why or why not? __not a line__

What is the y-intercept? __6__ Show the y-intercept on the table, graph and rule.

Is the pattern linear or non-linear? __non-linear__

Is the pattern ascending, descending, or horizontal? __none__

Graphing Number Patterns

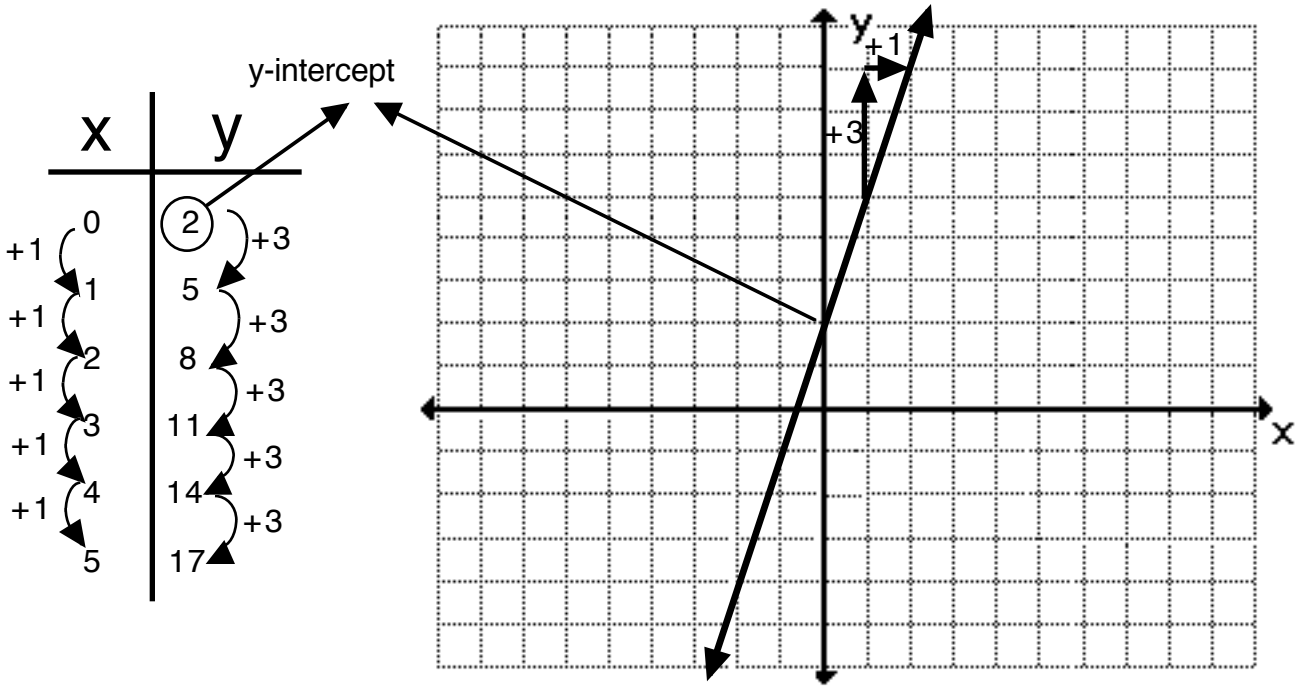
1) Study and complete
2) Complete the table
3) Label the X and Y a
4) Answer the questio

Key Question:

How is this problem different from the previous one?

Insted of a picture you have numbers. The X is the step while the Y is the number of squares in the picture.

X:	0	1	2	3	4	5	6	7	8
Y:	2,	5,	8,	11,	14,	17	20,	23,	26 ,



What is the slope? 3 Show the slope on the table and graph.

What is the y-intercept? 2 Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: y = 3x + 2

Use the equation to find the value of y when x = 10? 32
Use the equation to find the value of y when x = 100? 302
Use the equation to find the value of y when x = 1000? 3002

Is the pattern linear or non-linear? linear

Is the pattern ascending, descending, or horizontal? ascending

Graphing Number Patterns

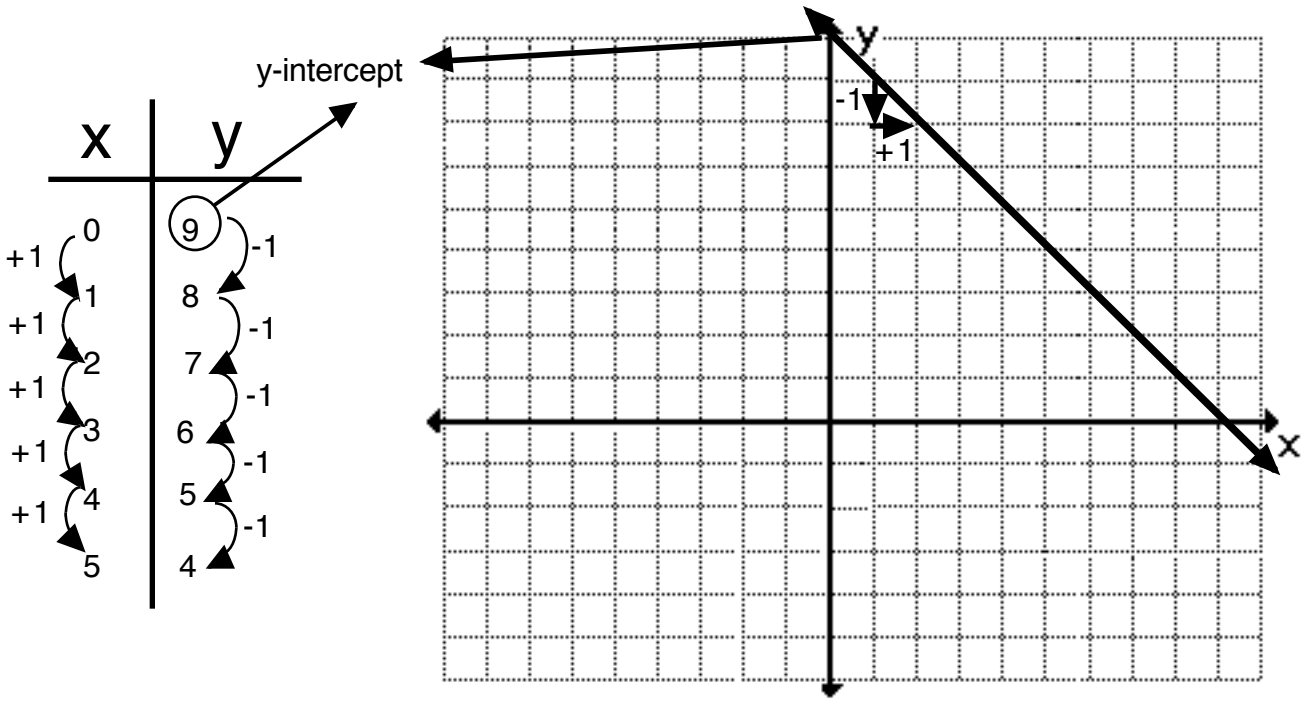
1) Study and complete the pattern
2) Complete the table f
3) Label the X and Y ax
4) Answer the question

Key Question:

How is this problem different from the previous one?

The Y numbers are going down by one.

X:	0	1	2	3	4	5	6	7	8
Y:	9,	8,	7,	6,	5,	4 ,	3 ,	2 ,	1 ,



What is the slope? ____-1____ Show the slope on the table and graph.

What is the y-intercept? ___9___ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: ____y = -1x + 9_____

Use the equation to find the value of y when x = 10? ____-19_____
Use the equation to find the value of y when x = 100? ____-100 + 9 = -91_____
Use the equation to find the value of y when x = 1000? ____-1000 + 9 = -991_____

Is the pattern linear or non-linear? _____linear_____

Is the pattern ascending, descending, or horizontal? ___descending__

Graphing Number Patterns

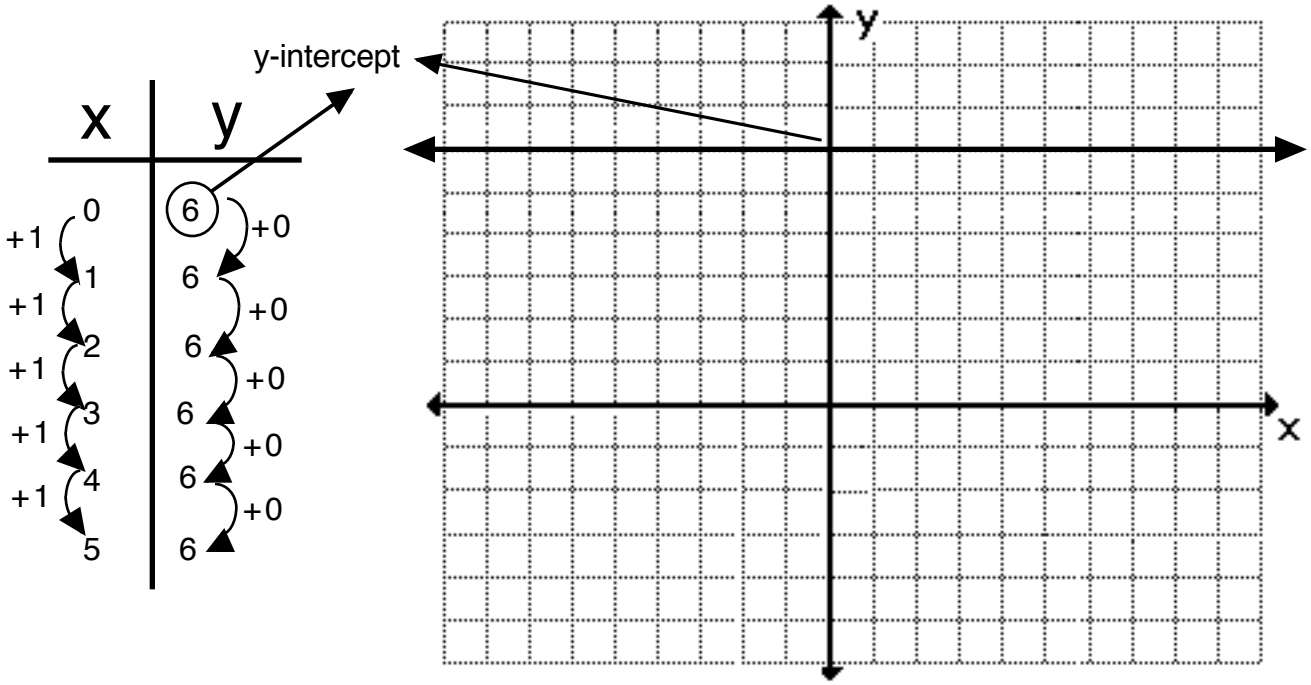
1) Study and complete
2) Complete the table
3) Label the X and Y a
4) Answer the questio

Key Question:

How is this problem different from the previous one?

The Y numbers are always the same.

X:	0	1	2	3	4	5	6	7	8
Y:	6,	6,	6,	6,	6,	6,	6,	6,	6,



What is the slope? ____0____ Show the slope on the table and graph.

What is the y-intercept? ___6___ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: _____y = 0x + 6_____

Use the equation to find the value of y when x = 10? _____6_____
Use the equation to find the value of y when x = 100? _____6_____
Use the equation to find the value of y when x = 1000? _____6_____

Is the pattern linear or non-linear? ____linear_____

Is the pattern ascending, descending, or horizontal? ___horizontal____

Graphing Number Patterns

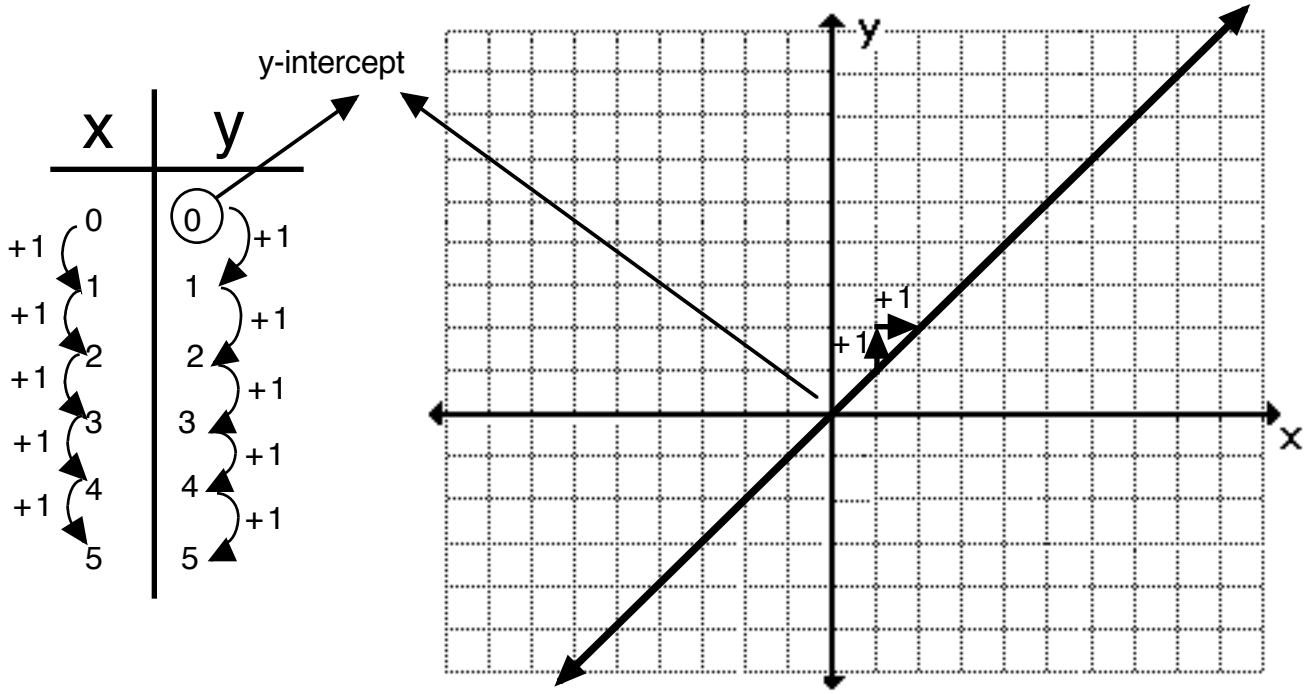
1) Study and complete
2) Complete the table
3) Label the X and Y a
4) Answer the questio

Key Question:

How is this problem different from the previous one?

The X and Y numbers are the same. You add one to each one.

X:	0	1	2	3	4	5	6	7	8
Y:	0,	1,	2,	3,	4,	5,	6,	7,	8,



What is the slope? 1 Show the slope on the table and graph.

What is the y-intercept? 0 Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: y = 1x + 0

Use the equation to find the value of y when x = 10? 10
Use the equation to find the value of y when x = 100? 100
Use the equation to find the value of y when x = 1000? 1000

Is the pattern linear or non-linear? linear

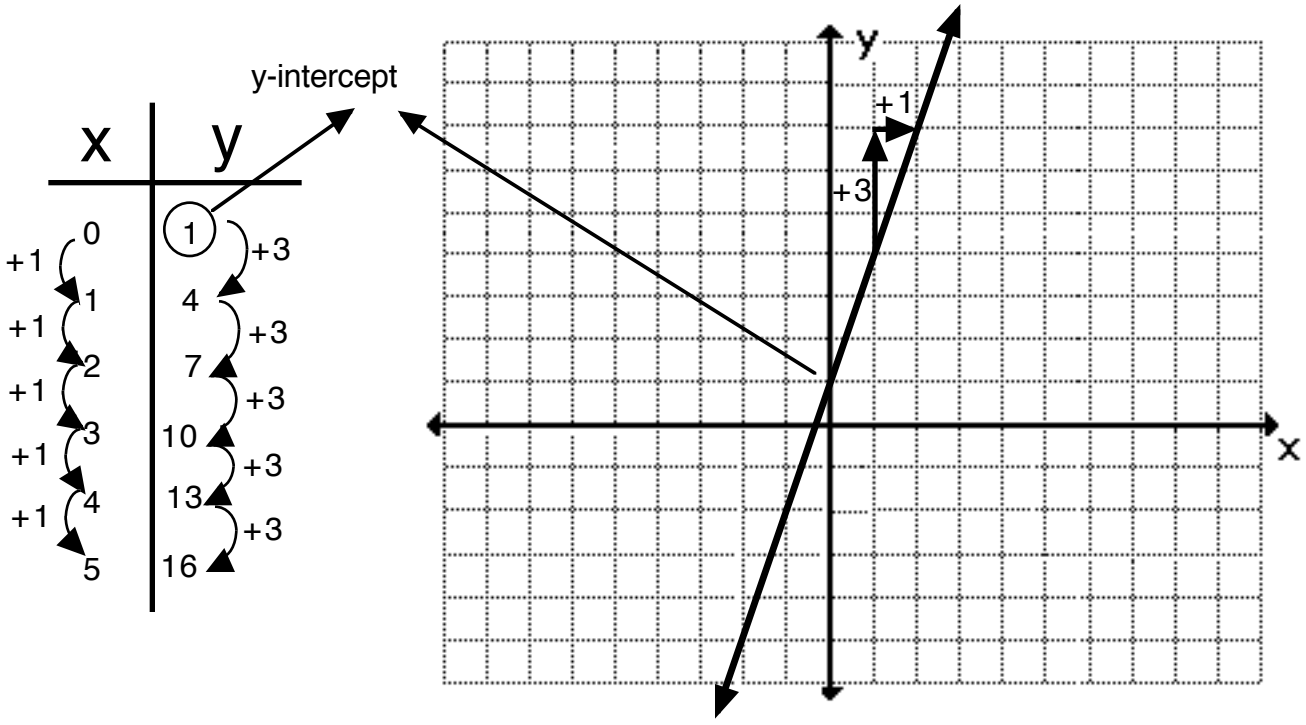
Is the pattern ascending, descending, or horizontal? ascending

Graphing Equations

1) Study the equation **y = 3x + 1**

2) Looking at the equation, what is the slope? __3__
what is the y-intercept? __1___

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? __3__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? _1

Is the pattern linear or non-linear? __linear_____

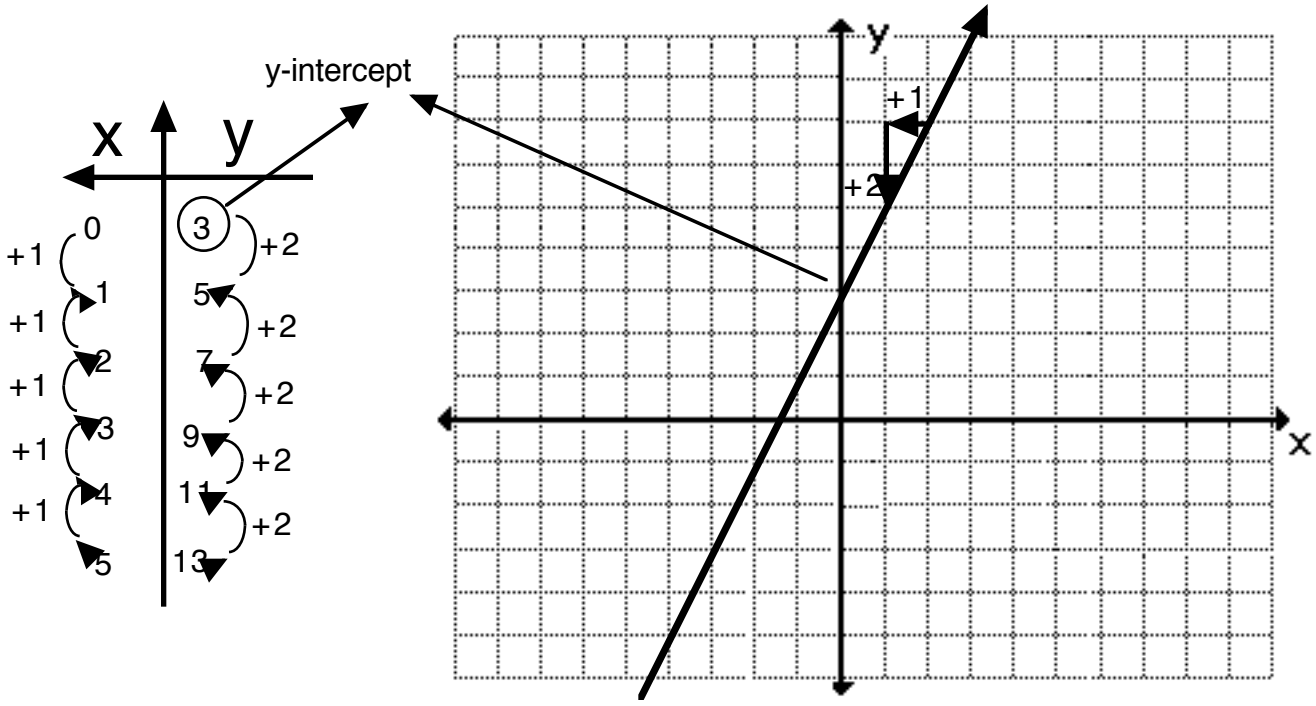
Is the pattern ascending, descending, or horizontal? _ascending_

Graphing Equations

1) Study the equation **y = 2x + 3**

2) Looking at the equation, what is the slope? __2__
what is the y-intercept? __3__

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? __2__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __3__

Is the pattern linear or non-linear? __linear__

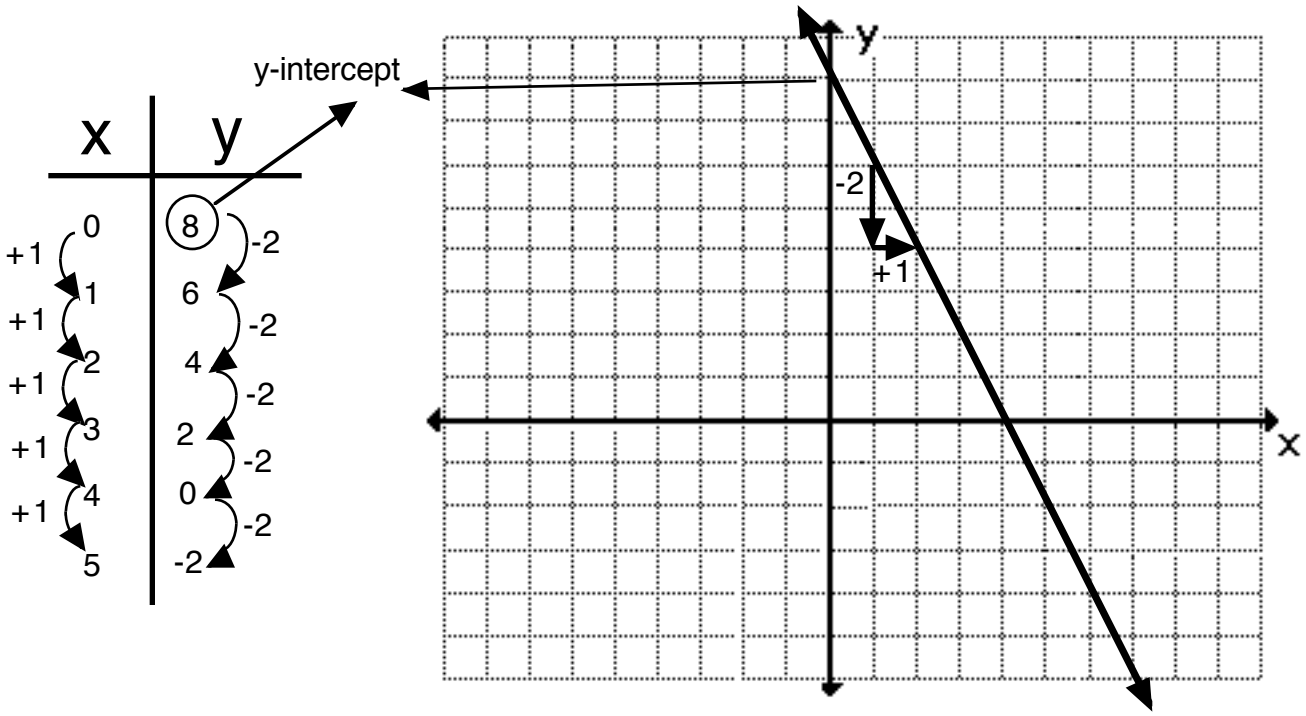
Is the pattern ascending, descending, or horizontal? __ascending__

Graphing Equations

1) Study the equation **$y = -2x + 8$**

2) Looking at the equation, what is the slope? __-2__
what is the y-intercept? __8__

3) Complete the table for x = 0, 1, 2, 3, 4 and.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? __-2__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __8__

Is the pattern linear or non-linear? __linear__

Is the pattern ascending, descending, or horizontal? __descending__

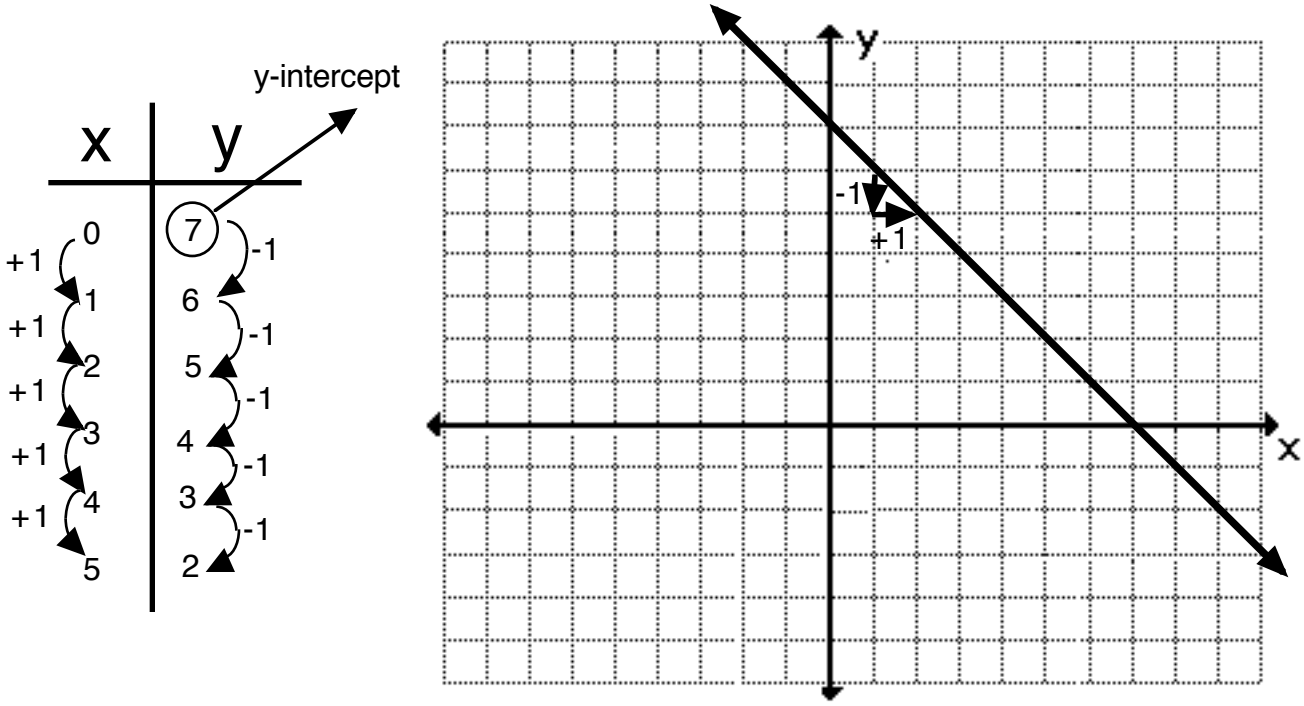
Graphing Equations

1) Study the equation **y = –1x + 7**

2) Looking at the equation, what is the slope? _-1_

what is the y-intercept? _7_

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? _-1_

Show the y-intercept on the table and graph. Is this the same as your answer in #2? _7_

Is the pattern linear or non-linear? _linear_

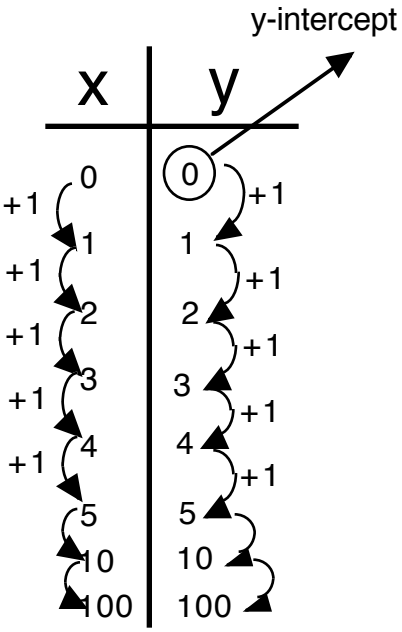
Is the pattern ascending, descending, or horizontal? _descending_

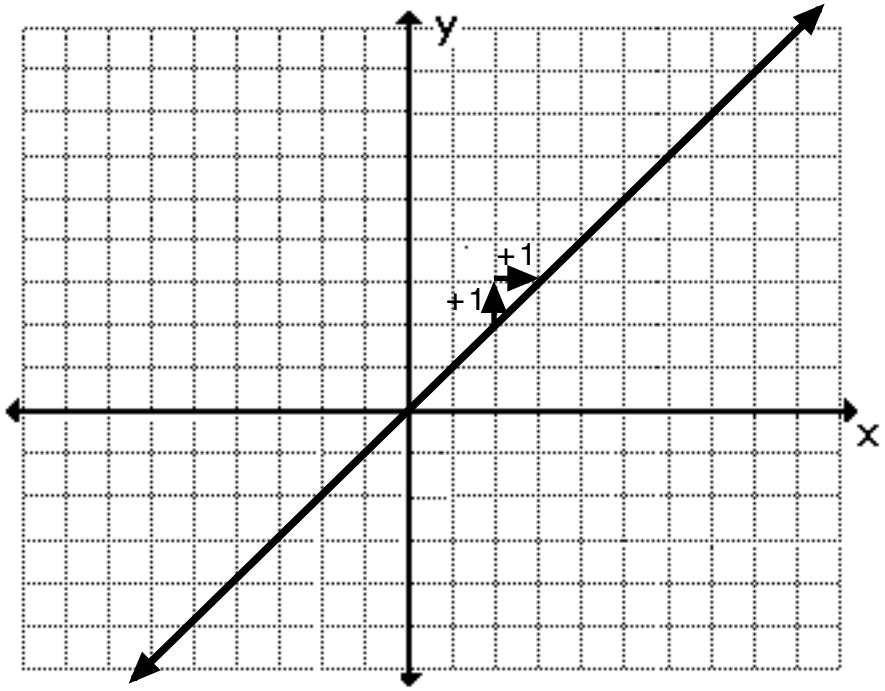
Graphing Equations

1) Study the equation **y = x**

2) Looking at the equation, what is the slope? __1__
what is the y-intercept? __0__
what is this type of equation called? __identity__

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.





Show the slope on the table and graph. Is this the same as your answer in #2? __1__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __0__

Is the pattern linear or non-linear? ____linear_____

Is the pattern ascending, descending, or horizontal? __ascending__

Graphing Equations

1) Study the equation **y = 3x + –6**

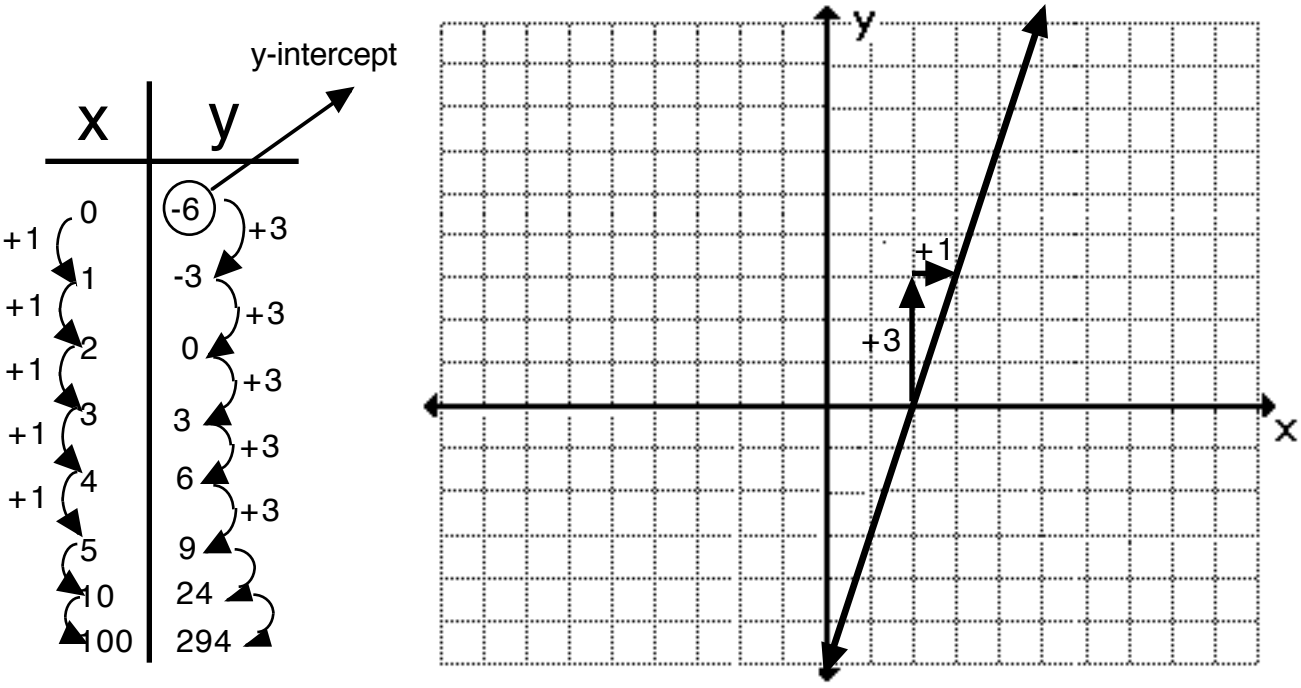
2) Looking at the equation, what is the slope? __3__

what is the y-intercept? __-6__

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.

4) Label the X and Y axes and graph the equation.

5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? __3__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __-6__

Is the pattern linear or non-linear? ___linear_____

Is the pattern ascending, descending, or horizontal? ___ascending___

Graphing Equations

1) Study the equation **y = 3**

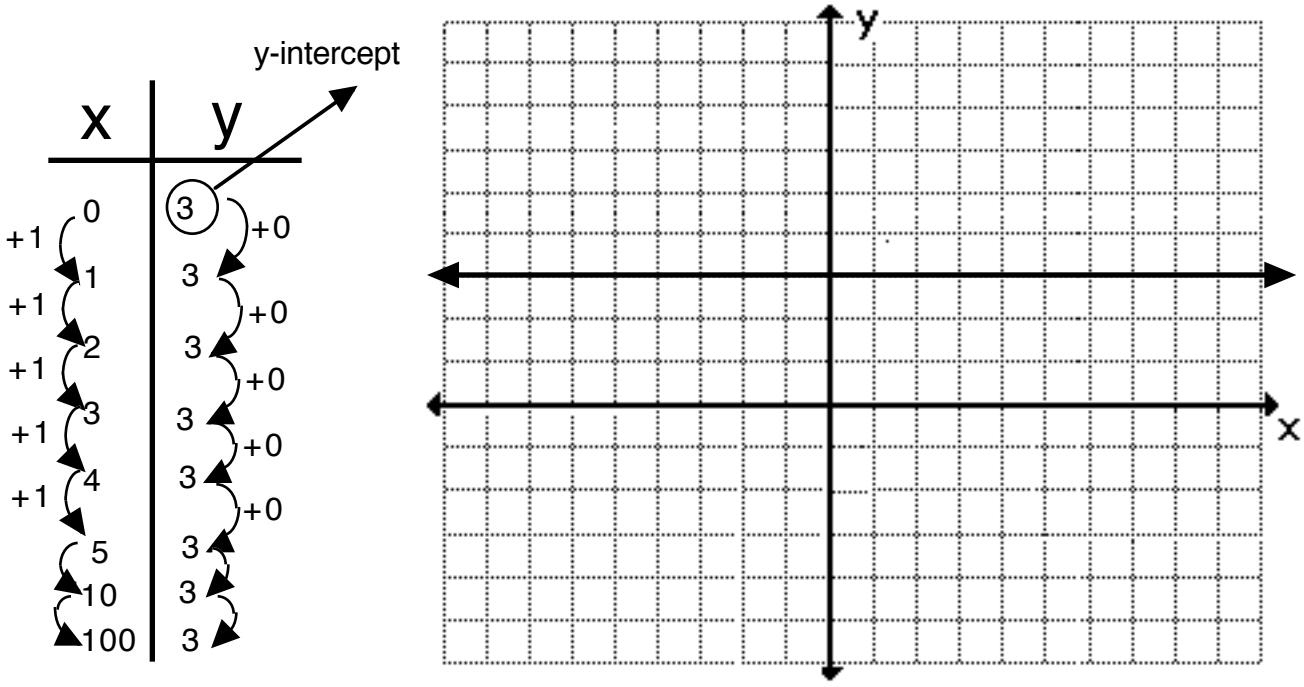
2) Looking at the equation, what is the slope? __0__

what is the y-intercept? __3__

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.

4) Label the X and Y axes and graph the equation.

5) Answer the questions.



Show the slope on the table and graph. Is this the same as your answer in #2? __0__

Show the y-intercept on the table and graph. Is this the same as your answer in #2? _3_

Is the pattern linear or non-linear? ____linear_____

Is the pattern ascending, descending, or horizontal? _horizontal_

Family of Lines

1) Study the equation **y = 2x + 1** what is the slope? __2__

what is the y-intercept? __1__

2) Study the equation **y = 2x + 3** what is the slope? __2__

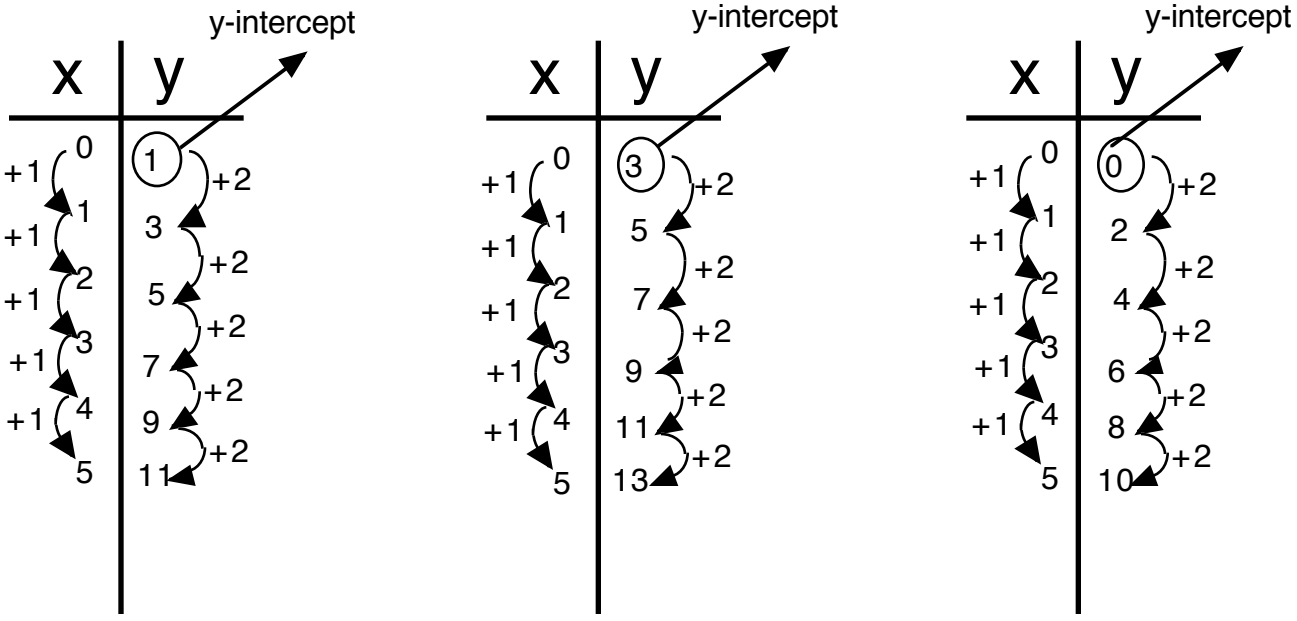
what is the y-intercept? __3__

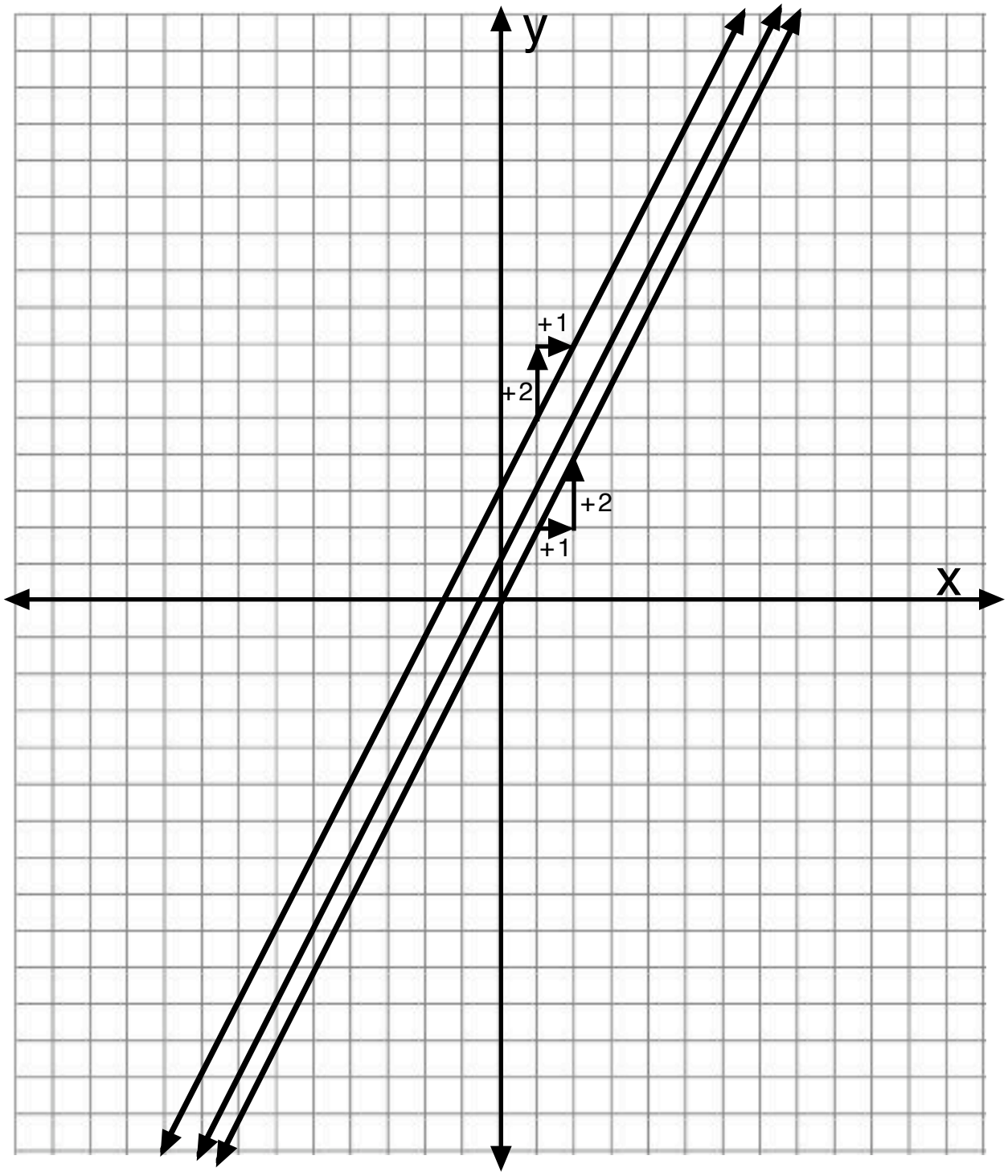
3) Study the equation **y = 2x** what is the slope? __2__

what is the y-intercept? __0__

4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.





What do you notice about the three lines? _____parallel_____

What do the equations of the lines have in common? _____the slope_____

Family of Lines

1) Study the equation **y = x + 2** what is the slope? __1__

what is the y-intercept? __2__

2) Study the equation **y = x + 5** what is the slope? __1__

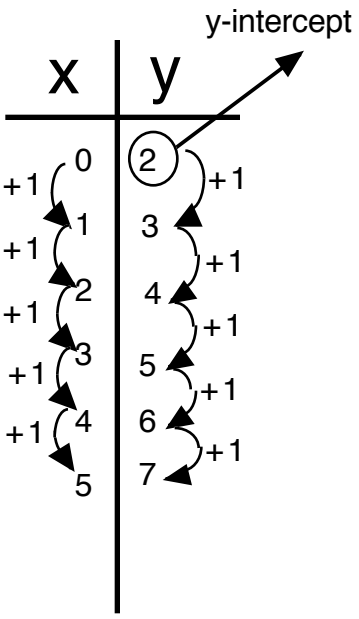
what is the y-intercept? __5__

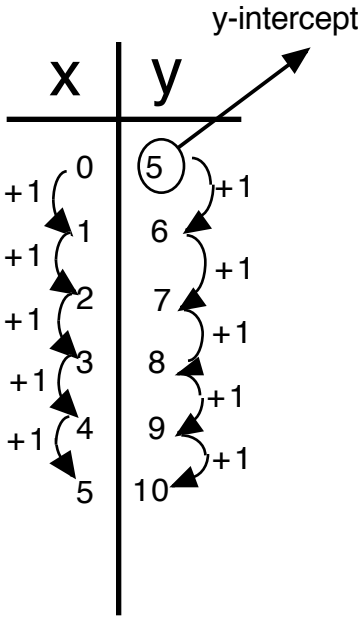
3) Study the equation **y = x + – 3** what is the slope? __1__

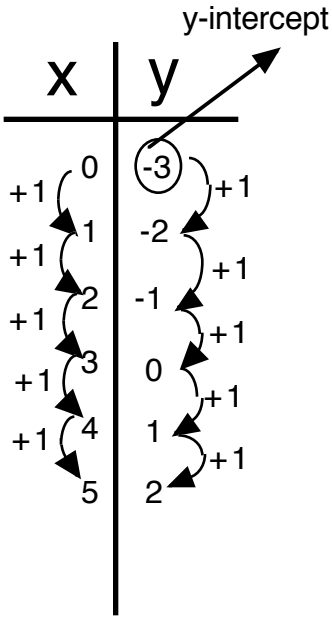
what is the y-intercept? __-3__

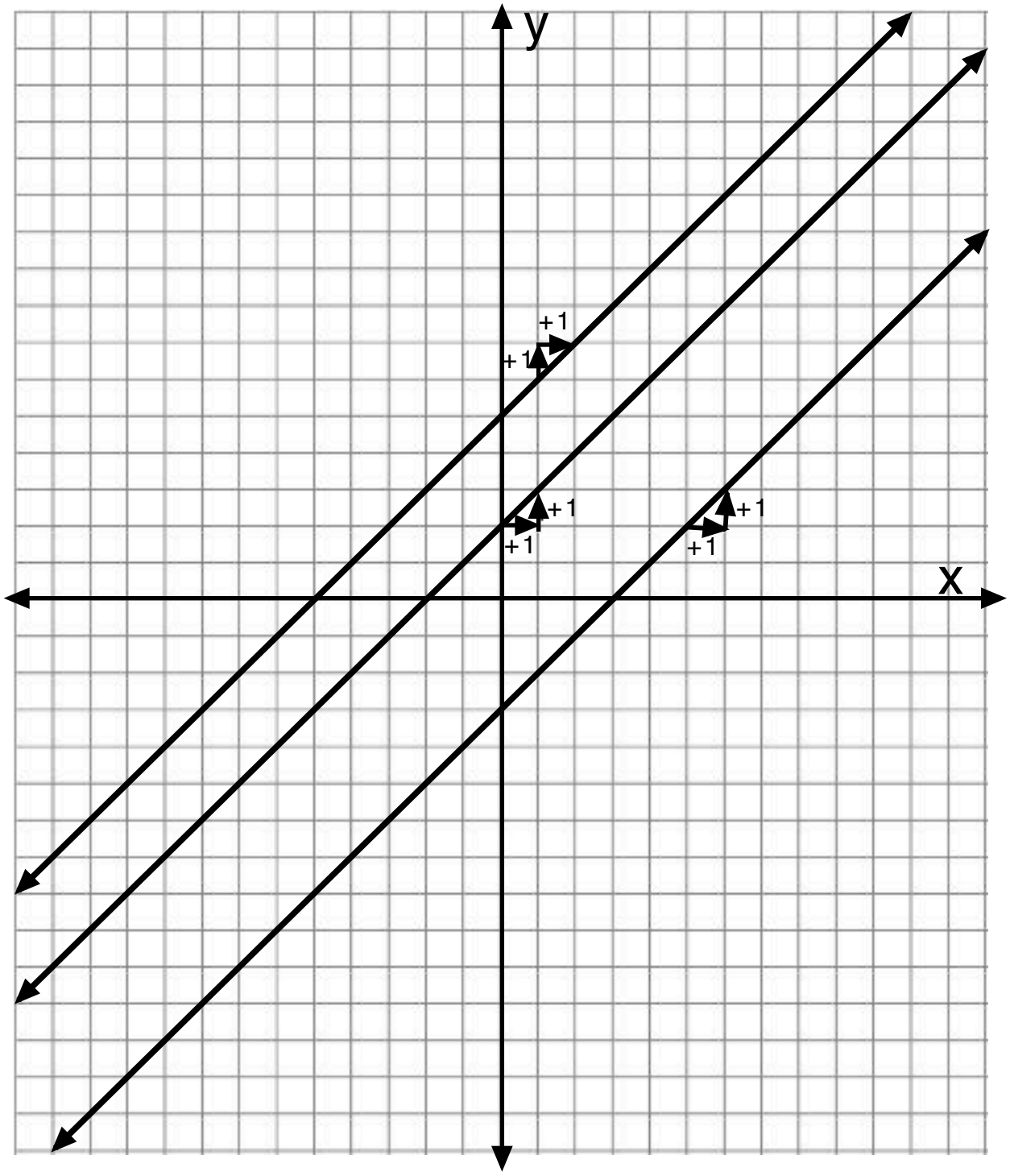
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.









What do you notice about the three lines? _____parrallel_____

What do the equations of the lines have in common? _____slope_____

Family of Lines

1) Study the equation **y = x + 2** what is the slope? __1__

what is the y-intercept? __2__

2) Study the equation **y = 3x + 2** what is the slope? __3__

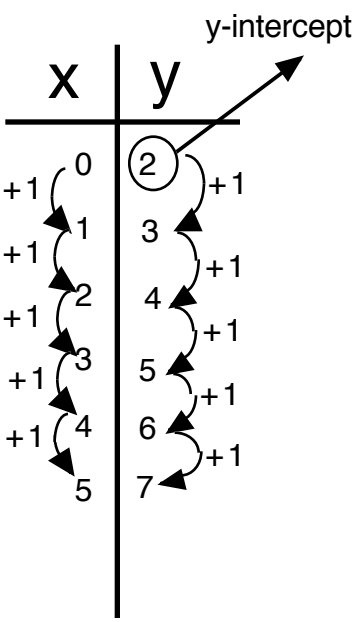
what is the y-intercept? __2__

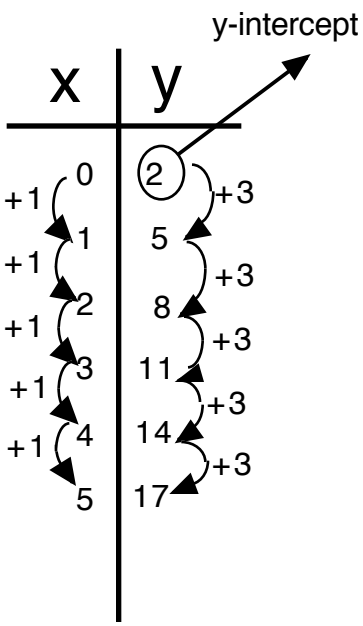
3) Study the equation **y = –2x + 2** what is the slope? __-2__

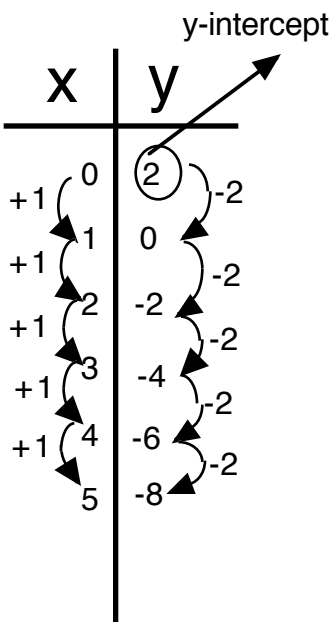
what is the y-intercept? __2__

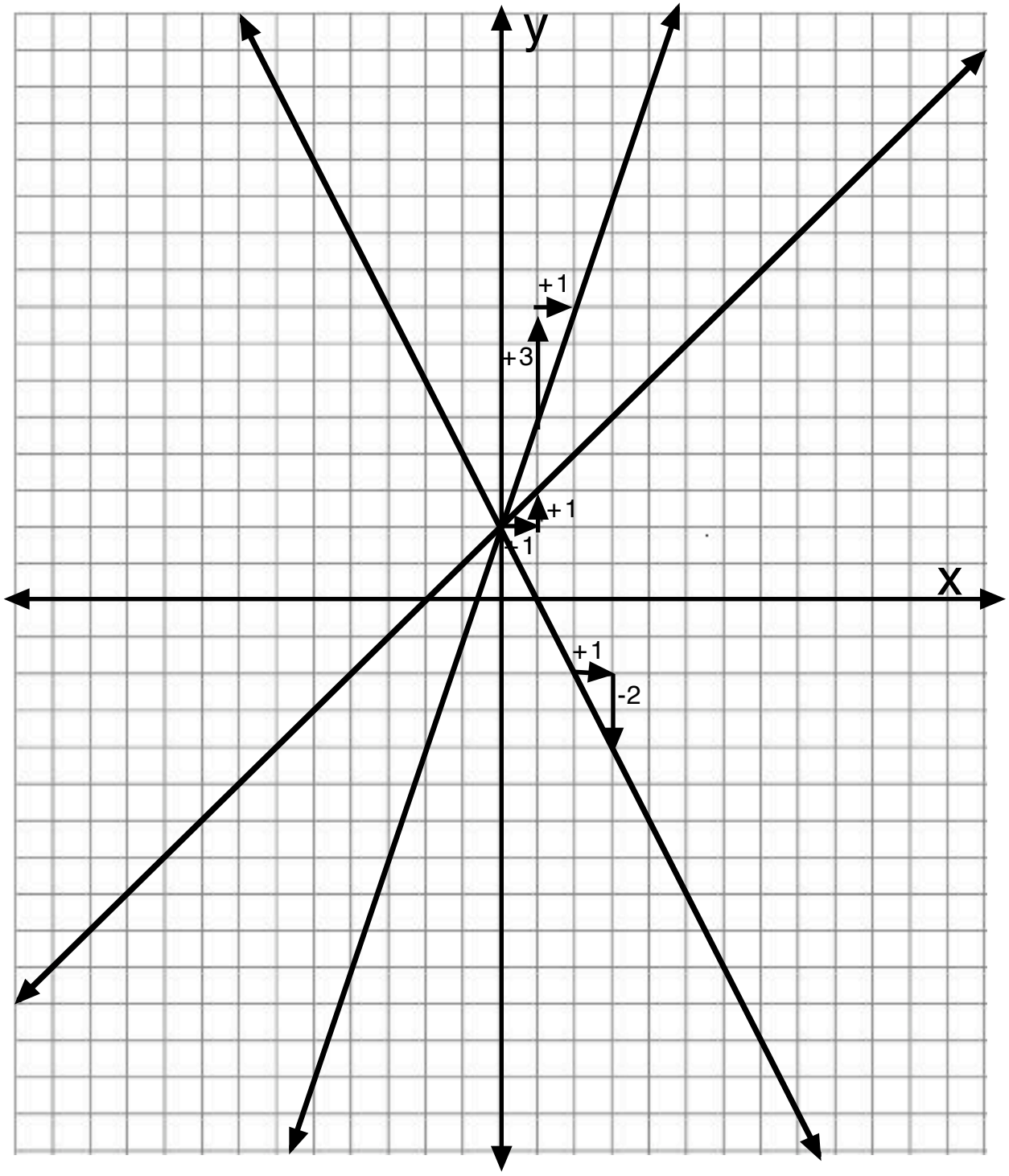
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.









What do you notice about the three lines? ____same y-intercept_____

What do the equations of the lines have in common? _____y-intercept_____

Family of Lines

1) Study the equation **y = 5** what is the slope? 0

what is the y-intercept? 5

2) Study the equation **y = 2** what is the slope? 0

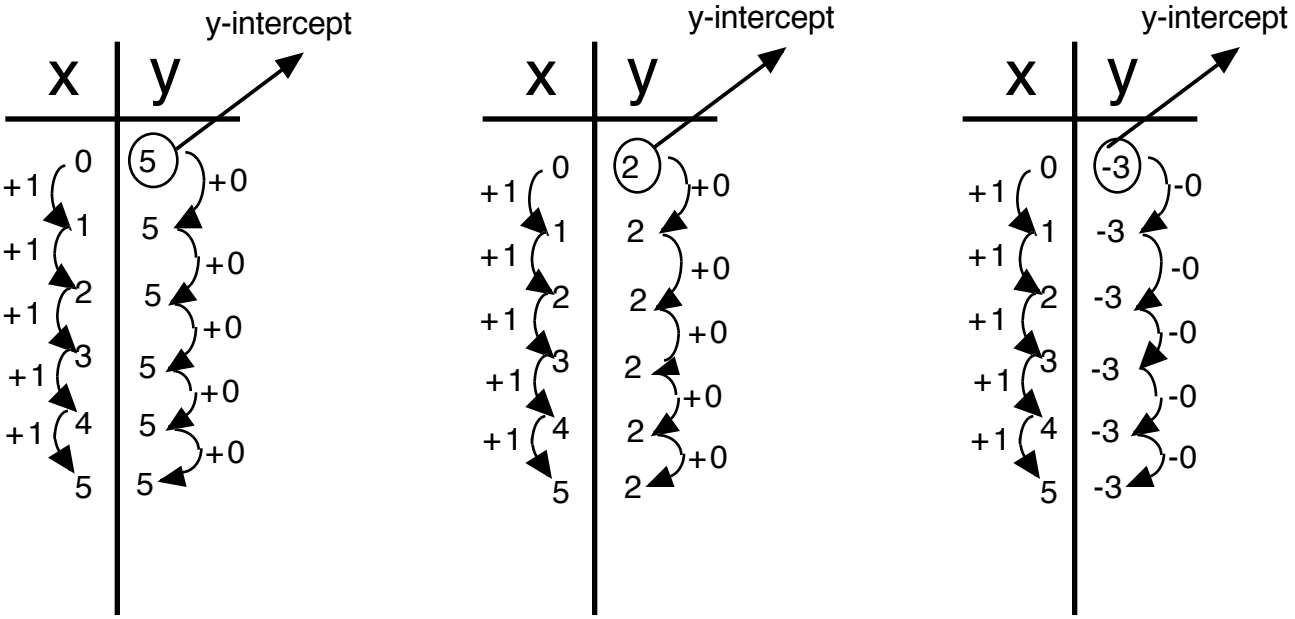
what is the y-intercept? 2

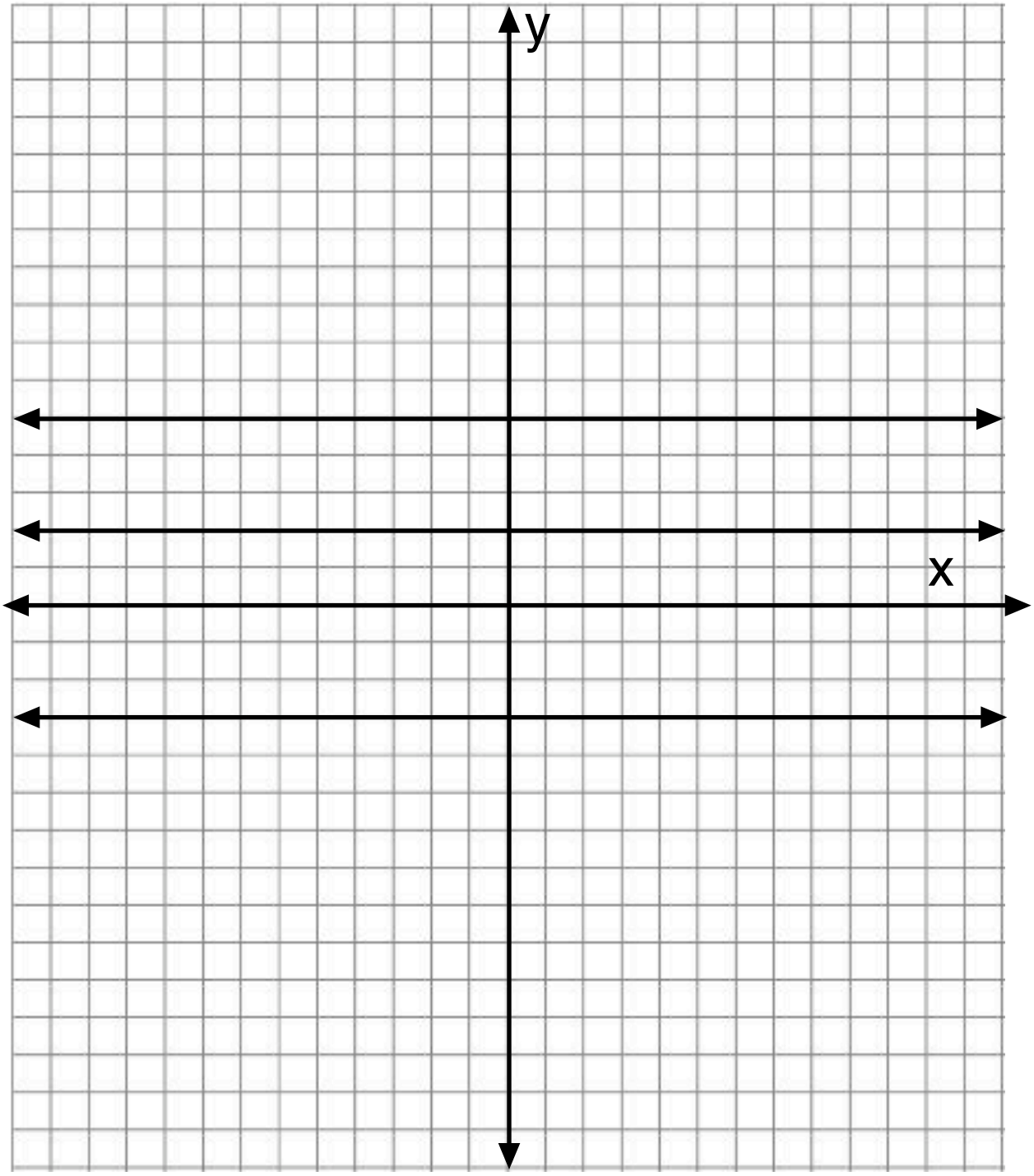
3) Study the equation **y = –3** what is the slope? 0

what is the y-intercept? -3

4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.





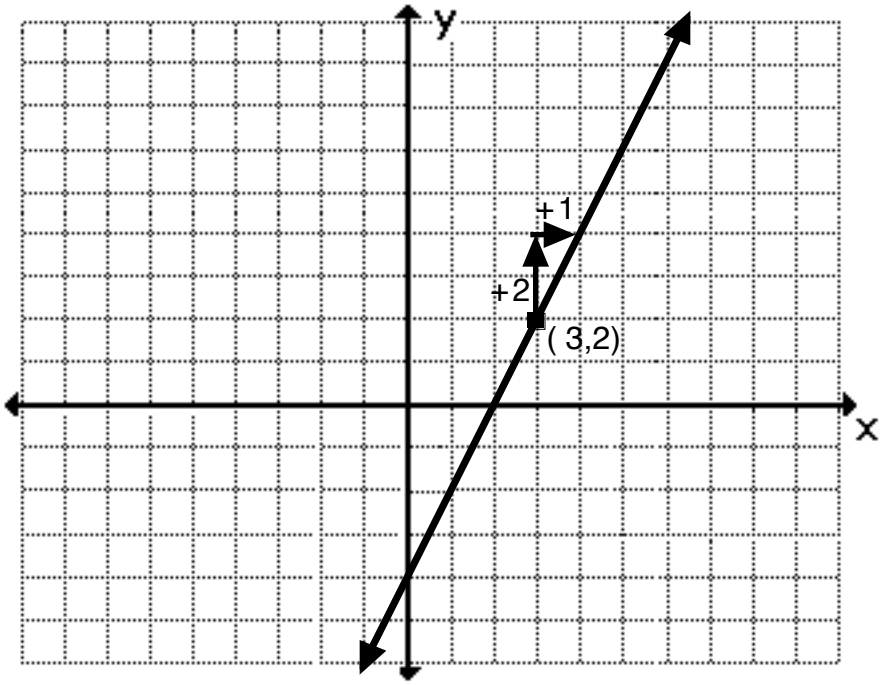
What do you notice about the three lines? they are horizontal

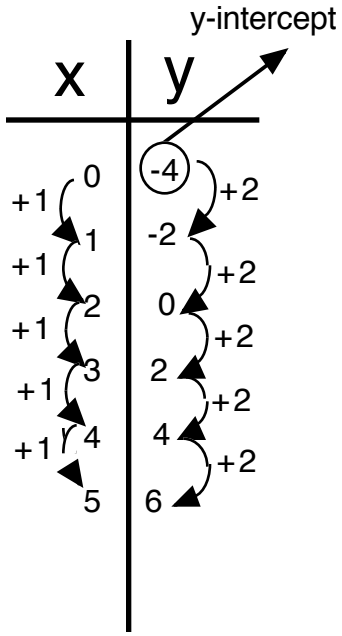
What do the equations of the lines have in common? slope

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (3, 2).

2) Use the ruler to draw a line through the point (3, 2) with a slope of 2.





3) Looking at the graph, what is the y-intercept? __-4__

what is the equation of the line? __y = 2x - 4__

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

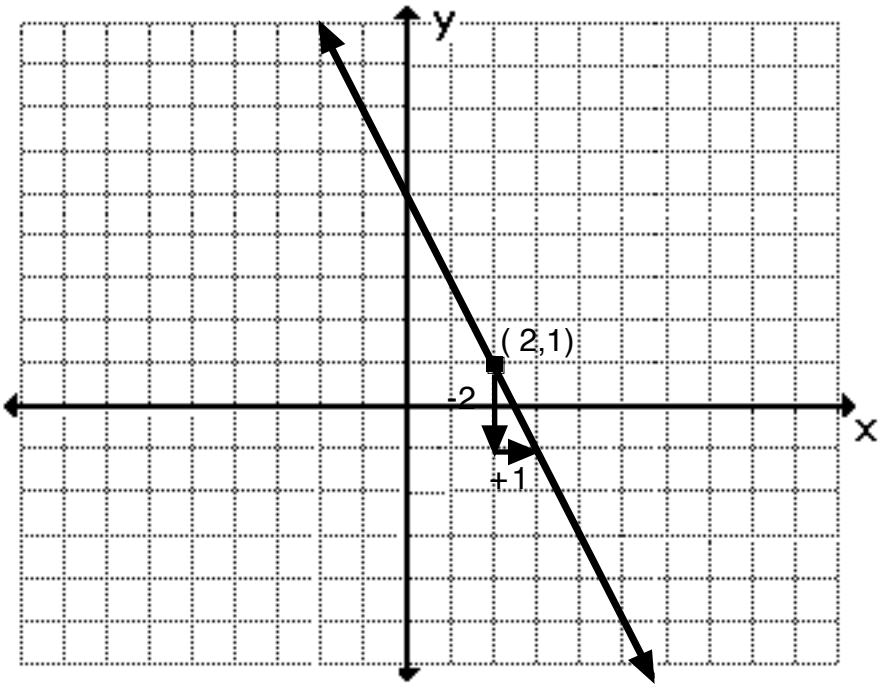
5) Is the pattern linear or non-linear? ___linear_____

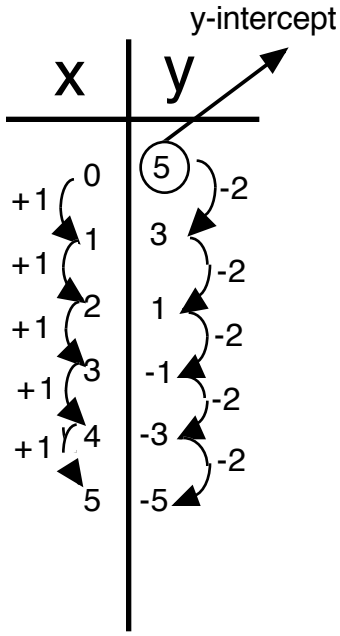
6) Is the pattern ascending, descending, or horizontal? __ascending__.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (2,1).

2) Use the ruler to draw a line through the point (2,1) with a slope of –2.





3) Looking at the graph, what is the y-intercept? __5___

what is the equation of the line? __y = -2x + 5___

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

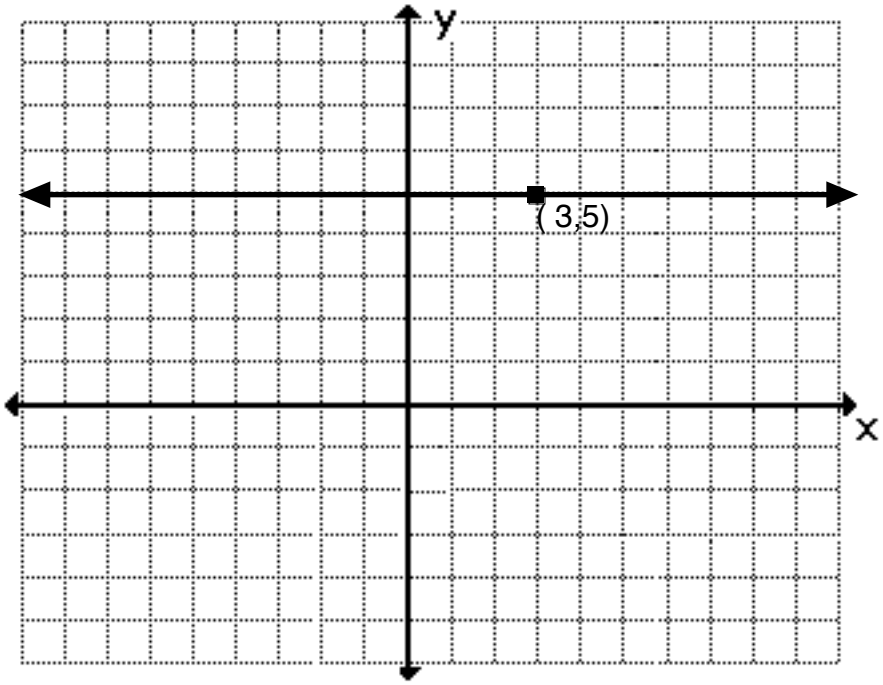
5) Is the pattern linear or non-linear? ___linear_____

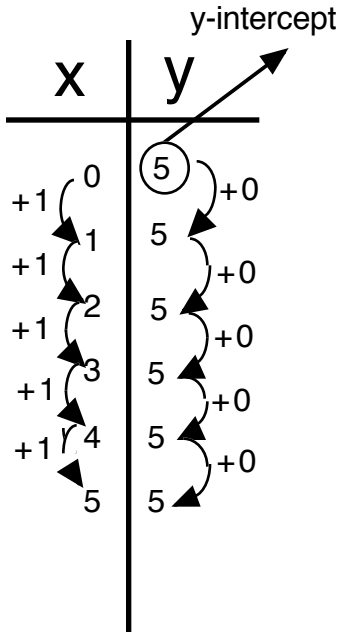
6) Is the pattern ascending, descending, or horizontal? __descending__.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (3, 5).

2) Use the ruler to draw a line through the point (3, 5) with a slope of 0.





3) Looking at the graph, what is the y-intercept? __5___

what is the equation of the line? __y = 0x + 5___

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

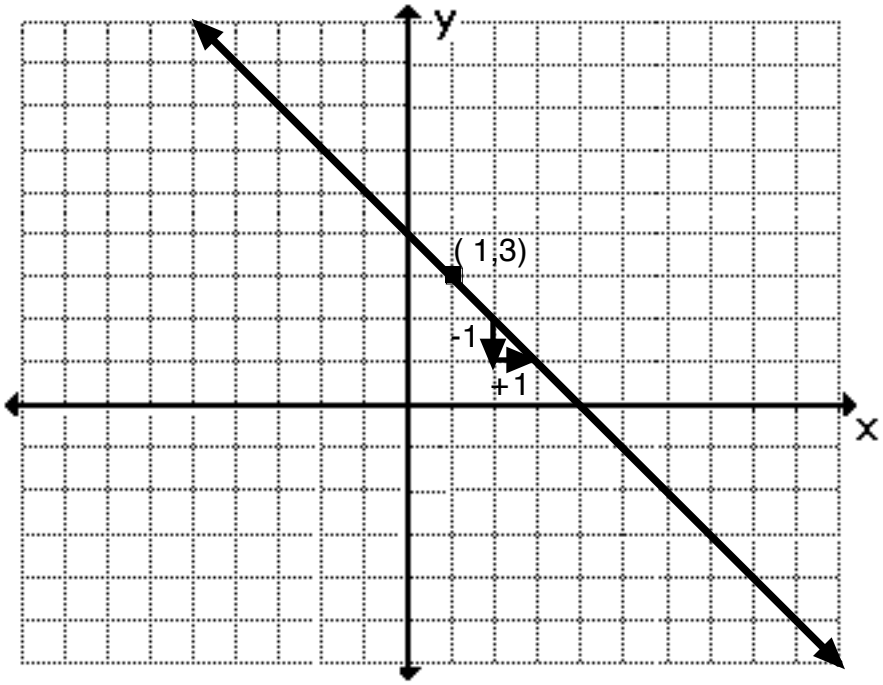
5) Is the pattern linear or non-linear? ___linear_____

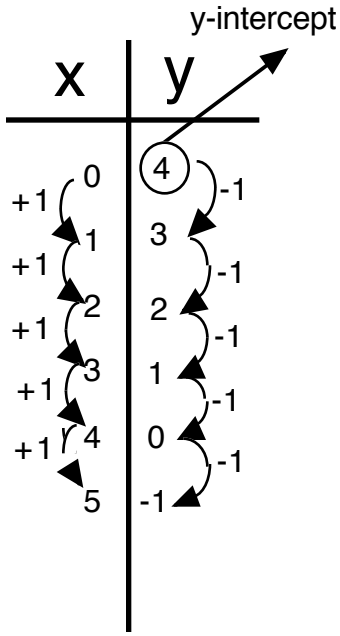
6) Is the pattern ascending, descending, or horizontal? ___horizontal__.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (1, 3).

2) Use the ruler to draw a line through the point (1, 3) with a slope of –1.





3) Looking at the graph, what is the y-intercept? __4___

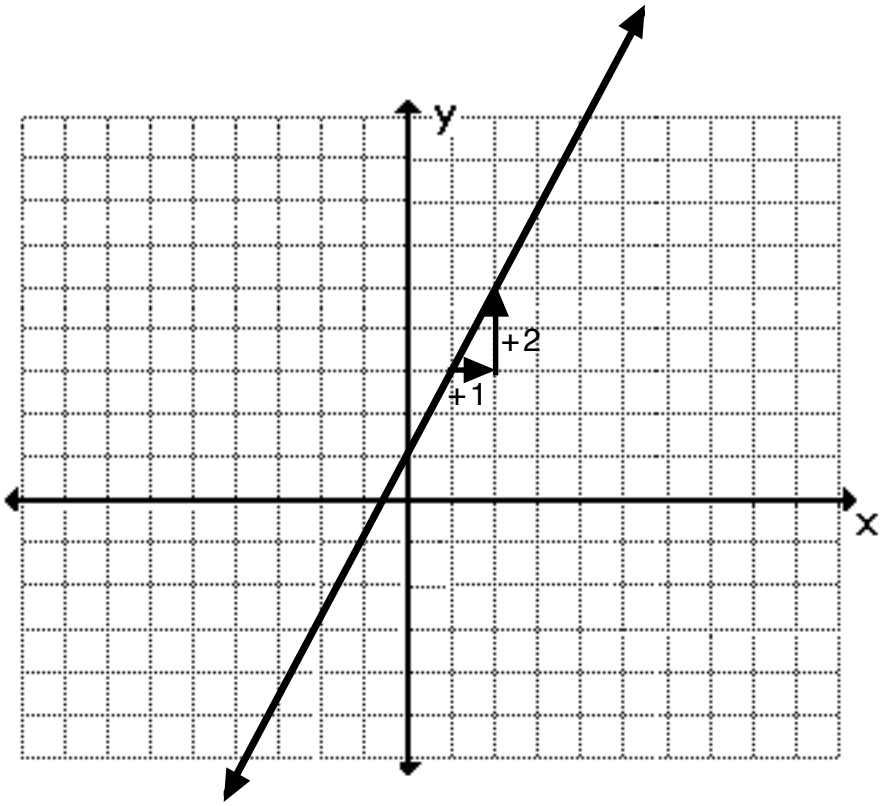
what is the equation of the line? __y = -1x + 4__

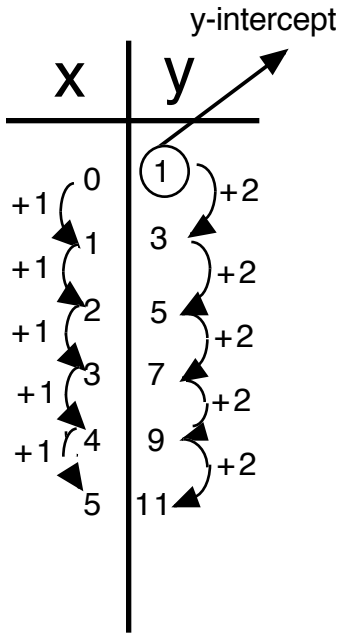
4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

5) Is the pattern linear or non-linear? ____linear____

6) Is the pattern ascending, descending, or horizontal? __descending__.

Finding the Equation of a Line





1) Study the graph.

2) Looking at the graph, what is the slope? __2__

what is the y-intercept? __1__

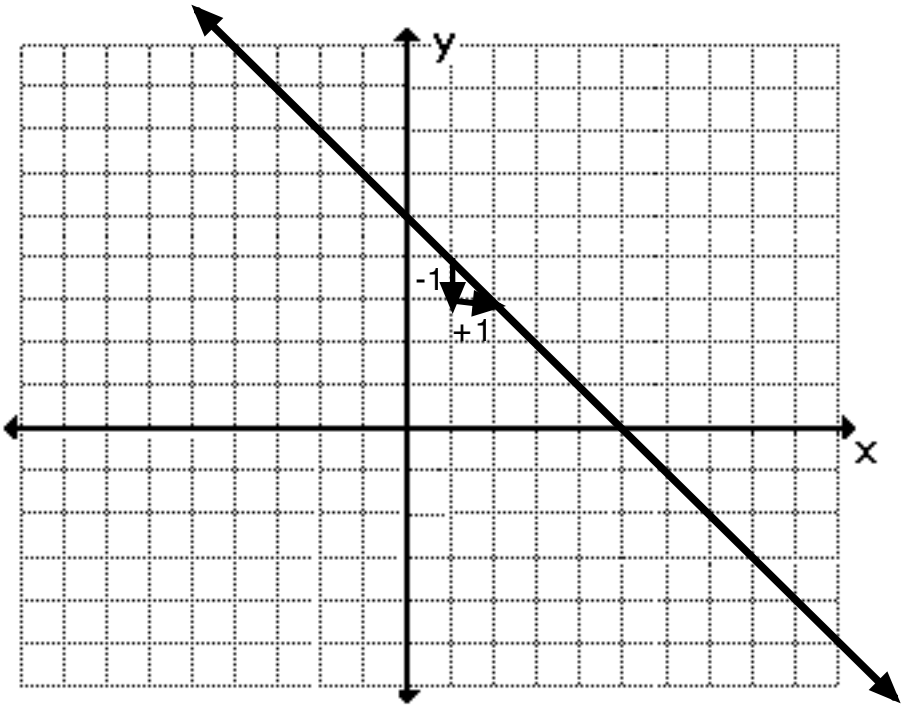
what is the equation of the line? __y = 2x + 1__

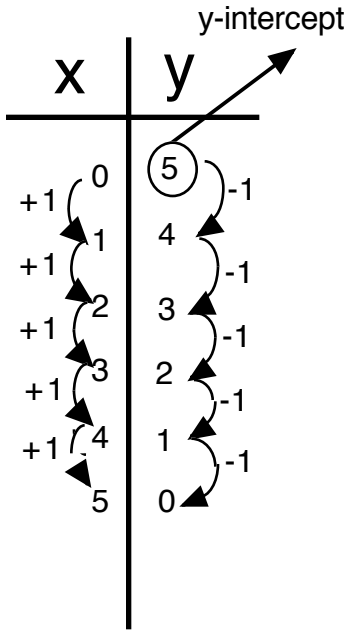
3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? ___linear___

5) Is the pattern ascending, descending, or horizontal? __ascending__.

Finding the Equation of a Line





1) Study the graph.

2) Looking at the graph, what is the slope? __-1__

what is the y-intercept? __5__

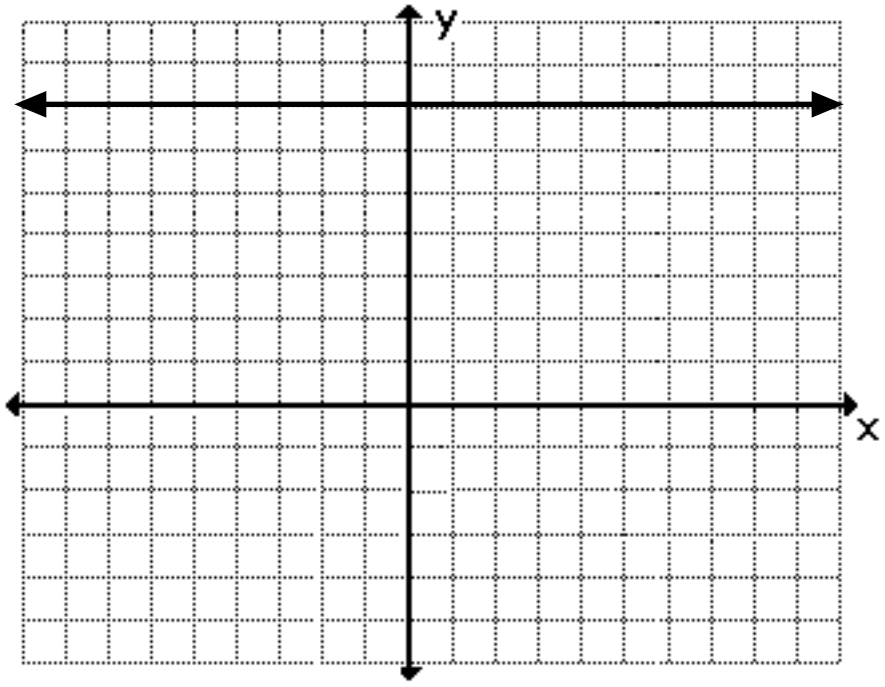
what is the equation of the line? __y = -1x + 5__

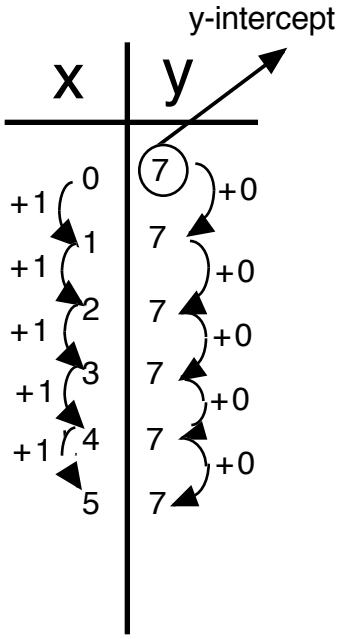
3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? ___linear___

5) Is the pattern ascending, descending, or horizontal? __descending__.

Finding the Equation of a Line





1) Study the graph.

2) Looking at the graph, what is the slope? __0__

what is the y-intercept? __7__

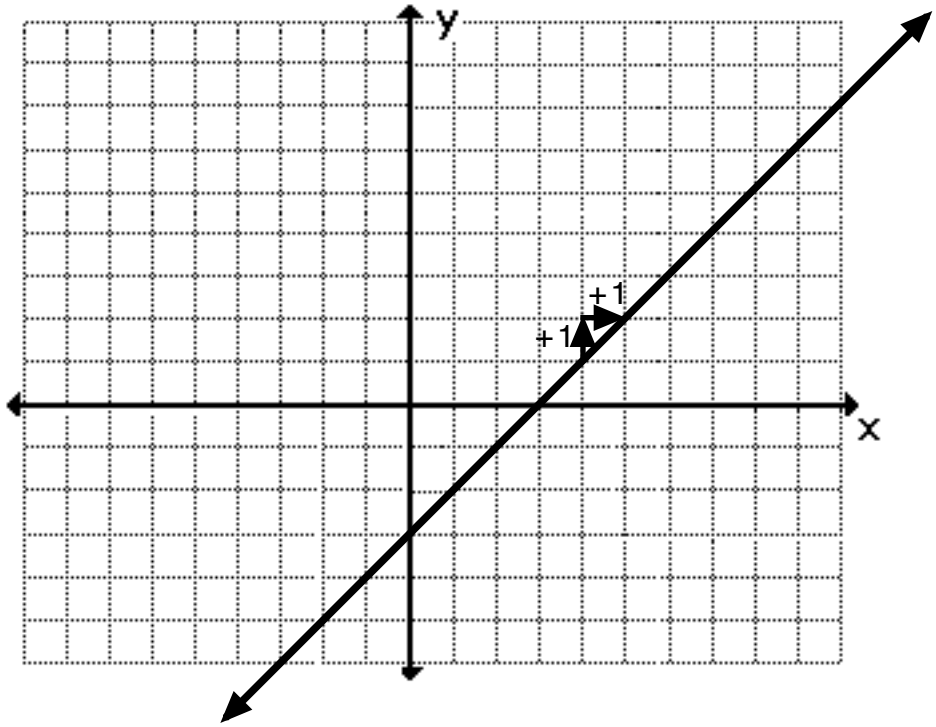
what is the equation of the line? __y = 0x + 7__

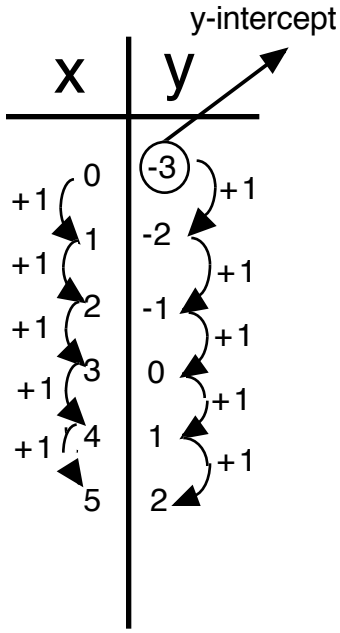
3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? ____linear____

5) Is the pattern ascending, descending, or horizontal? __horizontal__.

Finding the Equation of a Line





1) Study the graph.

2) Looking at the graph, what is the slope? __1__

what is the y-intercept? __-3__

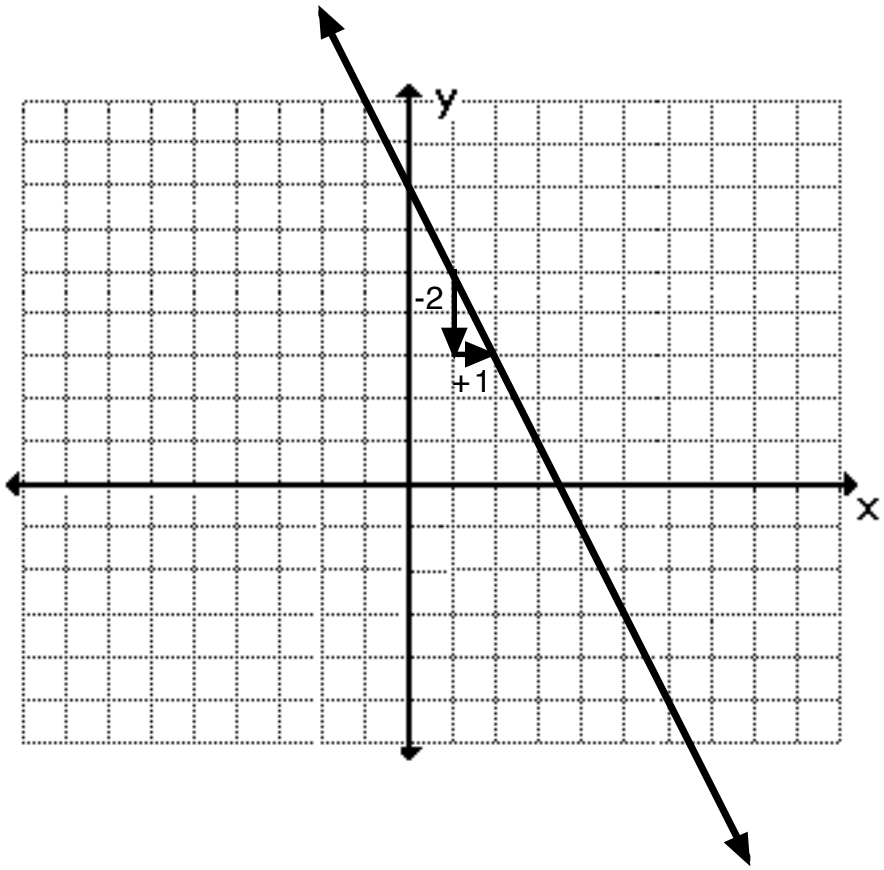
what is the equation of the line? __y = 1x - 3__

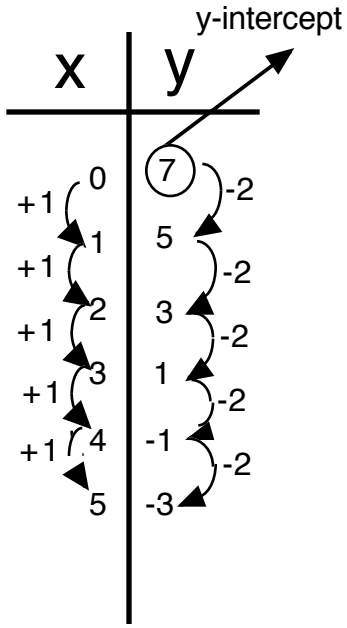
3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? ____linear____

5) Is the pattern ascending, descending, or horizontal? ___ascending___.

Finding the Equation of a Line





1) Study the graph.

2) Looking at the graph, what is the slope? __-2__

what is the y-intercept? __7__

what is the equation of the line? __y = -2x + 7__

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

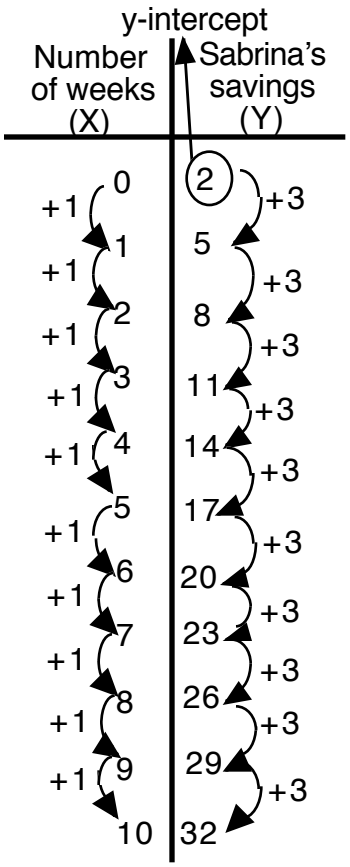
4) Is the pattern linear or non-linear? __linear__

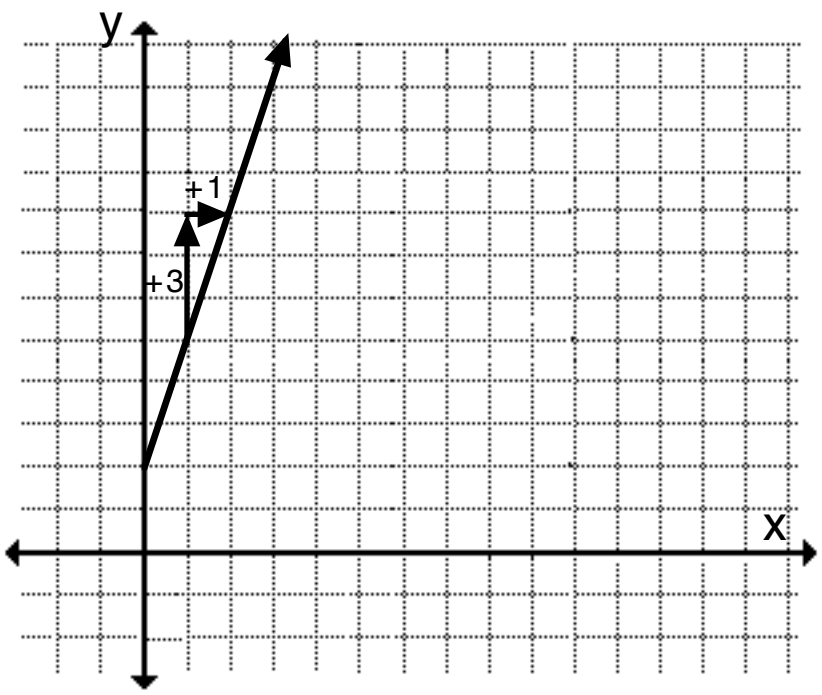
5) Is the pattern ascending, descending, or horizontal? __descending__.

Word Problem

Sabrina wants to buy a CD player. She has $2. She decides to save $3 from her allowance every week.

1) Complete a table and graph Sabrina's savings during 10 weeks.





2) What is the slope? 3

3) What part of the word problem gives you the "slope"? amount added to the savings

4) What is the y-intercept? 2

5) What part of the word problem gives you the "y-intercept"? amount of money she had before the first week

6) What is the equation that represents Sabrina's savings? $y = 3x + 2$

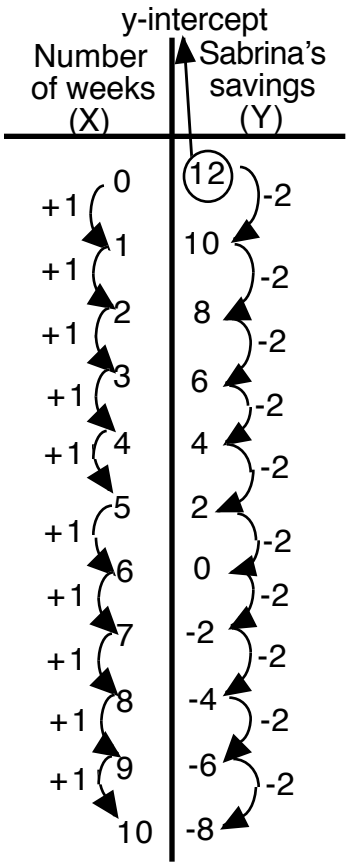
7) What does the X-axis represent? weeks

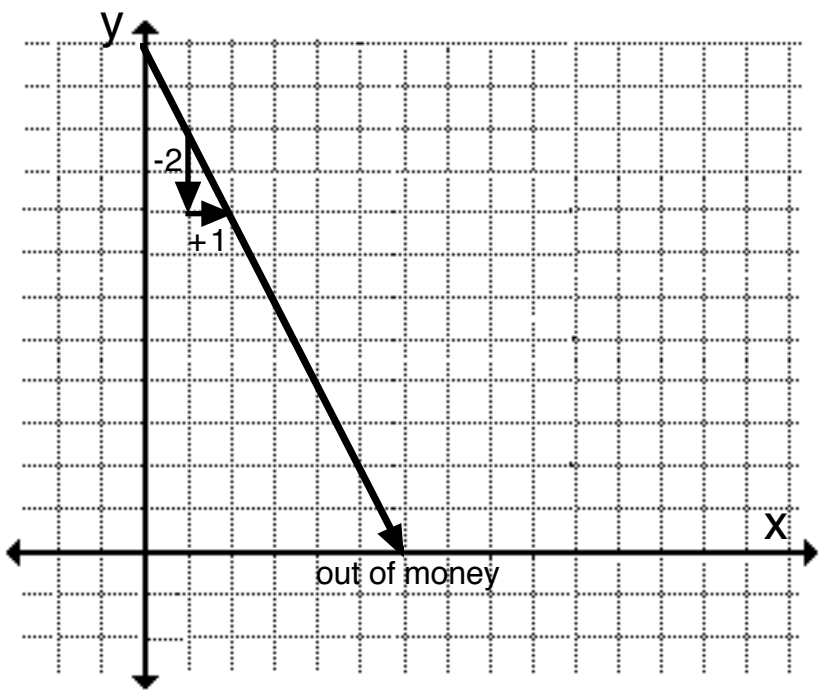
8) What does the Y-axis represent? money in savings

Word Problem

Sabrina has $12 saved. She decides to spend $2 a week on candy.

1) Complete a table and graph Sabrina's savings during 10 weeks.





2) What is the slope? -2

3) What part of the word problem gives you the "slope"? how much she spenteach week

4) What is the y-intercept? 12

5) What part of the word problem gives you the "y-intercept"? amount of money she started with

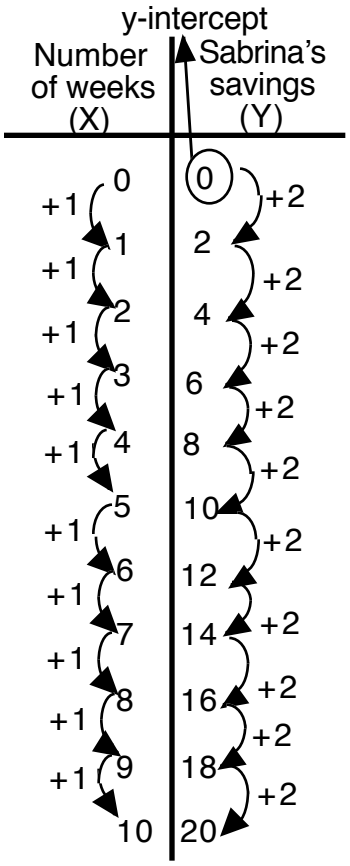
6) What is the equation that represents Sabrina's savings? y = -2x + 12

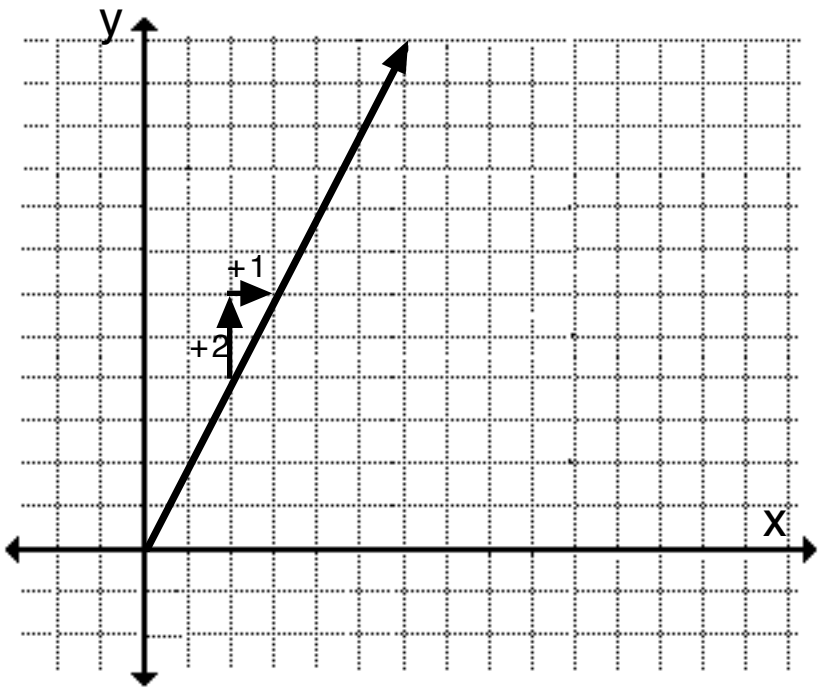
7) During what week did Sabrina run out of money? Label it on the graph. 6

Word Problem

Sabrina wants to buy a CD player. She has no money. She decides to save $2 from her allowance every week.

1) Complete a table and on graph paper graph Sabrina's savings during 10 weeks.





2) What is the slope? 2

3) What part of the word problem gives you the "slope"? amount added to savings per week

4) What is the y-intercept? 0

5) What part of the word problem gives you the "y-intercept"? amount of money she started with

6) What is the equation that represents Sabrina's savings? $y = 2x + 0$

7) What does the X-axis represent? number of weeks

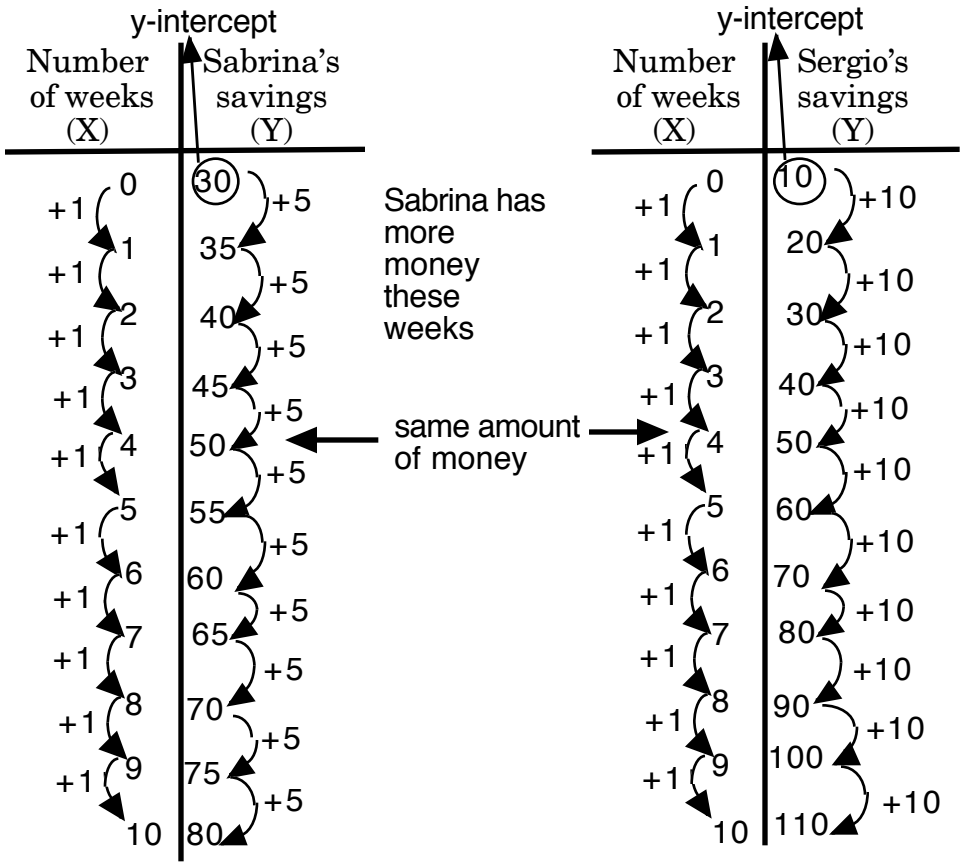
8) What does the Y-axis represent? amount of money in savings

Graphing Linear Systems of Equations

A) Sabrina has $30 and she receives an allowance of $5 per week.

B) Sergio has $10 and he receives an allowance of $10 per week.

1) Complete a t-table and graph Sabrina and Sergio's savings for 10 weeks.



What is the slope? 5

What is the y-intercept? 30

What is the slope? 10

What is the y-intercept? 10

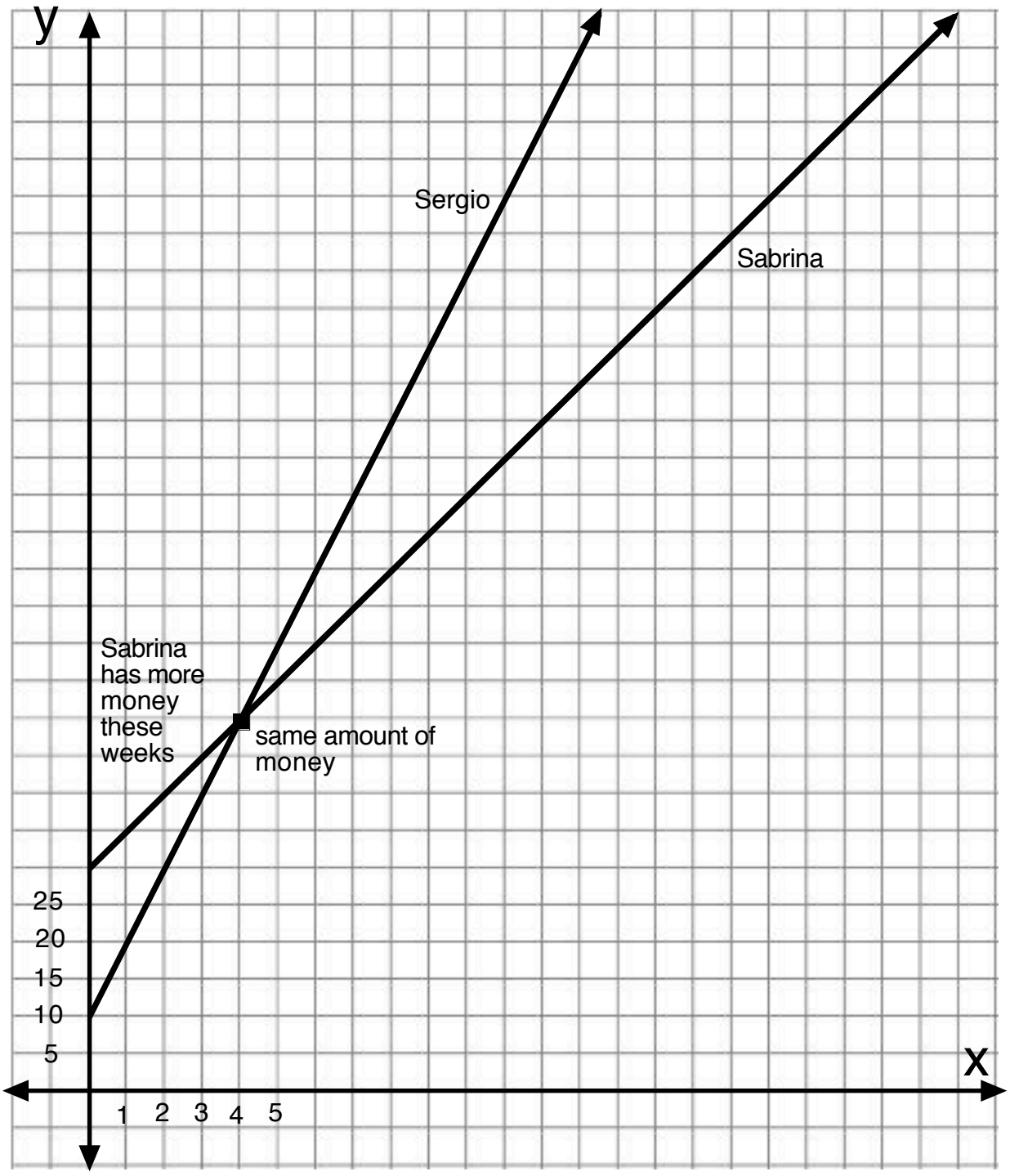
2) Graph Sabrina and Sergio's savings for 10 weeks.

3) What part of problem gives you the "slope"? amount of money added

4) What part of the word problem gives you the "y-intercept"? amount of money they start with

5) What is the equation that represents Sabrina's savings? $y = 5x + 30$

6) What is the equation that represents Sergio's savings? $y = 10x + 10$



During what week will Sabrina and Sergio's savings be the same? 4

Show your answer on the t-table and the graph.

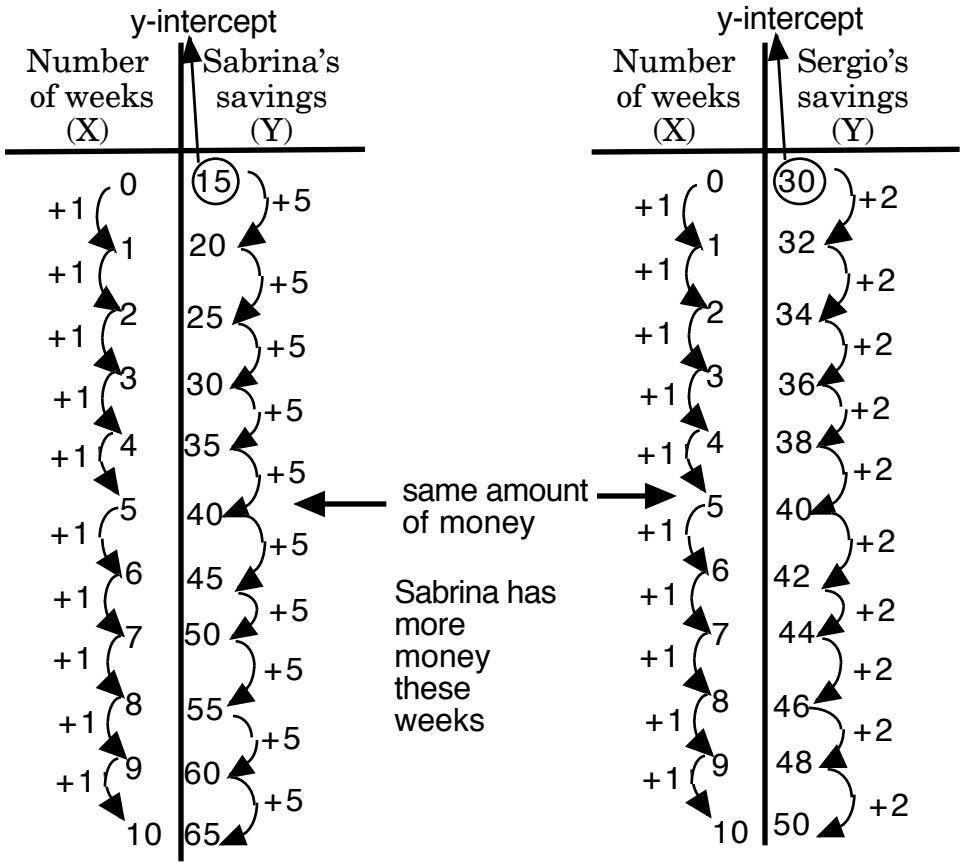
During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Graphing Linear Systems of Equations

A) Sabrina has $ 15 and she receives an allowance of $ 5 per week.

B) Sergio has $ 30 and he receives an allowance of $ 2 per week.

1) Complete a t-table and graph Sabrina and Sergio's savings for 10 weeks.



What is the slope? 5

What is the y-intercept? 15

What is the slope? 2

What is the y-intercept? 30

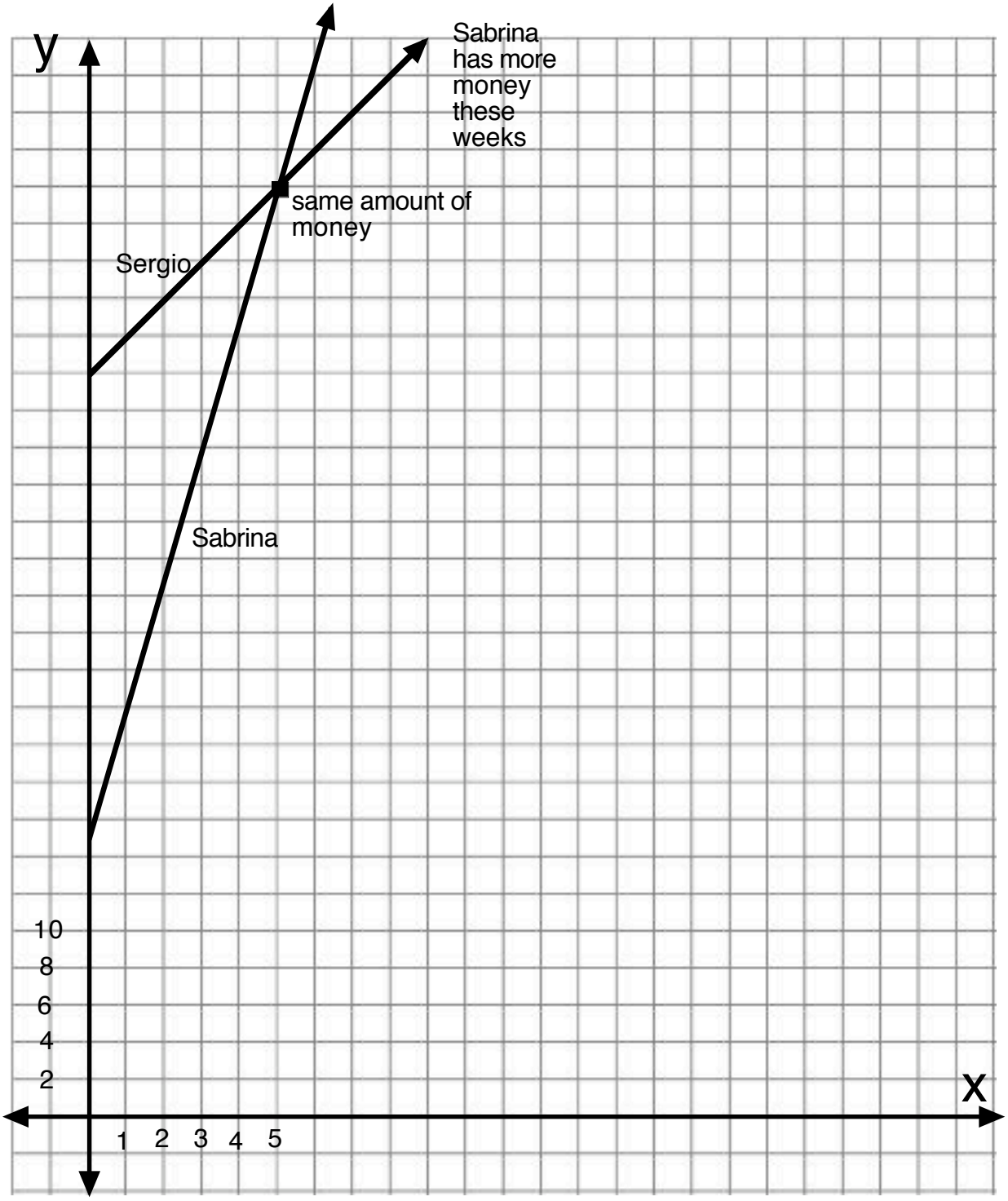
2) Graph Sabrina and Sergio's savings for 10 weeks.

3) What part of problem gives you the "slope"? amount of money added each week

4) What part of the word problem gives you the "y-intercept"? money that starts in the savings

5) What is the equation that represents Sabrina's savings? $y = 5x + 15$

6) What is the equation that represents Sergio's savings? $y = 2x + 30$



During what week will Sabrina and Sergio's savings be the same? 5

Show your answer on the t-table and the graph.

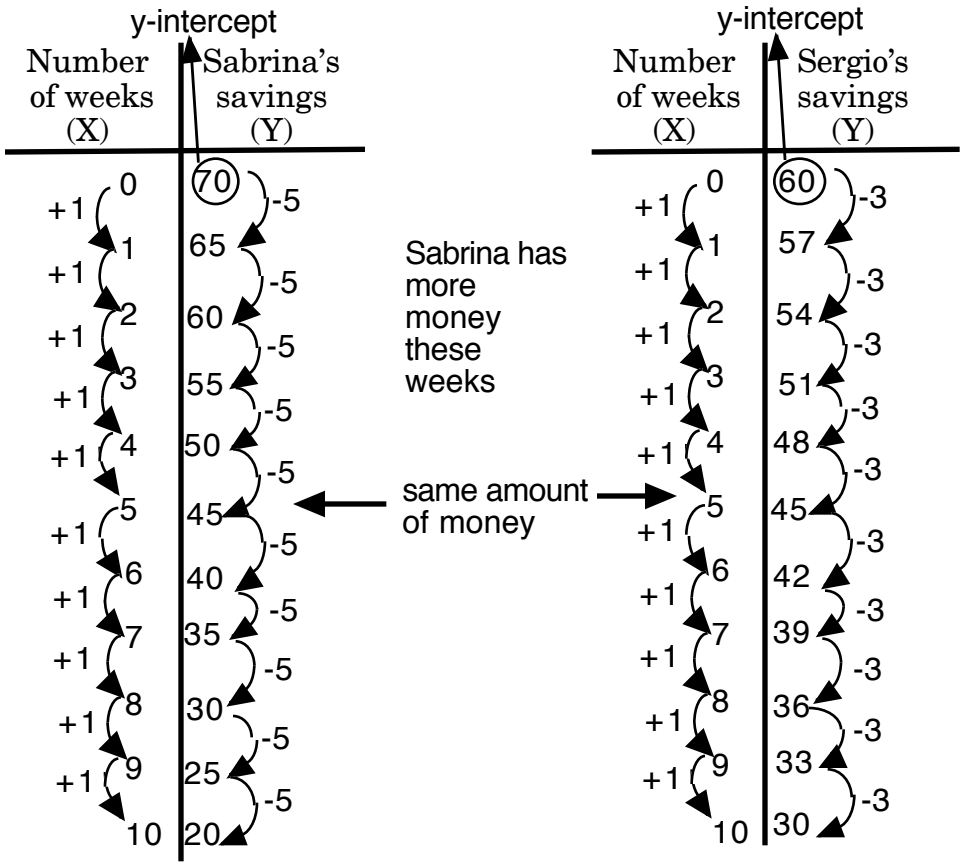
During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Graphing Linear Systems of Equations

A) Sabrina has saved $ 70 and spends $ 5 per week.

B) Sergio has saved $ 60 and spends $ 3 per week.

1) Complete a t-table and graph Sabrina and Sergio's spending until they run out of money.



What is the slope? -5

What is the y-intercept? 70

What is the slope? -2

What is the y-intercept? 60

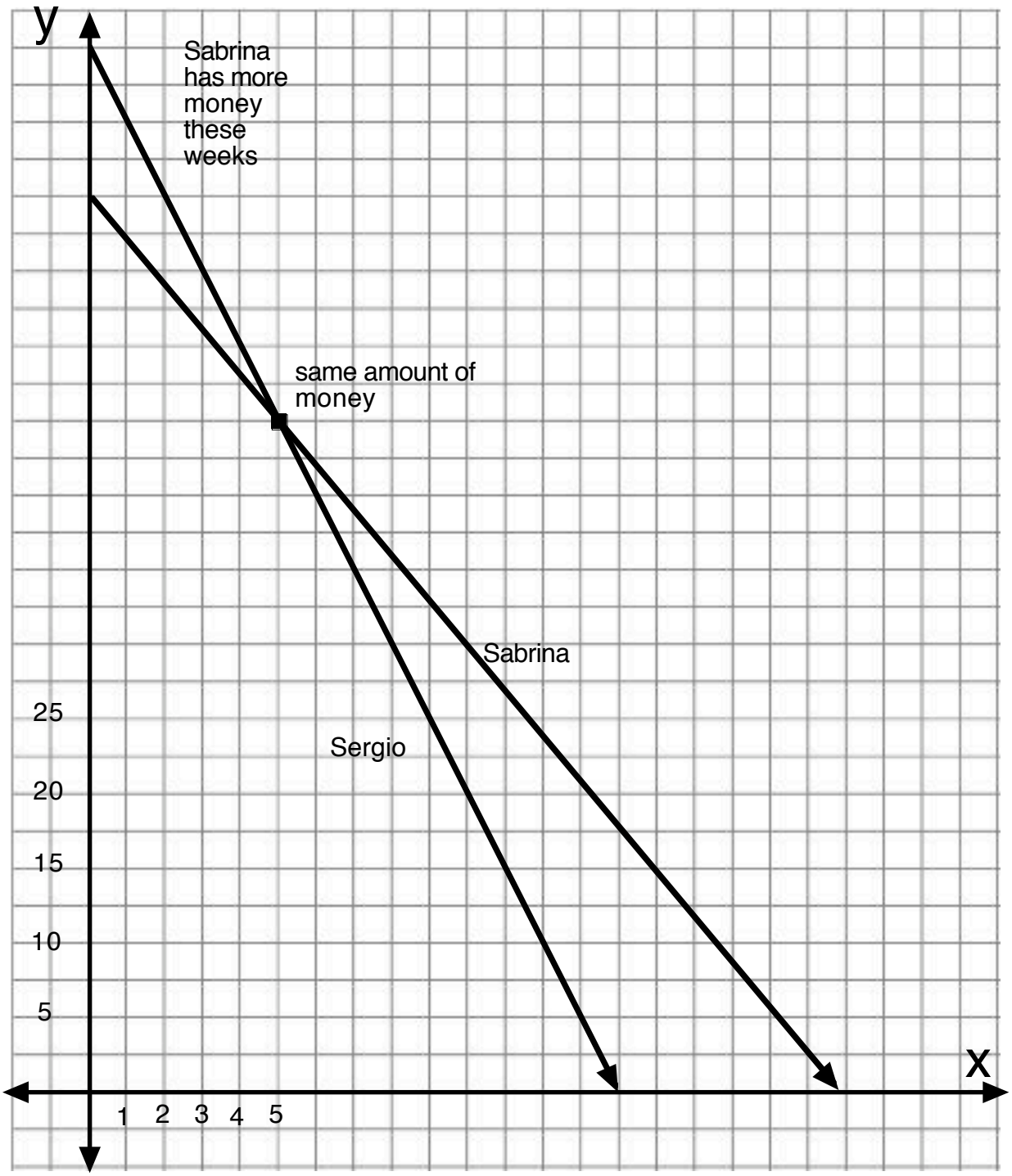
2) Graph Sabrina and Sergio's spending.

3) What part of problem gives you the "slope"? the amount of money spent each week

4) What part of the word problem gives you the "y-intercept"? the amout of money that started in the savings

5) What is the equation that represents Sabrina's savings? y = -5x + 70

6) What is the equation that represents Sergio's savings? y = -3 + 60



During what week will Sabrina and Sergio's have the same amount of money?

__5__ Show your answer on the t-table and the graph.

During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Unit Summary

Using words, graphs, diagrams and examples, clearly explain each one of the following mathematical terms:

- ❒ pattern
- ❒ slope
- ❒ y-intercept
- ❒ equation
- ❒ linear
- ❒ non-linear
- ❒ ascending
- ❒ descending
- ❒ horizontal

Unit Summary Continue

Super Math Units

Introducing Graphing Linear Equations

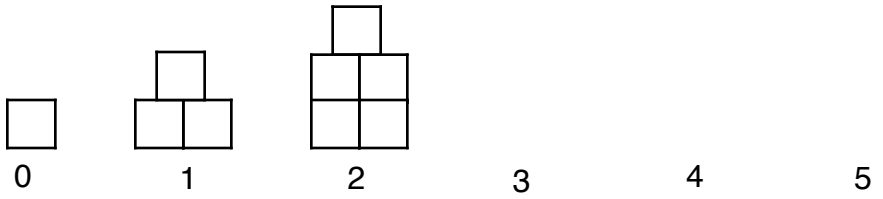
Name: _____

Period: _____

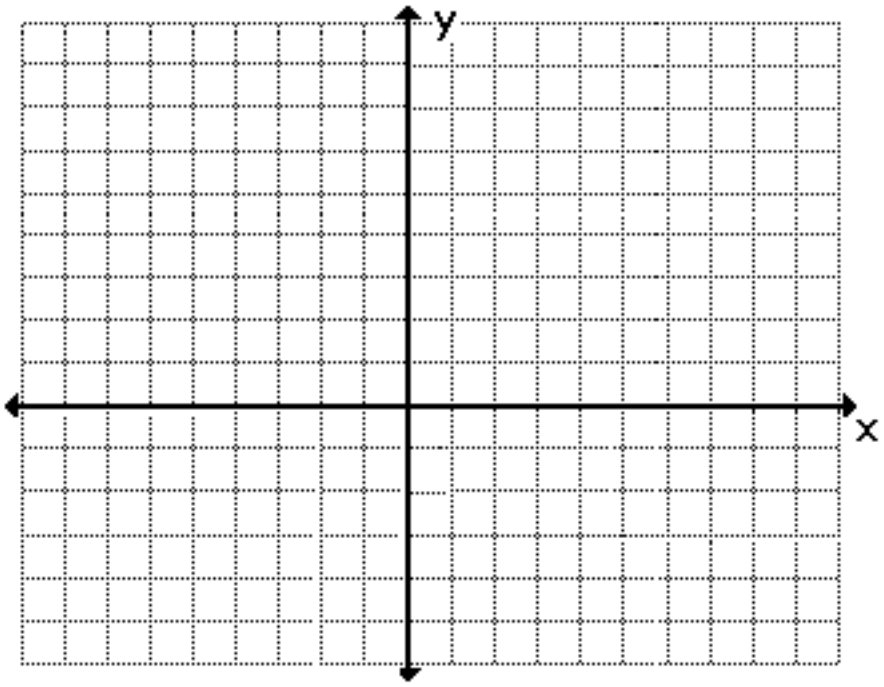
Date: _____

Graphing Patterns

1) Study and complete the pattern.
2) Complete the table.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.



step	number of squares
0	
1	
2	
3	
4	
5	



What is the slope? _____ Show the slope on the pattern, table and graph.

What is the y-intercept? _____ Show the y-intercept on the pattern, table and graph.

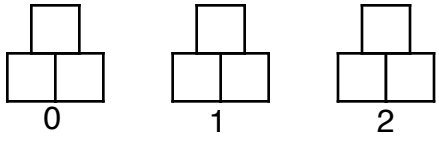
Use the slope and y-intercept to write the equation: _____

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

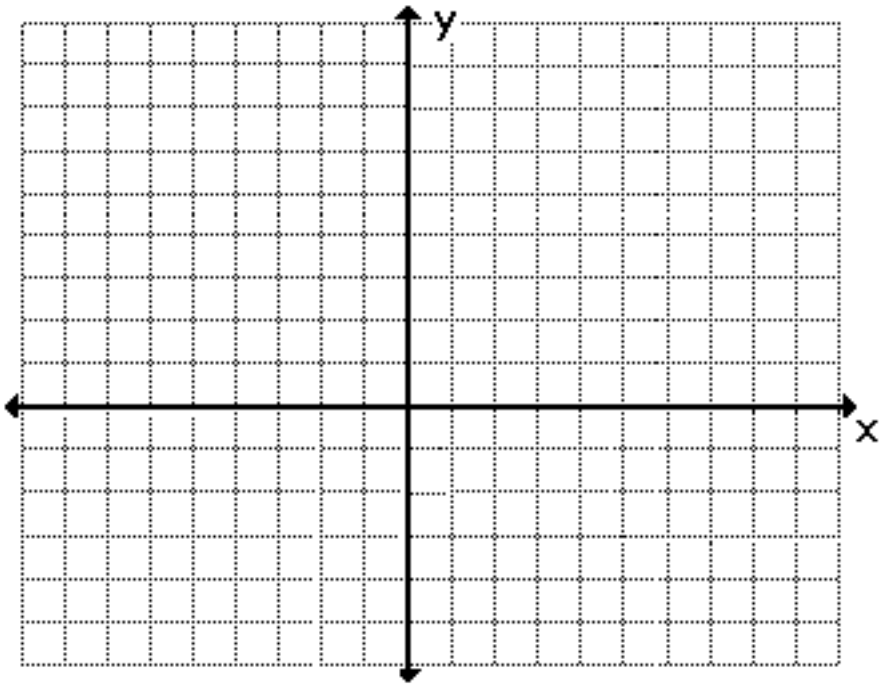
Graphing Patterns

1) Study and complete the pattern.
2) Complete the table.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.



3 4 5

step	number of squares
0	
1	
2	
3	
4	
5	



What is the slope? _____ Show the slope on the pattern, table and graph.

What is the y-intercept? _____ Show the y-intercept on the pattern, table and graph.

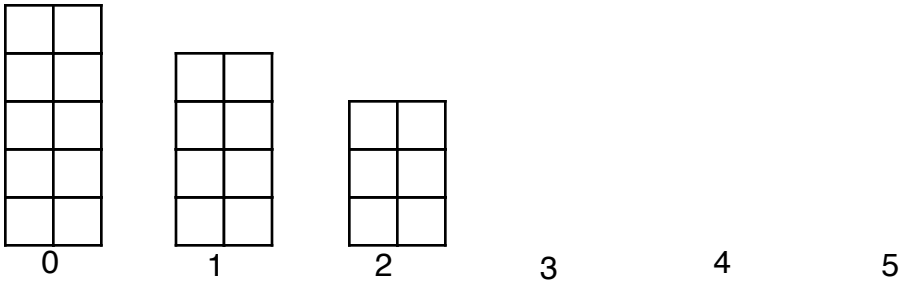
Use the slope and y-intercept to write the equation: _____

Is the pattern linear or non-linear? _____

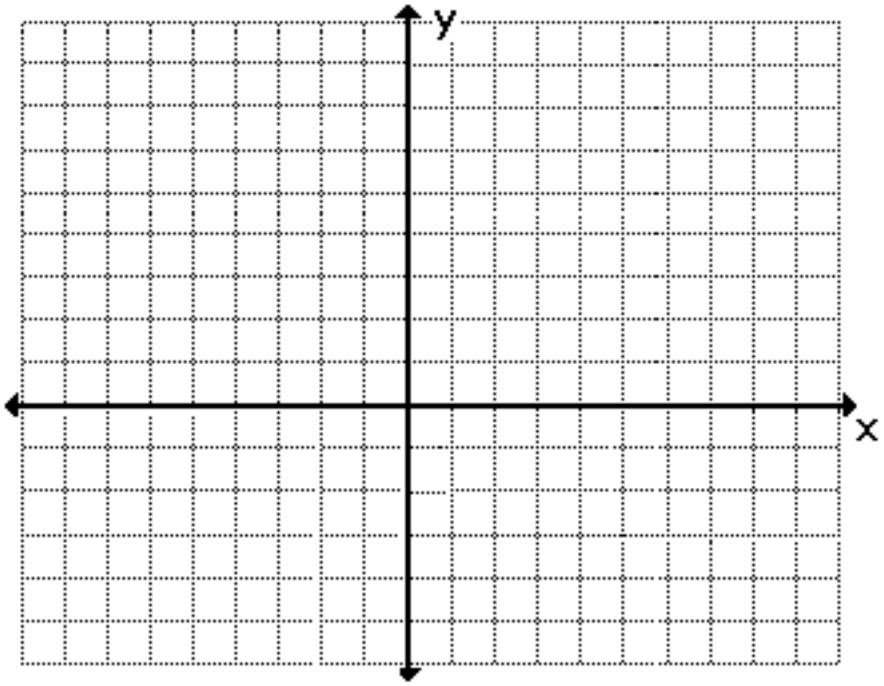
Is the pattern ascending, descending, or horizontal? _____

Graphing Patterns

1) Study and complete the pattern.
2) Complete the table.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.



step	number of squares
0	
1	
2	
3	
4	
5	



What is the slope? _____ Show the slope on the pattern, table and graph.

What is the y-intercept? _____ Show the y-intercept on the pattern, table and graph.

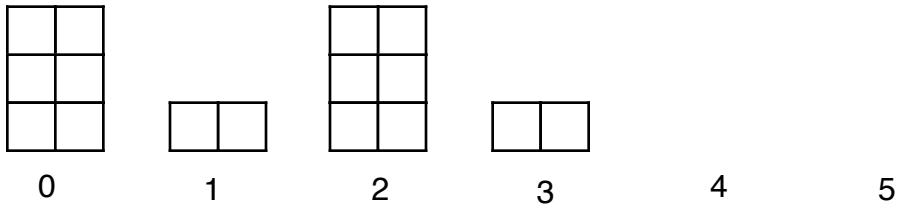
Use the slope and y-intercept to write the equation: _____

Is the pattern linear or non-linear? _____

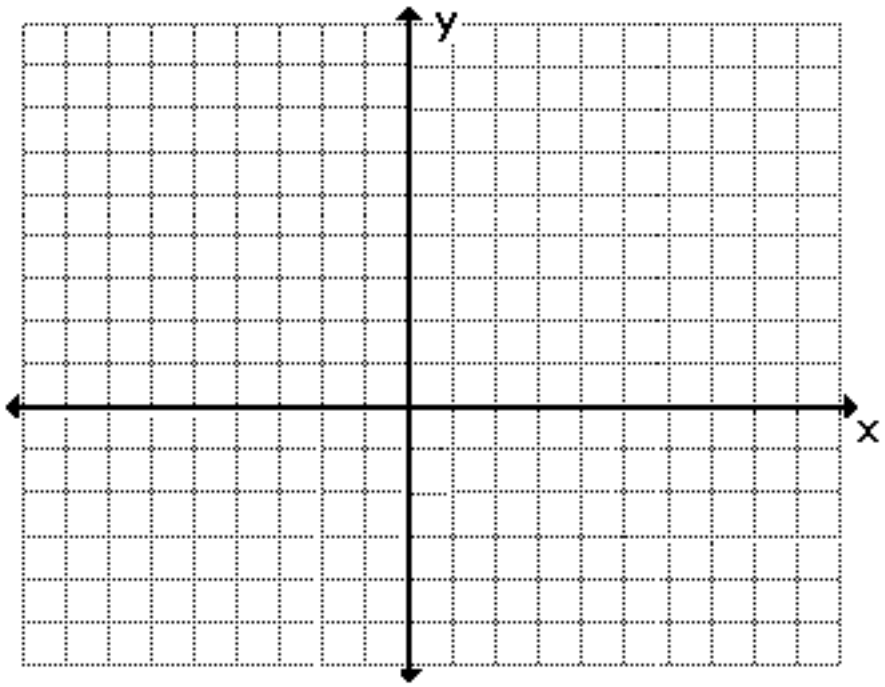
Is the pattern ascending, descending, or horizontal? _____

Graphing Patterns

1) Study and complete the pattern.
2) Complete the table.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.



step	number of squares
0	
1	
2	
3	
4	
5	



Can you determine a slope? _____Why or why not?_____

What is the y-intercept? _____ Show the y-intercept on the table, graph and rule.

Is the pattern linear or non-linear? _____

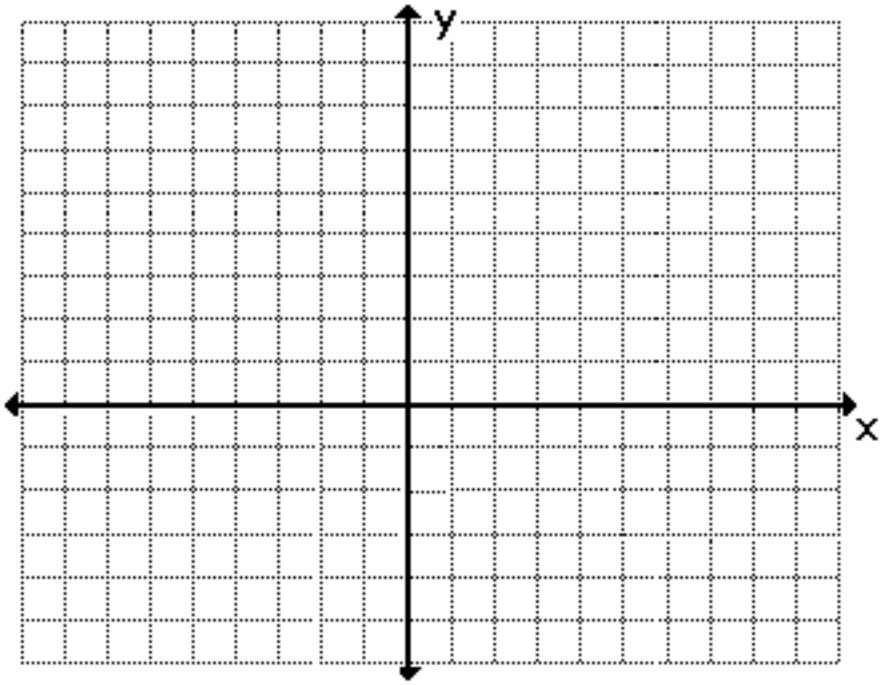
Is the pattern ascending, descending, or horizontal? _____

Graphing Number Patterns

1) Study and complete the pattern.
2) Complete the table for x = 0, 1, 2, 3, 4, and 5.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.

X:	0	1	2	3	4	5	6	7	8
Y:	2,	5,	8,	11,	___,	___,	___,	___,	____,

x	y



What is the slope? _____ Show the slope on the table and graph.

What is the y-intercept? _____ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: _____

Use the equation to find the value of y when x = 10? _____
Use the equation to find the value of y when x = 100? _____
Use the equation to find the value of y when x = 1000? _____

Is the pattern linear or non-linear? _____

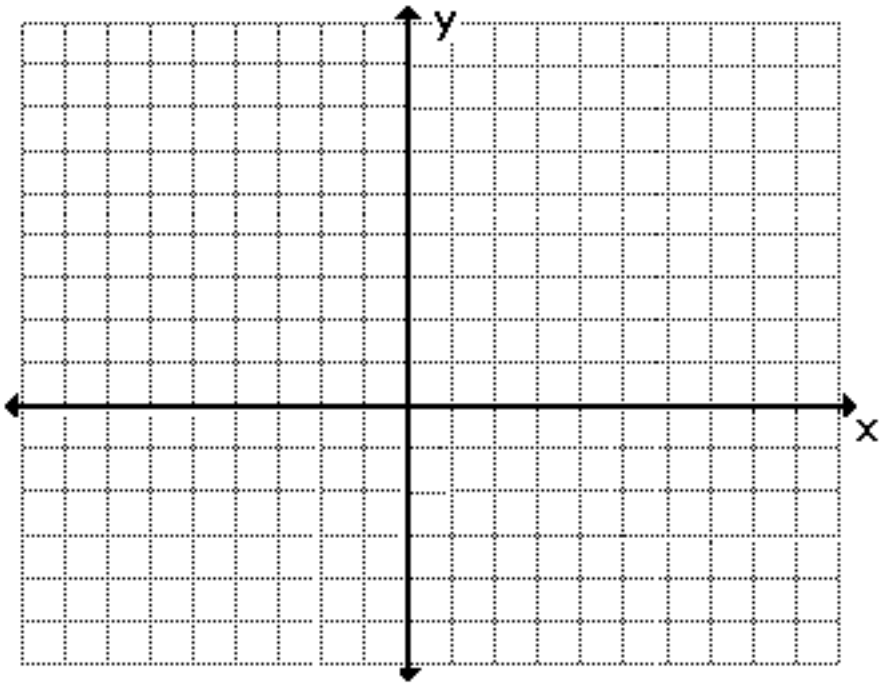
Is the pattern ascending, descending, or horizontal? _____

Graphing Number Patterns

1) Study and complete the pattern.
2) Complete the table for x = 0, 1, 2, 3, 4, and 5.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.

X:	0	1	2	3	4	5	6	7	8
Y:	9,	8,	7,	6,	5,	___,	___,	___,	____,

x	y



What is the slope? _____ Show the slope on the table and graph.

What is the y-intercept? _____ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: _____

Use the equation to find the value of y when x = 10? _____
Use the equation to find the value of y when x = 100? _____
Use the equation to find the value of y when x = 1000? _____

Is the pattern linear or non-linear? _____

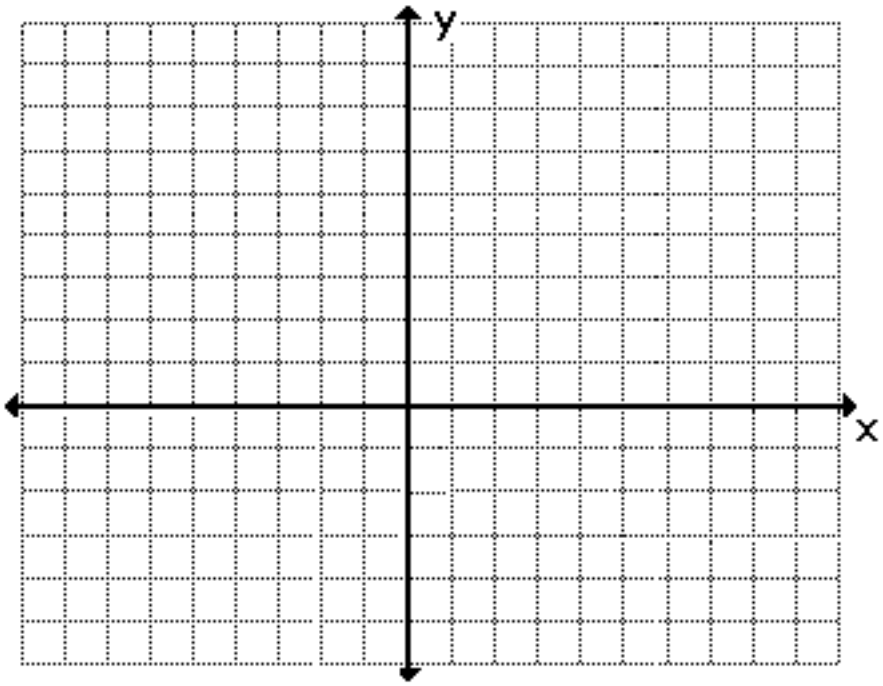
Is the pattern ascending, descending, or horizontal? _____

Graphing Number Patterns

1) Study and complete the pattern.
2) Complete the table for x = 0, 1, 2, 3, 4, and 5.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.

X:	0	1	2	3	4	5	6	7	8
Y:	6,	6,	6,	6,	6,	___,	___,	___,	____,

x	y



What is the slope? _____ Show the slope on the table and graph.

What is the y-intercept? _____ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: _____

Use the equation to find the value of y when x = 10? _____
Use the equation to find the value of y when x = 100? _____
Use the equation to find the value of y when x = 1000? _____

Is the pattern linear or non-linear? _____

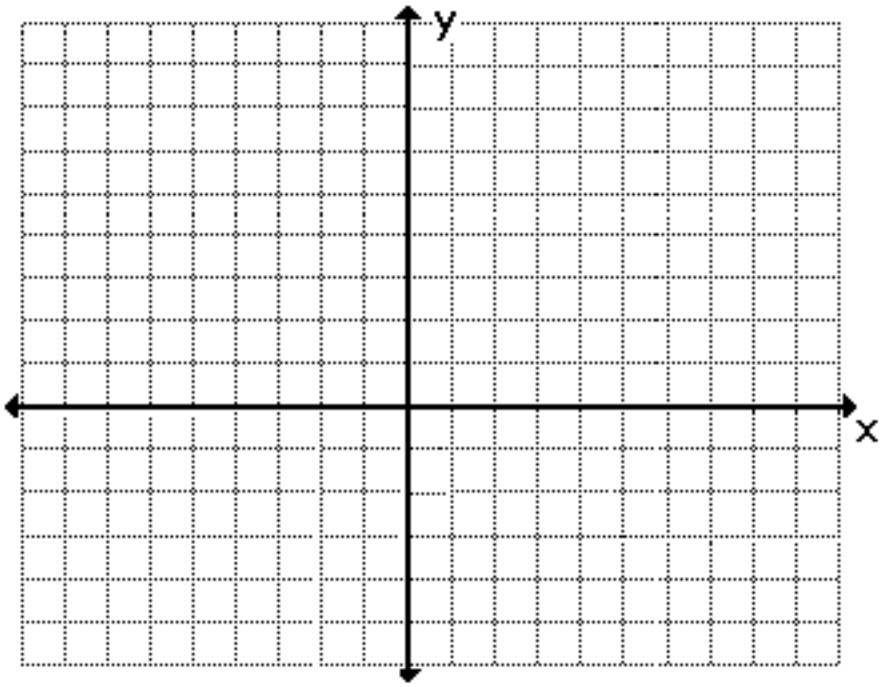
Is the pattern ascending, descending, or horizontal? _____

Graphing Number Patterns

1) Study and complete the pattern.
2) Complete the table for x = 0, 1, 2, 3, 4, and 5.
3) Label the X and Y axes and graph the pattern.
4) Answer the questions.

X:	0	1	2	3	4	5	6	7	8
Y:	0,	1,	2,	3,	4,	___,	___,	___,	____,

x	y



What is the slope? _____ Show the slope on the table and graph.

What is the y-intercept? _____ Show the y-intercept on the table and graph.

Use the slope and y-intercept to write the equation: _____

Use the equation to find the value of y when x = 10? _____
Use the equation to find the value of y when x = 100? _____
Use the equation to find the value of y when x = 1000? _____

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

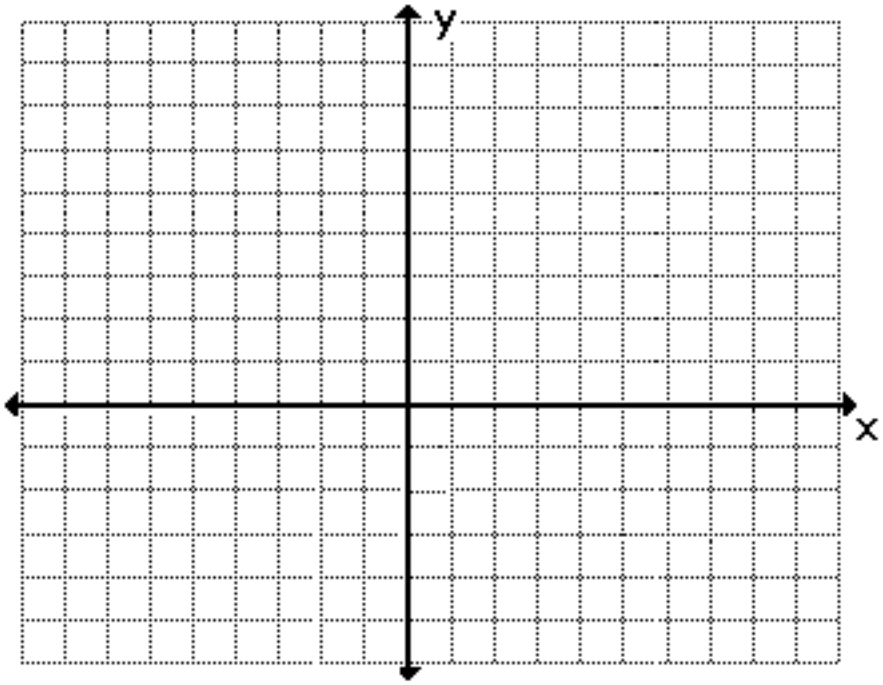
Graphing Equations

1) Study the equation **y = 3x + 1**

2) Looking at the equation, what is the slope? _____
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

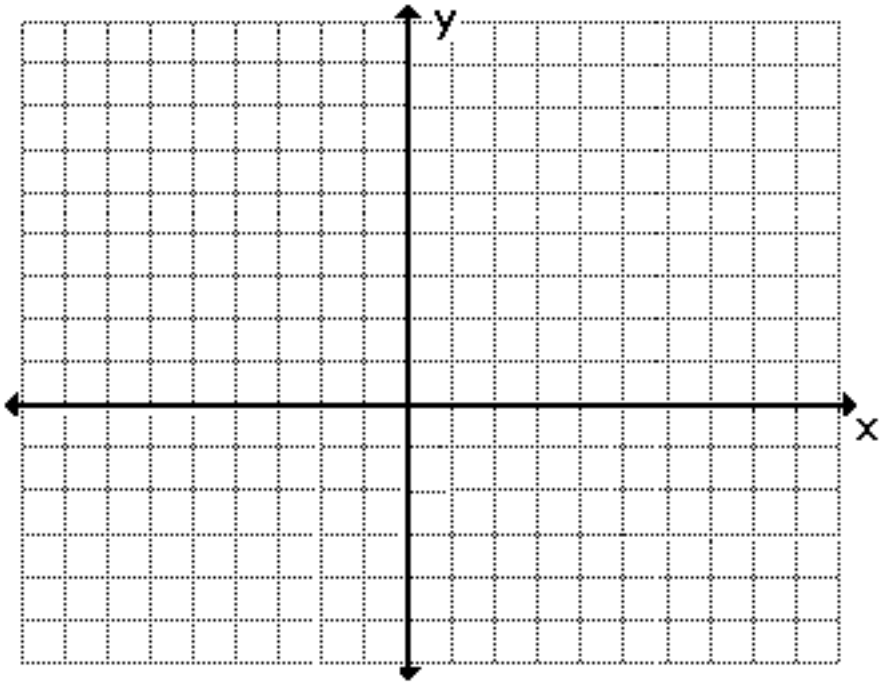
Graphing Equations

1) Study the equation **y = 2x + 3**

2) Looking at the equation, what is the slope? _____
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

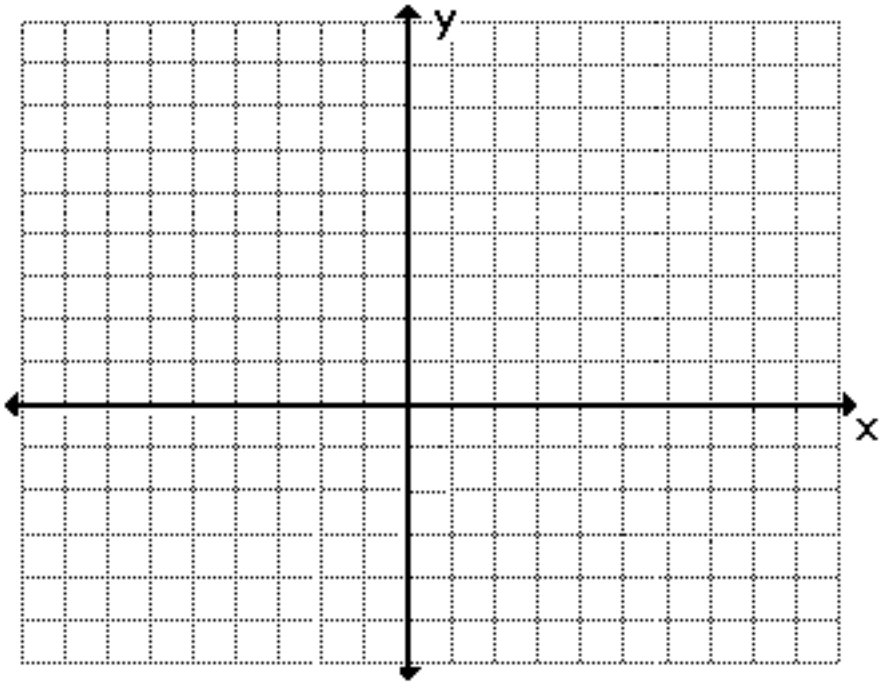
Graphing Equations

1) Study the equation **$y = -2x + 8$**

2) Looking at the equation, what is the slope? _____
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

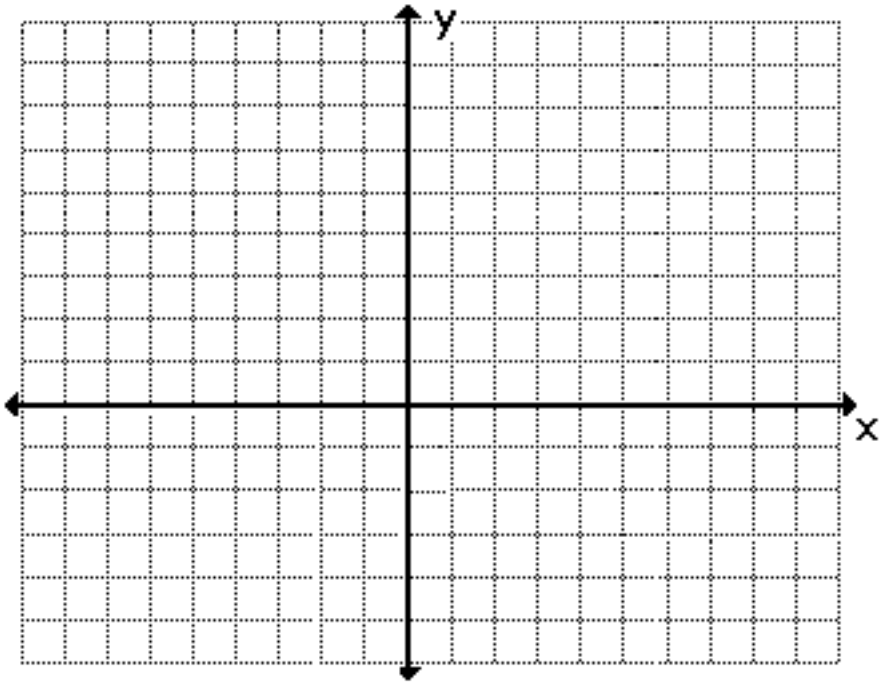
Graphing Equations

1) Study the equation **$y = -1x + 7$**

2) Looking at the equation, what is the slope? _____
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

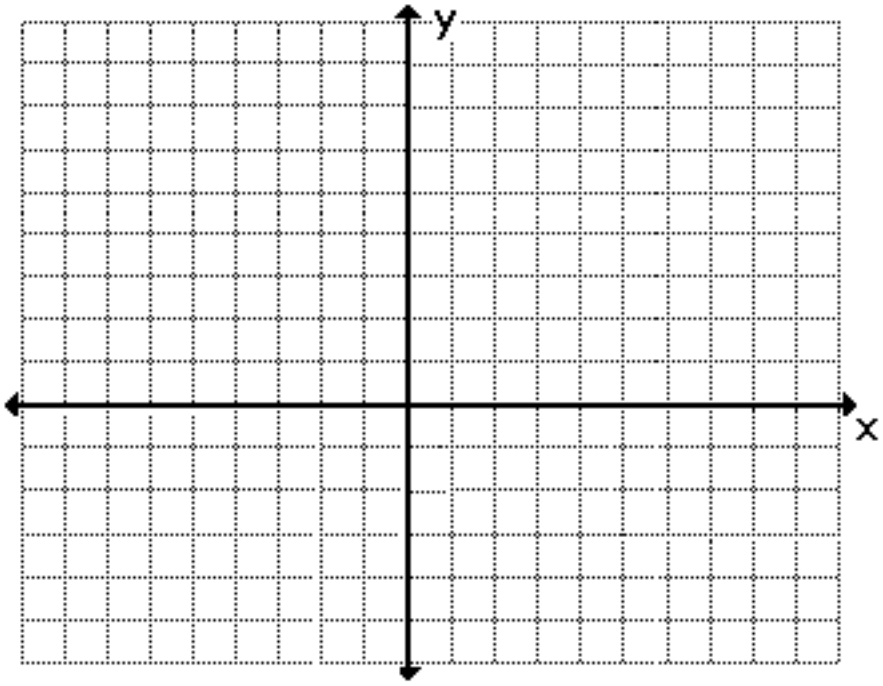
Graphing Equations

1) Study the equation **y = x**

2) Looking at the equation, what is the slope? _____
what is the y-intercept? _____
what is this type of equation called? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.
4) Label the X and Y axes and graph the equation.
5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

Graphing Equations

1) Study the equation **y = 3x + –6**

2) Looking at the equation, what is the slope? _____

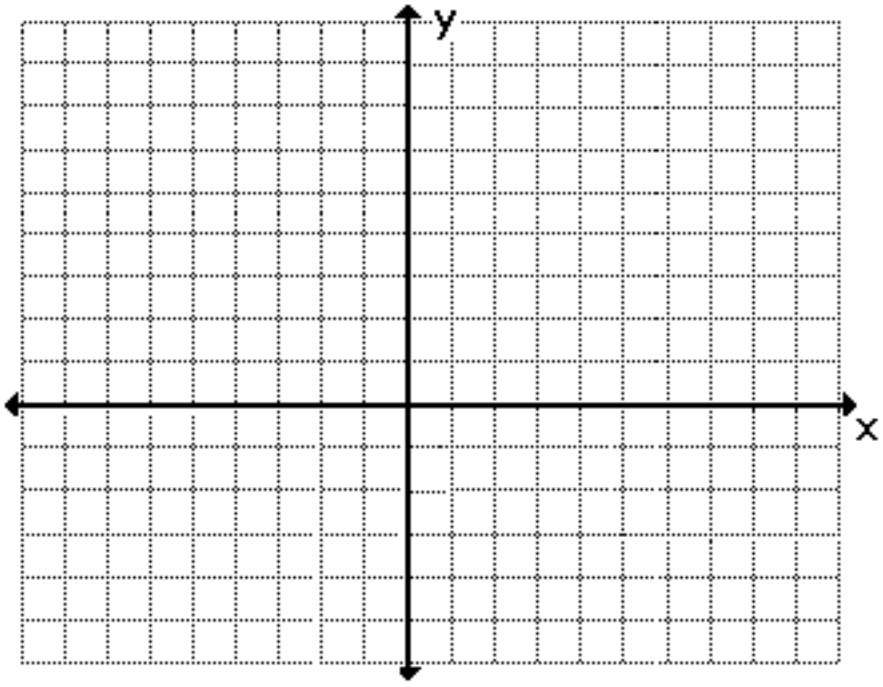
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.

4) Label the X and Y axes and graph the equation.

5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

Graphing Equations

1) Study the equation **y = 3**

2) Looking at the equation, what is the slope? _____

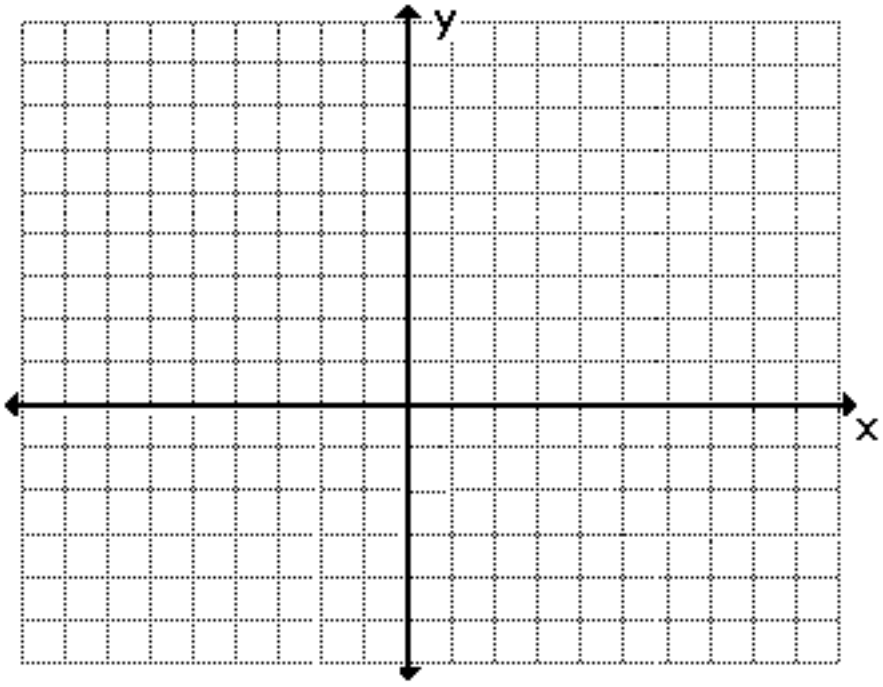
what is the y-intercept? _____

3) Complete the table for x = 0, 1, 2, 3, 4 and 5.

4) Label the X and Y axes and graph the equation.

5) Answer the questions.

x	y



Show the slope on the table and graph. Is this the same as your answer in #2? _____

Show the y-intercept on the table and graph. Is this the same as your answer in #2? __

Is the pattern linear or non-linear? _____

Is the pattern ascending, descending, or horizontal? _____

Family of Lines

1) Study the equation **y = 2x + 1**

what is the slope? _____

what is the y-intercept? _____

2) Study the equation **y = 2x + 3**

what is the slope? _____

what is the y-intercept? _____

3) Study the equation **y = 2x**

what is the slope? _____

what is the y-intercept? _____

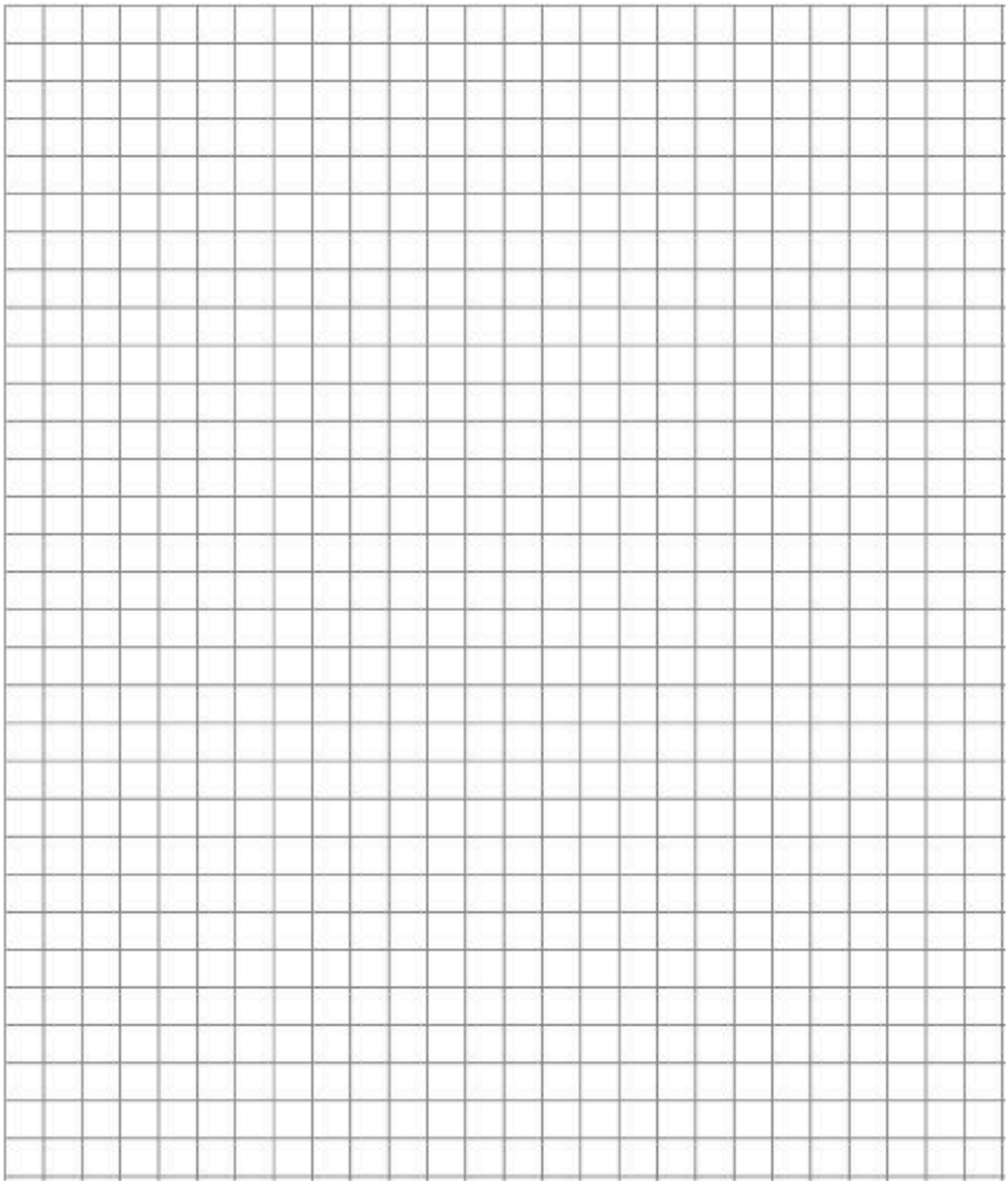
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.

x	y

x	y

x	y



What do you notice about the three lines? _____

What do the equations of the lines have in common? _____

Family of Lines

1) Study the equation **y = x + 2** what is the slope? _____

what is the y-intercept? _____

2) Study the equation **y = x + 5** what is the slope? _____

what is the y-intercept? _____

3) Study the equation **y = x + – 3** what is the slope? _____

what is the y-intercept? _____

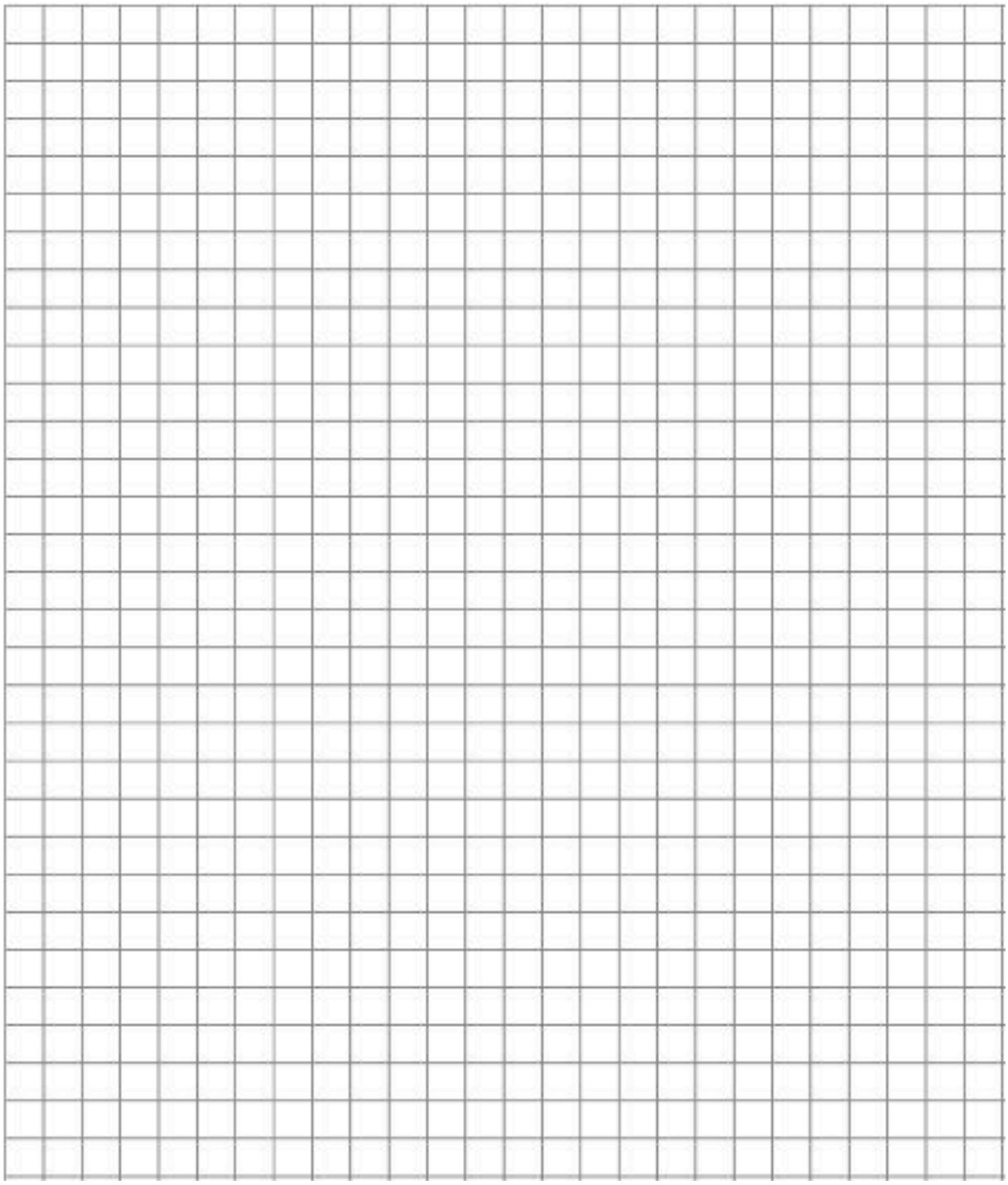
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.

x	y

x	y

x	y



What do you notice about the three lines? _____

What do the equations of the lines have in common? _____

Family of Lines

1) Study the equation **y = x + 2**

what is the slope? _____

what is the y-intercept? _____

2) Study the equation **y = 3x + 2**

what is the slope? _____

what is the y-intercept? _____

3) Study the equation **y = –2x + 2**

what is the slope? _____

what is the y-intercept? _____

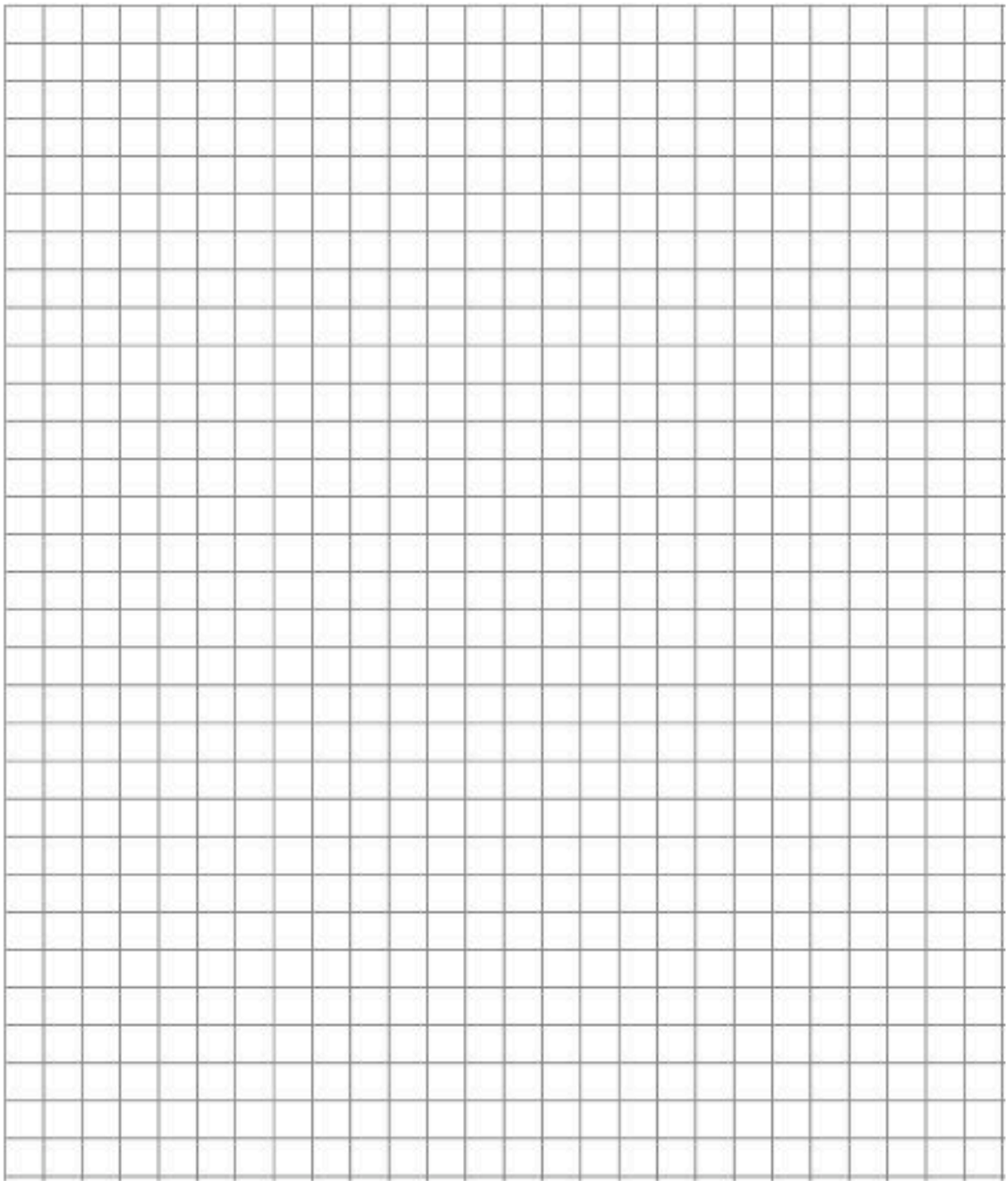
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.

x	y

x	y

x	y



What do you notice about the three lines? _____

What do the equations of the lines have in common? _____

Family of Lines

1) Study the equation **y = 5**

what is the slope? _____

what is the y-intercept? _____

2) Study the equation **y = 2**

what is the slope? _____

what is the y-intercept? _____

3) Study the equation **y = –3**

what is the slope? _____

what is the y-intercept? _____

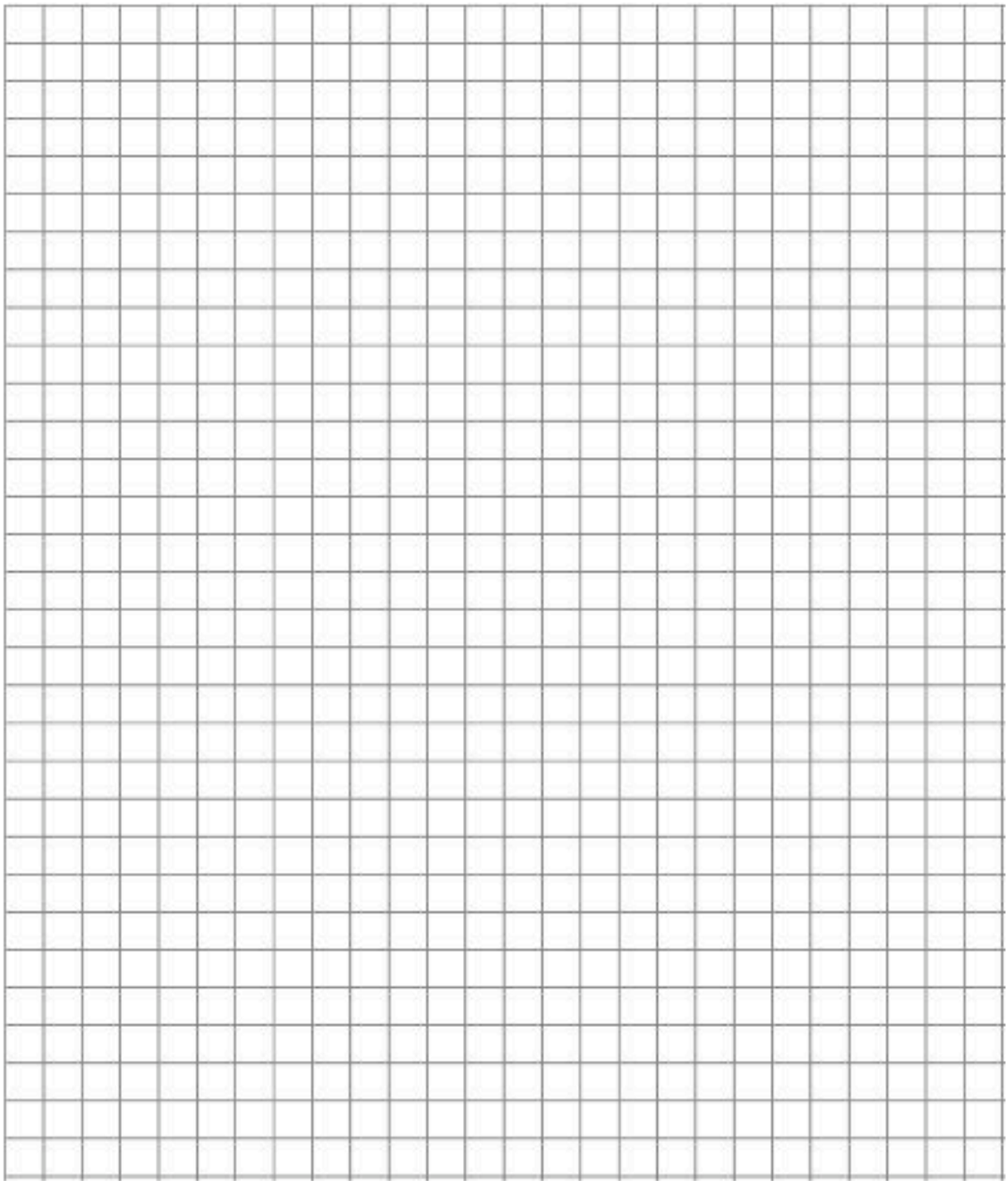
4) Complete the table for each equation for x = 0, 1, 2, 3, 4 , 5.

5) Graph the three equations on the same graph.

x	y

x	y

x	y



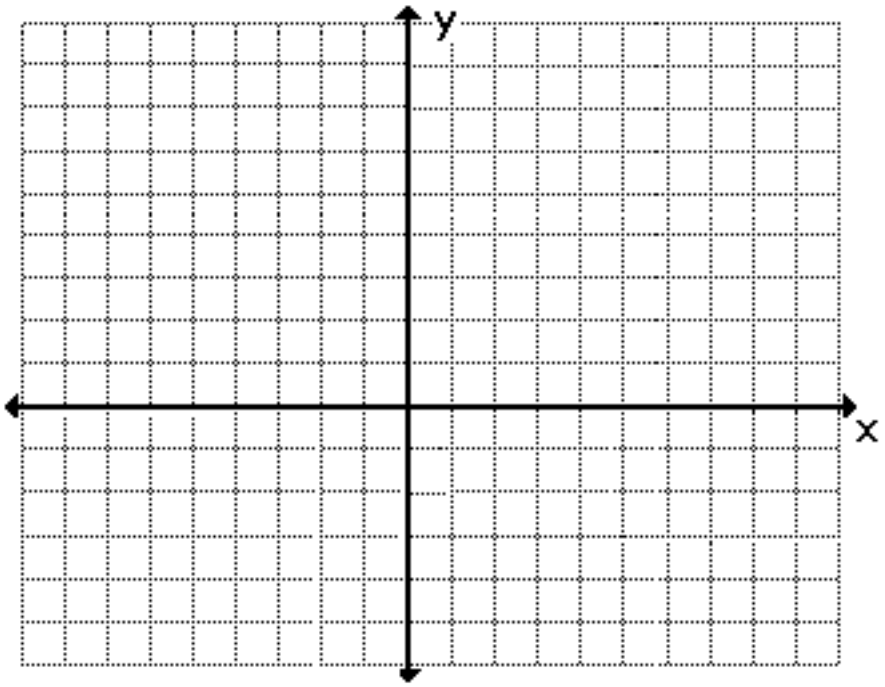
What do you notice about the three lines? _____

What do the equations of the lines have in common? _____

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (3, 2).

2) Use the ruler to draw a line through the point (3, 2) with a slope of 2.



x	y

3) Looking at the graph, what is the y-intercept? _____

what is the equation of the line? _____

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

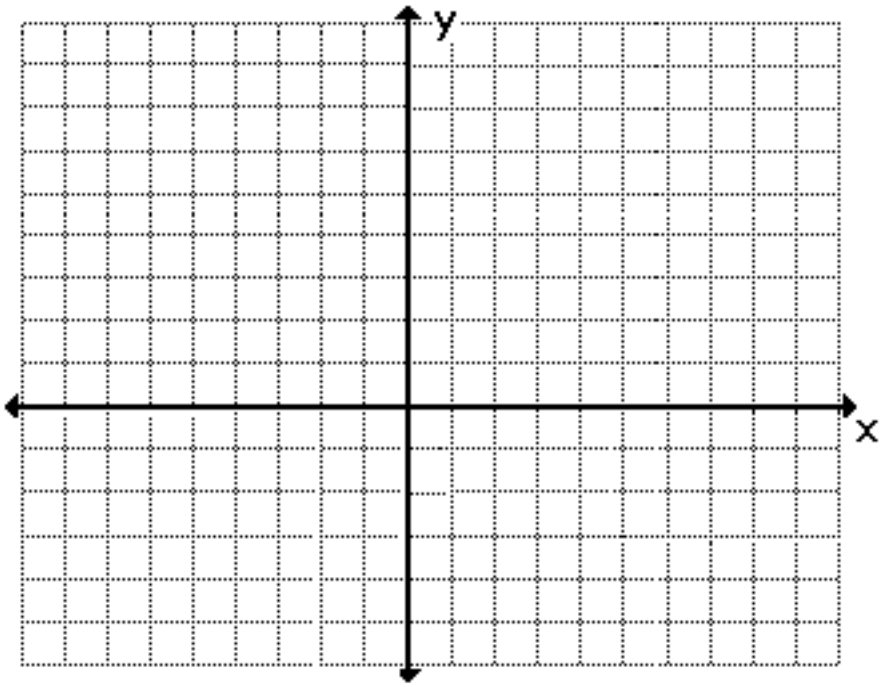
5) Is the pattern linear or non-linear? _____

6) Is the pattern ascending, descending, or horizontal? _____.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (2,1).

2) Use the ruler to draw a line through the point (2,1) with a slope of –2.



x	y

3) Looking at the graph, what is the y-intercept? _____

what is the equation of the line? _____

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

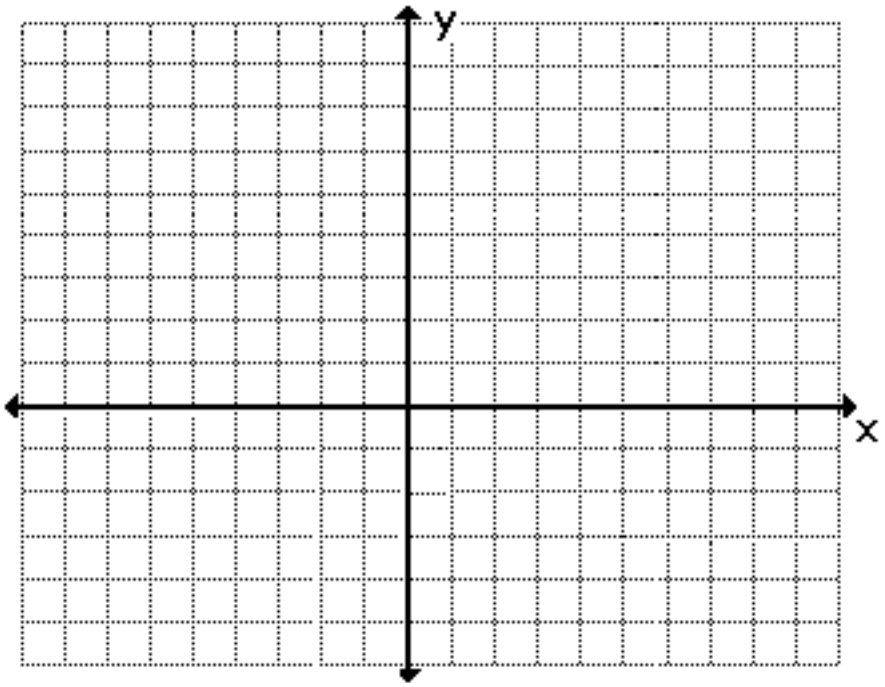
5) Is the pattern linear or non-linear? _____

6) Is the pattern ascending, descending, or horizontal? _____.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (3, 5).

2) Use the ruler to draw a line through the point (3, 5) with a slope of 0.



x	y

3) Looking at the graph, what is the y-intercept? _____

what is the equation of the line? _____

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

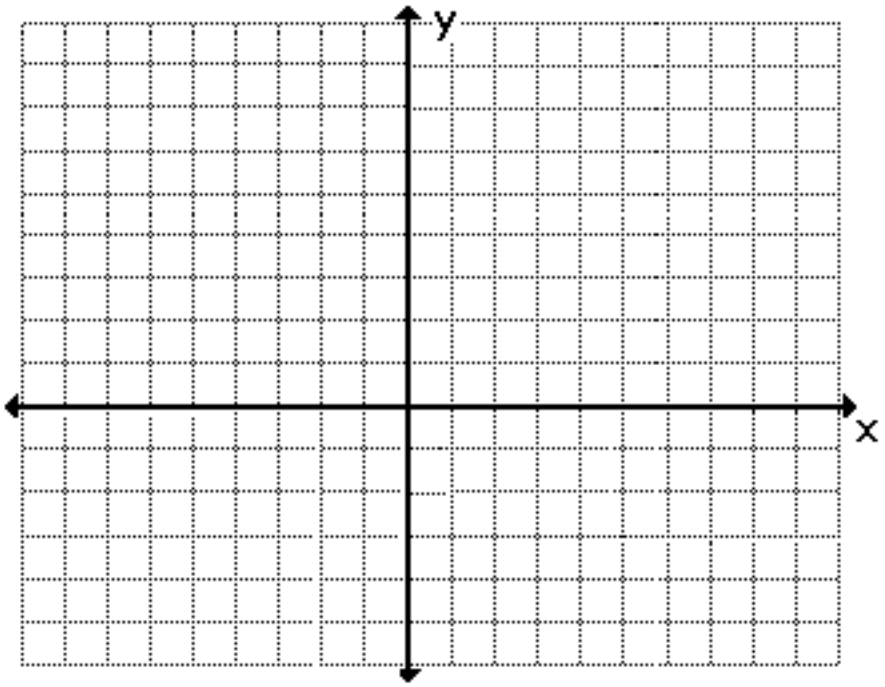
5) Is the pattern linear or non-linear? _____

6) Is the pattern ascending, descending, or horizontal? _____.

Graphing a Line given a Coordinate and the Slope

1) Label the graph and plot (1, 3).

2) Use the ruler to draw a line through the point (1, 3) with a slope of –1.



x	y

3) Looking at the graph, what is the y-intercept? _____

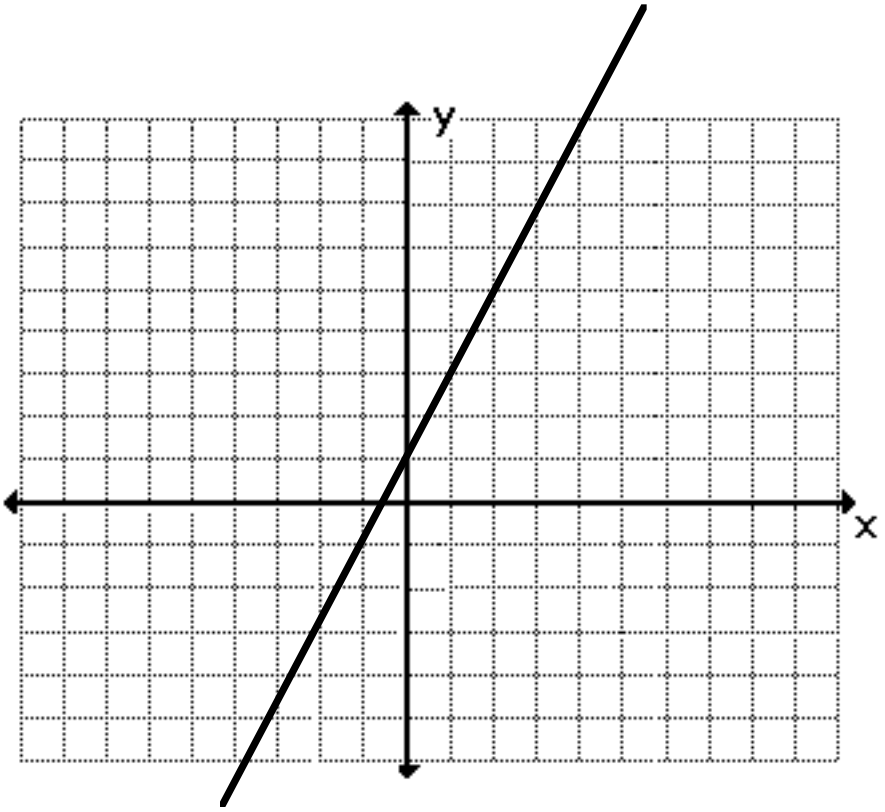
what is the equation of the line? _____

4) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

5) Is the pattern linear or non-linear? _____

6) Is the pattern ascending, descending, or horizontal? _____.

Finding the Equation of a Line



x	y

1) Study the graph.

2) Looking at the graph, what is the slope? _____

what is the y-intercept? _____

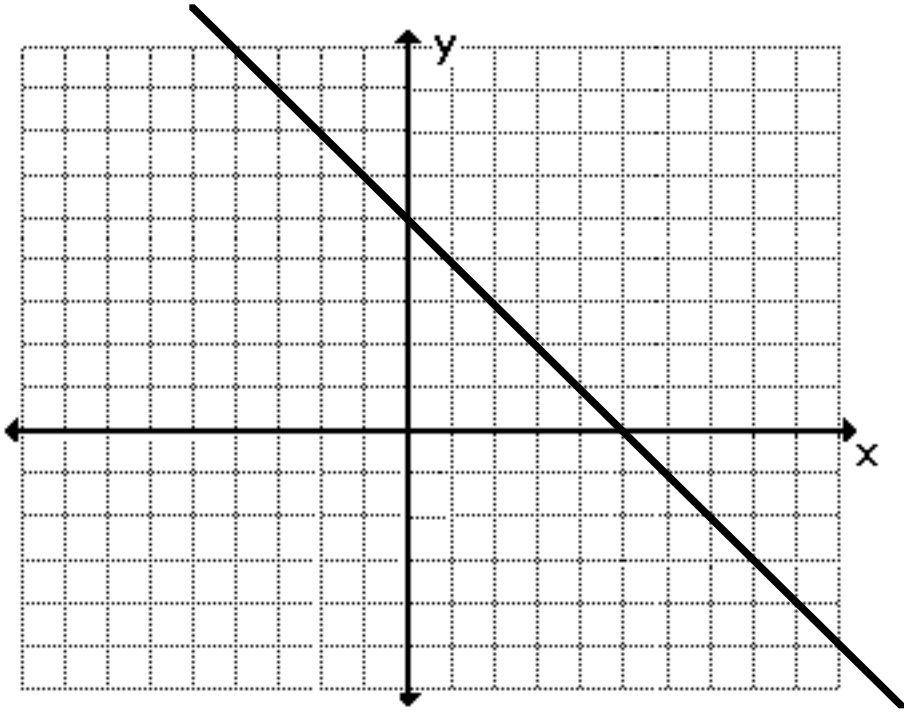
what is the equation of the line? _____

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? _____

5) Is the pattern ascending, descending, or horizontal? _____.

Finding the Equation of a Line



x	y

1) Study the graph.

2) Looking at the graph, what is the slope? _____

what is the y-intercept? _____

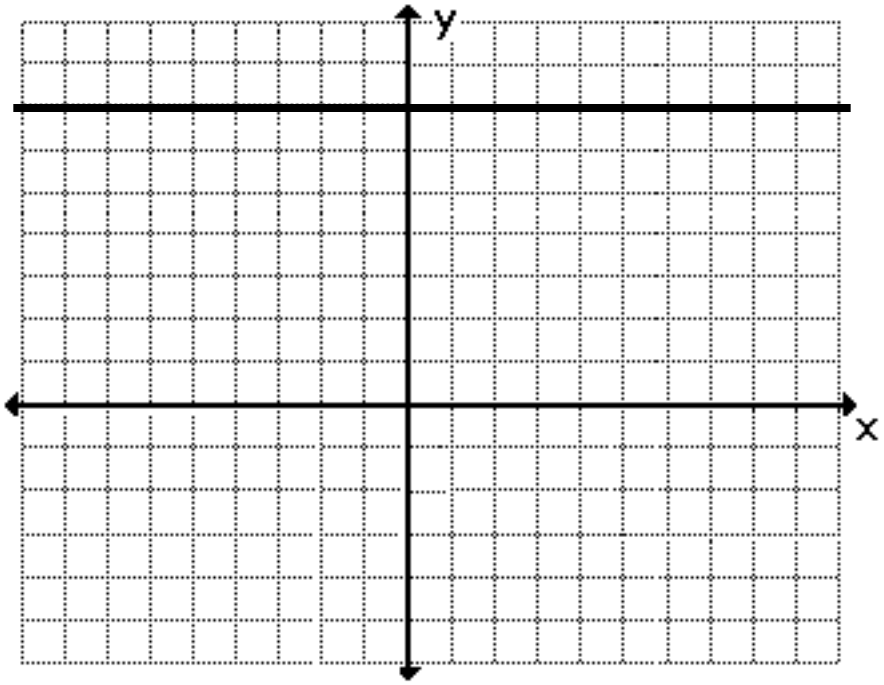
what is the equation of the line? _____

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? _____

5) Is the pattern ascending, descending, or horizontal? _____.

Finding the Equation of a Line



x	y

1) Study the graph.

2) Looking at the graph, what is the slope? _____

what is the y-intercept? _____

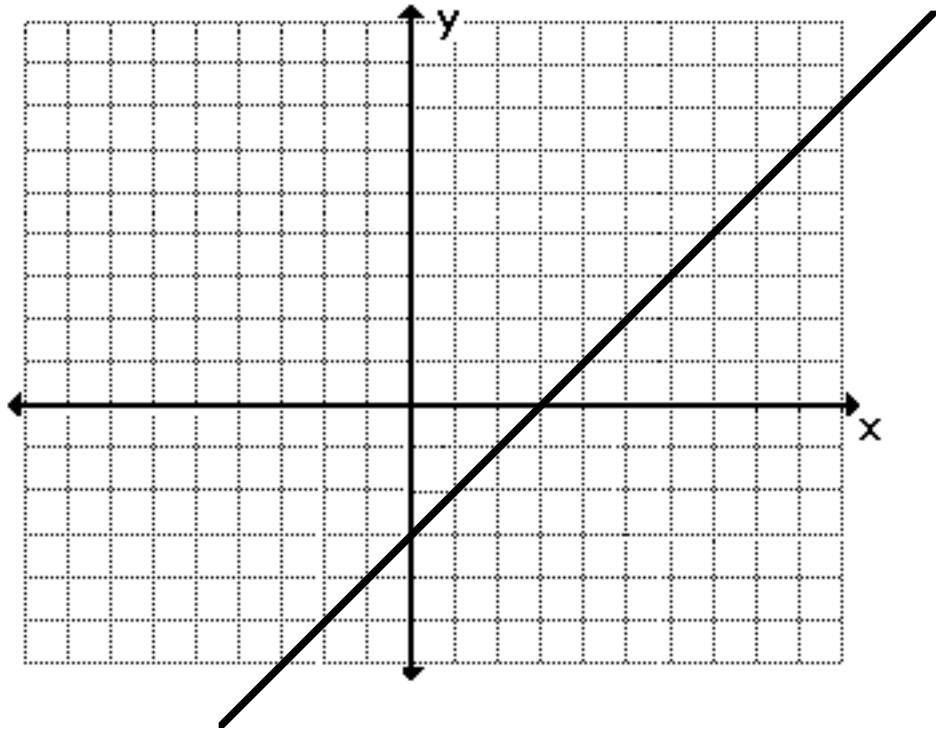
what is the equation of the line? _____

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? _____

5) Is the pattern ascending, descending, or horizontal? _____.

Finding the Equation of a Line



x	y

1) Study the graph.

2) Looking at the graph, what is the slope? _____

what is the y-intercept? _____

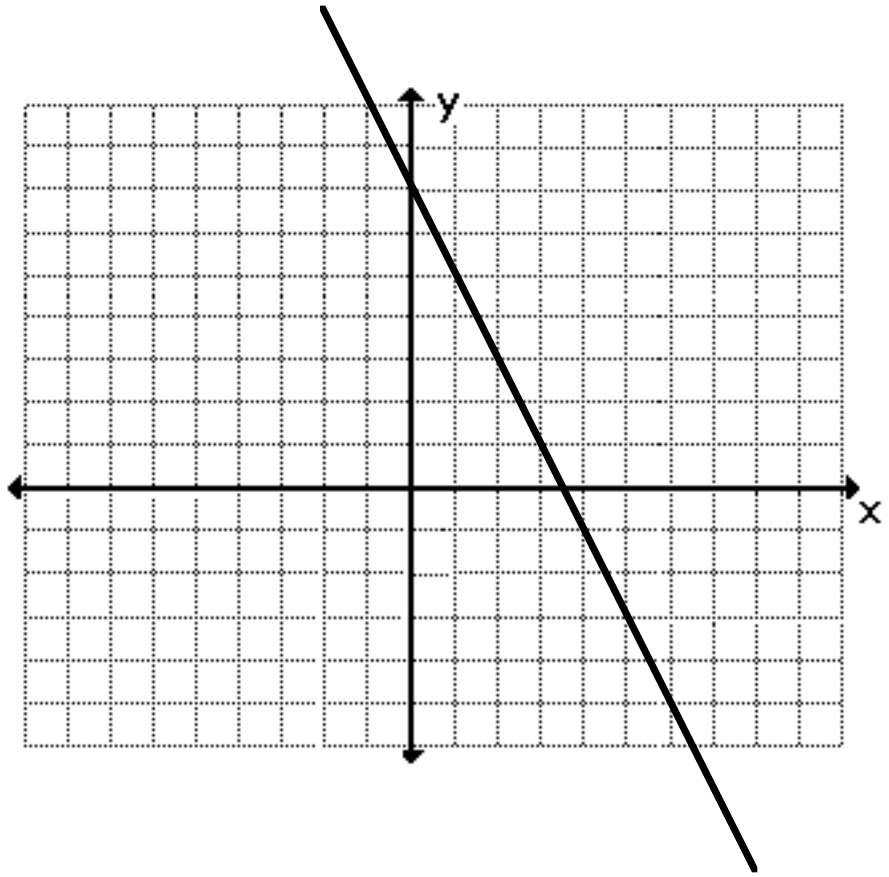
what is the equation of the line? _____

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? _____

5) Is the pattern ascending, descending, or horizontal? _____.

Finding the Equation of a Line



x	y

1) Study the graph.

2) Looking at the graph, what is the slope? _____

what is the y-intercept? _____

what is the equation of the line? _____

3) Complete the table for x = 0, 1, 2, 3, 4 , and 5.

4) Is the pattern linear or non-linear? _____

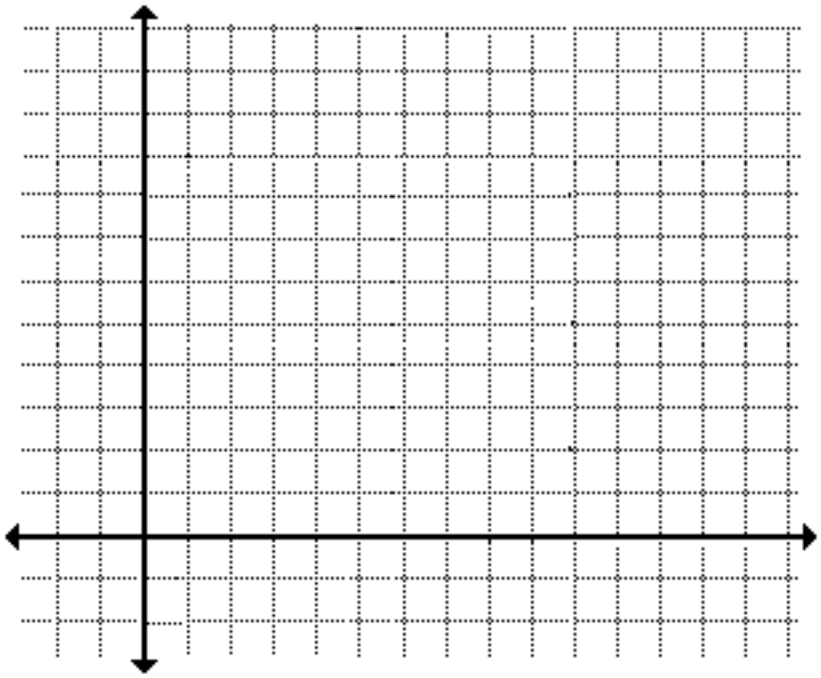
5) Is the pattern ascending, descending, or horizontal? _____.

Word Problem

Sabrina wants to buy a CD player. She has $2. She decides to save $3 from her allowance every week.

1) Complete a table and graph Sabrina's savings during 10 weeks.

Number of weeks (X)	Sabrina's savings (Y)



2) What is the slope?

3) What part of the word problem gives you the "slope"?

4) What is the y-intercept?

5) What part of the word problem gives you the "y-intercept"?

6) What is the equation that represents Sabrina's savings?

7) What does the X-axis represent?

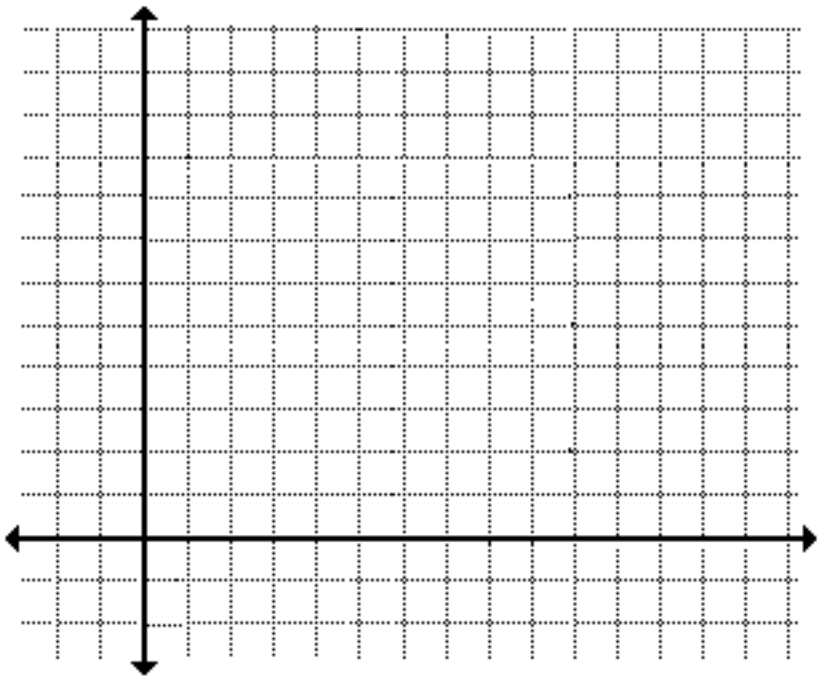
8) What does the Y-axis represent?

Word Problem

Sabrina has $12 saved. She decides to spend $2 a week on candy.

1) Complete a table and graph Sabrina's savings during 10 weeks.

Number of weeks (X)	Sabrina's savings (Y)



2) What is the slope?

3) What part of the word problem gives you the "slope"?

4) What is the y-intercept?

5) What part of the word problem gives you the "y-intercept"?

6) What is the equation that represents Sabrina's savings?

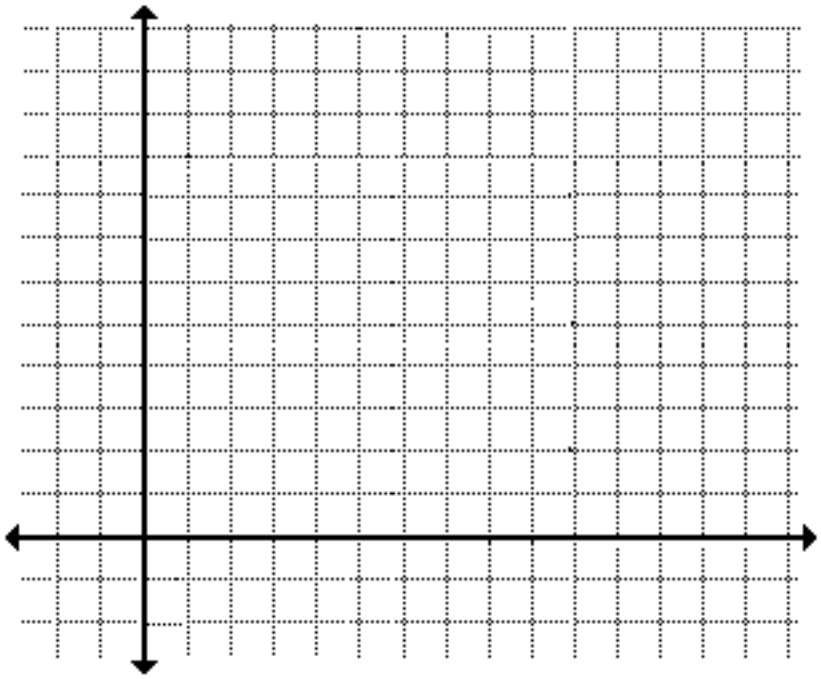
7) During what week did Sabrina run out of money? Label it on the graph.

Word Problem

Sabrina wants to buy a CD player. She has no money. She decides to save $2 from her allowance every week.

1) Complete a table and on graph paper graph Sabrina's savings during 10 weeks.

Number of weeks (X)	Sabrina's savings (Y)



2) What is the slope?

3) What part of the word problem gives you the "slope"?

4) What is the y-intercept?

5) What part of the word problem gives you the "y-intercept"?

6) What is the equation that represents Sabrina's savings?

7) What does the X-axis represent?

8) What does the Y-axis represent?

Graphing Linear Systems of Equations

A) Sabrina has $30 and she receives an allowance of $5 per week.

B) Sergio has $10 and he receives an allowance of $10 per week.

1) Complete a t-table and graph Sabrina and Sergio's savings for 10 weeks.

Number of weeks (X)	Sabrina's savings (Y)

What is the slope? ____

What is the y-intercept? ____

Number of weeks (X)	Sergio's savings (Y)

What is the slope? ____

What is the y-intercept? ____

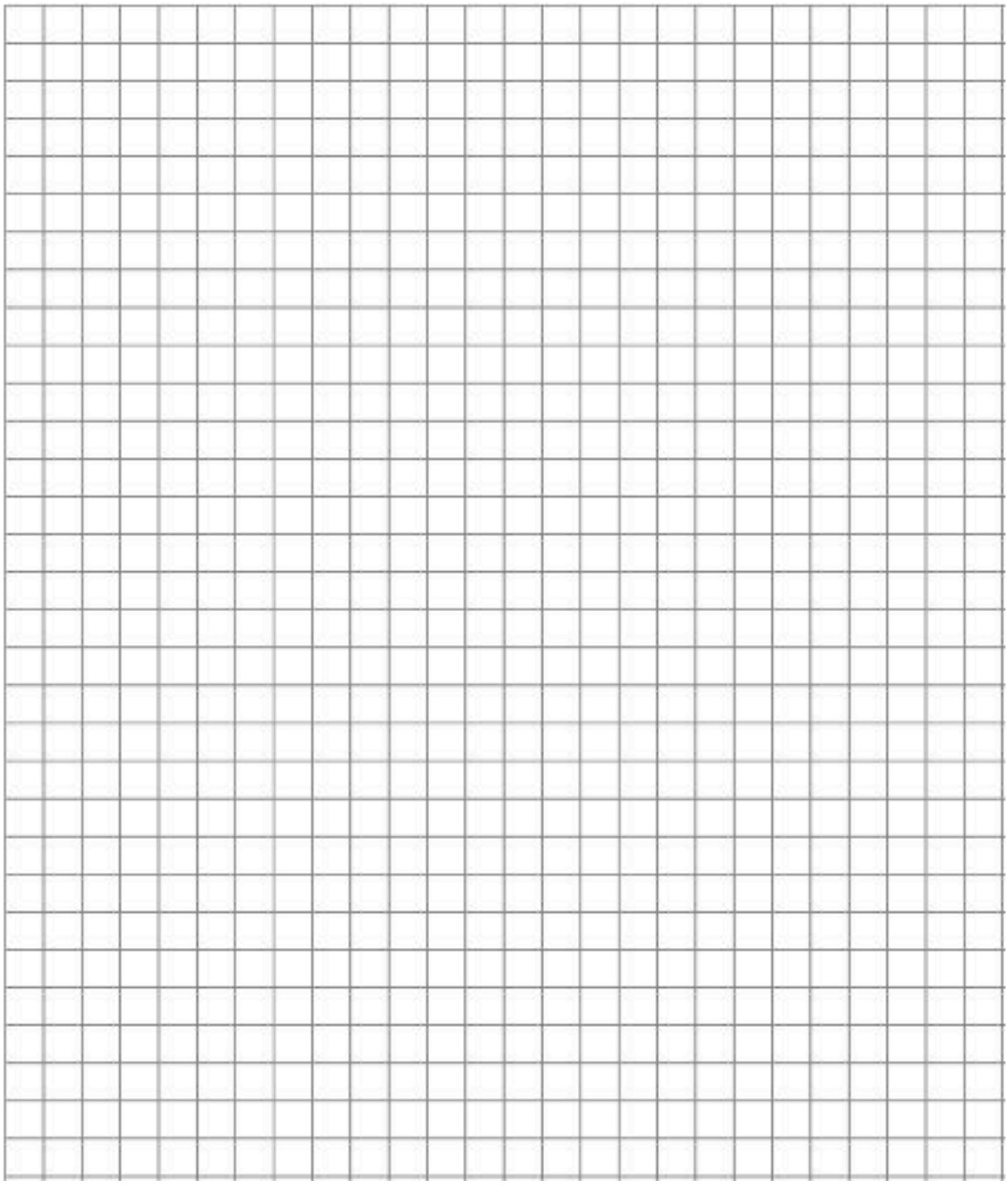
2) Graph Sabrina and Sergio's savings for 10 weeks.

3) What part of problem gives you the "slope"?

4) What part of the word problem gives you the "y-intercept"?

5) What is the equation that represents Sabrina's savings?

6) What is the equation that represents Sergio's savings?



During what week will Sabrina and Sergio's savings be the same? _____

Show your answer on the t-table and the graph.

During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Graphing Linear Systems of Equations

A) Sabrina has $ 15 and she receives an allowance of $ 5 per week.

B) Sergio has $ 30 and he receives an allowance of $ 2 per week.

1) Complete a t-table and graph Sabrina and Sergio's savings for 10 weeks.

Number of weeks (X)	Sabrina's savings (Y)

What is the slope? ____

What is the y-intercept? ____

Number of weeks (X)	Sergio's savings (Y)

What is the slope? ____

What is the y-intercept? ____

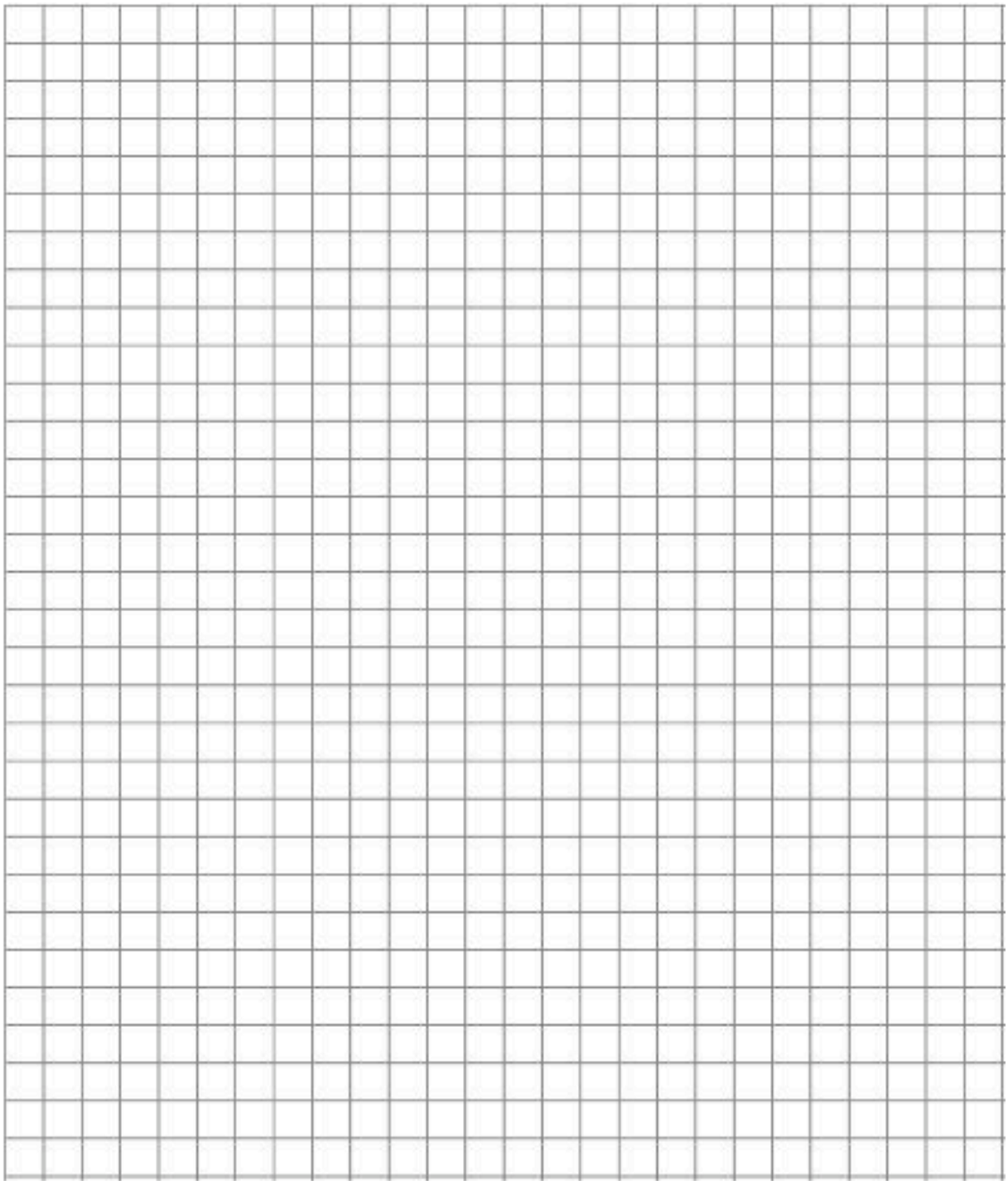
2) Graph Sabrina and Sergio's savings for 10 weeks.

3) What part of problem gives you the "slope"?

4) What part of the word problem gives you the "y-intercept"?

5) What is the equation that represents Sabrina's savings?

6) What is the equation that represents Sergio's savings?



During what week will Sabrina and Sergio's savings be the same? _____

Show your answer on the t-table and the graph.

During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Graphing Linear Systems of Equations

A) Sabrina has saved $ 70 and spends $ 5 per week.

B) Sergio has saved $ 60 and spends $ 3 per week.

1) Complete a t-table and graph Sabrina and Sergio's spending until they run out of money.

Number of weeks (X)	Sabrina's savings (Y)

What is the slope? ____

What is the y-intercept? ____

Number of weeks (X)	Sergio's savings (Y)

What is the slope? ____

What is the y-intercept? ____

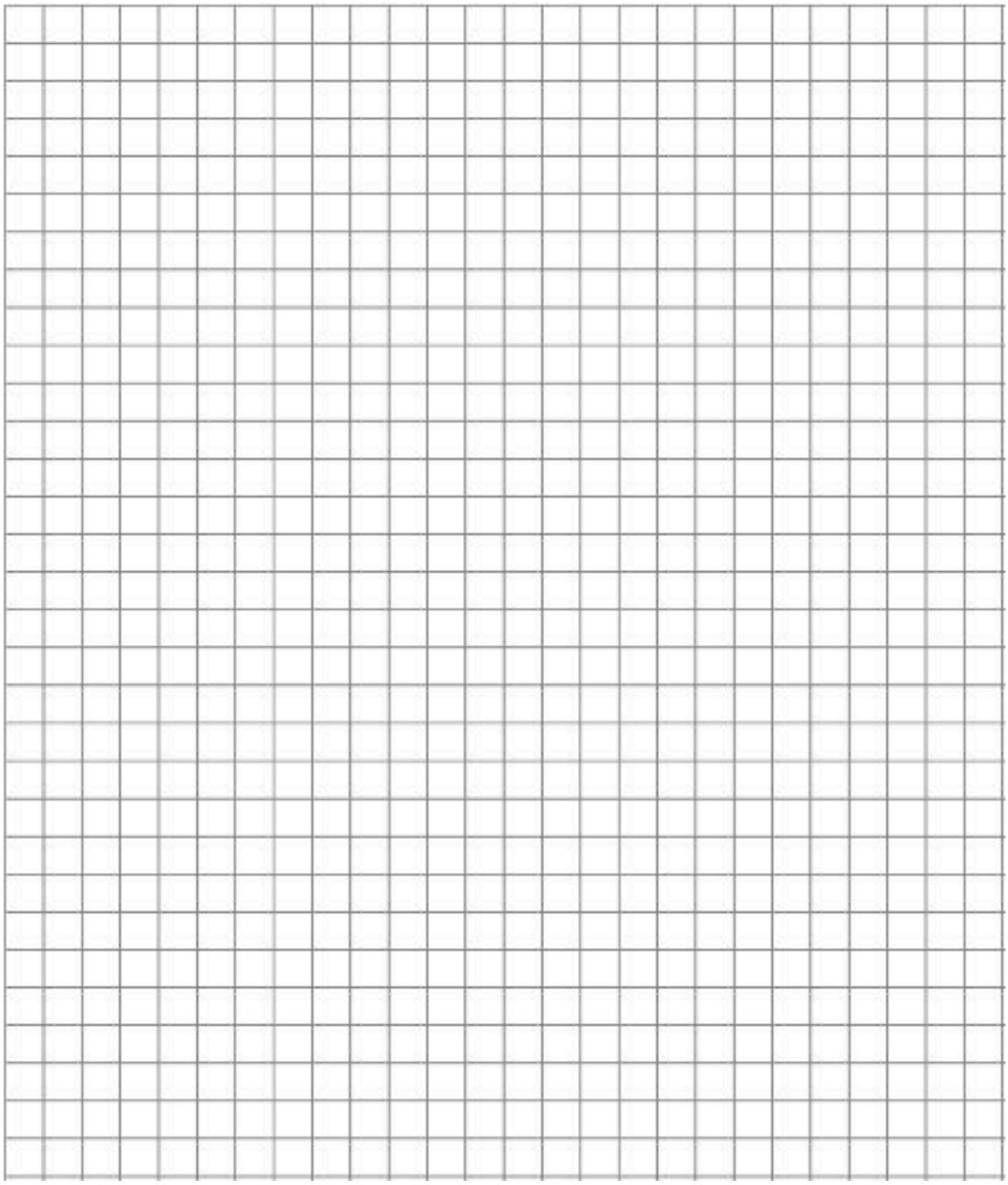
2) Graph Sabrina and Sergio's spending.

3) What part of problem gives you the "slope"?

4) What part of the word problem gives you the "y-intercept"?

5) What is the equation that represents Sabrina's savings?

6) What is the equation that represents Sergio's savings?



During what week will Sabrina and Sergio's have the same amount of money?

_____ Show your answer on the t-table and the graph.

During what weeks does Sabrina have more money than Sergio? Show your answer on the t-table and the graph.

Unit Summary

Using words, graphs, diagrams and examples, clearly explain each one of the following mathematical terms:

- ❒ pattern
- ❒ slope
- ❒ y-intercept
- ❒ equation
- ❒ linear
- ❒ non-linear
- ❒ ascending
- ❒ descending
- ❒ horizontal

Unit Summary Continue