

LESSON 1: HOMEWORK

Notes or additional instructions based on whole-class discussion of homework assignment:

1. A stamp machine at the post office works very much like a vending machine: You press a button to select the type of stamp you want to buy. The diagrams below show the buttons and types of stamp for one machine. All of the stamps cost the same amount of money.

- a. Draw arrows from the buttons to the stamps in the diagram below to show a relationship that is a function.

A B C D E

Flag President Elvis Flower Forever

- b. Draw arrows from the buttons to the stamps in a different way than you did in part a to show a relationship that is a function.

A B C D E

Flag President Elvis Flower Forever

- c. Draw arrows from the buttons to the stamps in a different way than you did in both part a and part b to show a relationship that is a function.

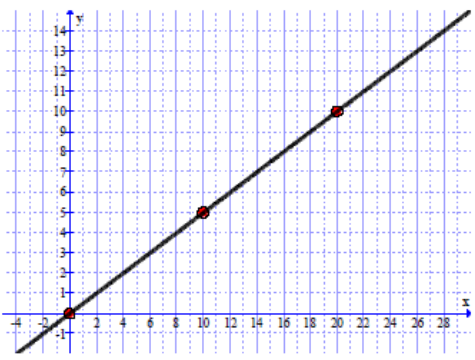
A B C D E

Flag President Elvis Flower Forever

2. Create an example of a relationship that is a function. (Your example cannot be one of the examples discussed today in class.) Explain why your example is a function.

3. Create an example of a relationship that is not a function. (Your example cannot be one of the examples discussed today in class.) Explain why your example is not a function.
4. Miriam is an aspiring meteorologist. She makes a table in which she numbers each day of the current calendar year—from 1 to 365—in the input column. She records the corresponding high temperature in her town for each of these days.
- Does Miriam's table represent a function? Answer "Yes," "No," or "Maybe," and explain your answer.
 - Miriam wonders whether the table would be a function if she reversed the input and output columns. If the input column contained the daily high temperature and the output column contained the day of the year (from 1 to 365), would the relationship be a function? Answer "Yes," "No," or "Maybe," and explain your answer.

LESSON 1: STAYING SHARP

Practicing skills & concepts	<p>1. Write a rule for the following graph:</p>  <p>Answer with supporting work:</p>	<p>2. Use the graph and your rule for question 1 to complete the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">Y</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">-4</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="text-align: center; padding: 5px;">5</td> </tr> <tr> <td style="text-align: center; padding: 5px;">15</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="text-align: center; padding: 5px;">10</td> </tr> <tr> <td style="text-align: center; padding: 5px;">50</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	x	Y	-4			5	15			10	50																																													
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Preparing for upcoming lessons	<p>3. Cordell writes the equation $v = 0.10d + 0.05n$ to model the total value of the dimes and nickels in his pocket. (Dimes are worth ten cents and nickels are worth five cents.) What does each part of the equation represent?</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Part</th> <th style="padding: 5px;">Meaning</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">v</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">0.10</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">d</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">0.05</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="text-align: center; padding: 5px;">n</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	Part	Meaning	v		0.10		d		0.05		n		<p>4. If Cordell has 6 nickels and 4 dimes, find the total value of his dimes and nickels by substituting and evaluating the expression $0.10d + 0.05n$.</p> <p>Answer with supporting work:</p>																																												
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Focus skill: Scaling graphs	<p>5. State an appropriate scale to use to graph the data in the x-y table shown.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">14</td> </tr> <tr> <td style="padding: 5px;">y</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">10</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">30</td> <td style="padding: 5px;">40</td> <td style="padding: 5px;">50</td> <td style="padding: 5px;">60</td> <td style="padding: 5px;">70</td> </tr> </tbody> </table> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; width: 200px;"> <tbody> <tr> <td style="padding: 5px;">Minimum x-value:</td> <td style="width: 50px;"></td> </tr> <tr> <td style="padding: 5px;">Maximum x-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Increment for x-axis:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Minimum y-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Maximum y-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	x	0	2	4	6	8	10	12	14	y	0	10	20	30	40	50	60	70	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>6. Matt is trying to graph the data in this x-y table:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 5px;">x</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">9</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">18</td> </tr> <tr> <td style="padding: 5px;">y</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">13</td> <td style="padding: 5px;">19</td> <td style="padding: 5px;">25</td> <td style="padding: 5px;">31</td> <td style="padding: 5px;">37</td> </tr> </tbody> </table> <p>He chooses the scale:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 5px;">Min. x:</td> <td style="padding: 5px;">0</td> <td style="padding: 5px;">Min. y:</td> <td style="padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">Max. x:</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">Max. y:</td> <td style="padding: 5px;">20</td> </tr> <tr> <td style="padding: 5px;">x increment:</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">y increment:</td> <td style="padding: 5px;">5</td> </tr> </tbody> </table> <p>Identify one problem with Matt's scale, and suggest one improvement you would make.</p>	x	0	6	9	12	15	18	y	1	13	19	25	31	37	Min. x :	0	Min. y :	0	Max. x :	20	Max. y :	20	x increment:	5	y increment:	5
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LESSON 2: HOMEWORK

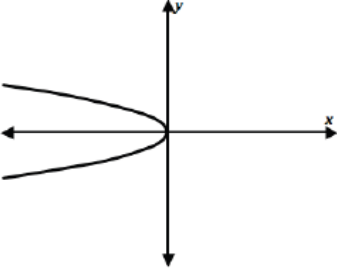
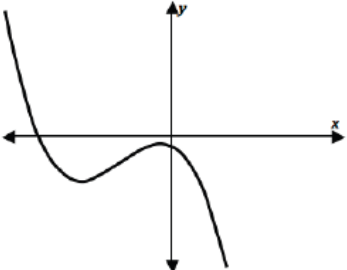
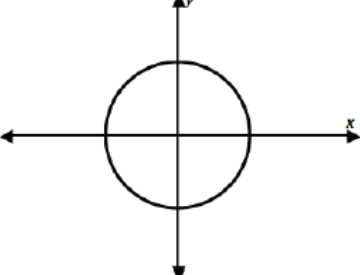
Notes or additional instructions based on whole-class discussion of homework assignment:

1. For each table, determine whether the relationship is a function. Circle "Function" or "Not a function." Then, either write the function rule, or explain why the relationship is not a function.

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<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><th style="padding: 2px;">x</th><th style="padding: 2px;">y</th></tr> <tr><td style="padding: 2px;">-2</td><td style="padding: 2px;">8</td></tr> <tr><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">2</td><td style="padding: 2px;">-8</td></tr> <tr><td style="padding: 2px;">4</td><td style="padding: 2px;">-16</td></tr> <tr><td style="padding: 2px;">6</td><td style="padding: 2px;">-24</td></tr> <tr><td style="padding: 2px;">8</td><td style="padding: 2px;">-32</td></tr> <tr><td style="padding: 2px;">10</td><td style="padding: 2px;">-40</td></tr> </table>	x	y	-2	8	0	0	2	-8	4	-16	6	-24	8	-32	10	-40	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><th style="padding: 2px;">x</th><th style="padding: 2px;">y</th></tr> <tr><td style="padding: 2px;">-3</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">-2</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">-1</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">1</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">2</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">3</td><td style="padding: 2px;">0</td></tr> </table>	x	y	-3	0	-2	0	-1	0	0	0	1	0	2	0	3	0	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><th style="padding: 2px;">x</th><th style="padding: 2px;">y</th></tr> <tr><td style="padding: 2px;">-100</td><td style="padding: 2px;">10</td></tr> <tr><td style="padding: 2px;">-25</td><td style="padding: 2px;">5</td></tr> <tr><td style="padding: 2px;">-4</td><td style="padding: 2px;">2</td></tr> <tr><td style="padding: 2px;">0</td><td style="padding: 2px;">0</td></tr> <tr><td style="padding: 2px;">-4</td><td style="padding: 2px;">-2</td></tr> <tr><td style="padding: 2px;">-25</td><td style="padding: 2px;">-5</td></tr> <tr><td style="padding: 2px;">-100</td><td style="padding: 2px;">-10</td></tr> </table>	x	y	-100	10	-25	5	-4	2	0	0	-4	-2	-25	-5	-100	-10	<table border="1" style="border-collapse: collapse; width: 100%;"> <tr><th style="padding: 2px;">x</th><th style="padding: 2px;">y</th></tr> <tr><td style="padding: 2px;">-3</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">-2</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">-1</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">0</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">1</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">2</td><td style="padding: 2px;">12</td></tr> <tr><td style="padding: 2px;">3</td><td style="padding: 2px;">12</td></tr> </table>	x	y	-3	12	-2	12	-1	12	0	12	1	12	2	12	3	12
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Table	Is it a function?	
a.	Function	Not a function
	Function rule or explanation of why it is not possible to find a function rule:	
b.	Function	Not a function
	Function rule or explanation of why it is not possible to find a function rule:	
c.	Function	Not a function
	Function rule or explanation of why it is not possible to find a function rule:	
d.	Function	Not a function
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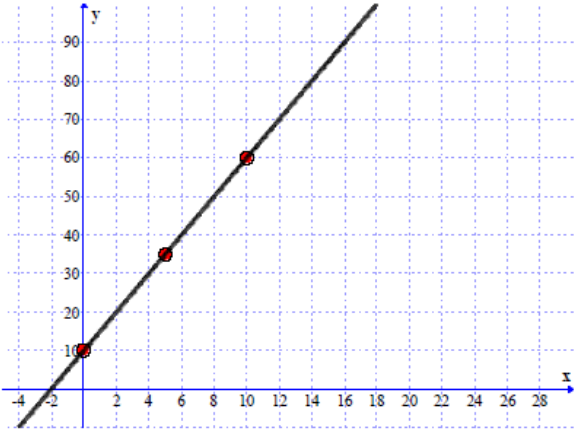
2. For each of the following graphs, determine whether the graph is a function. Circle "Function" or "Not a function." Provide a brief explanation to support your answer.

Graph	Is it a function?	
<p>a.</p> 	Function	Not a function
Explanation:		
<p>b.</p> 	Function	Not a function
Explanation:		
<p>c.</p> 	Function	Not a function
Explanation:		

3. Complete the following math journal entry.

Topic	Explanation
a. How to determine whether a table of input-output data is a function	
b. How to determine whether a graph of a mathematical relationship is a function	

LESSON 2: STAYING SHARP

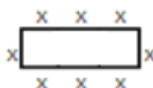
Practicing skills & concepts	<p>1. Write a rule for the following graph:</p>  <p>Answer with supporting work:</p>	<p>2. Use the graph and/or your rule for question 1 to complete the table below.</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td></td> </tr> <tr> <td></td> <td>10</td> </tr> <tr> <td></td> <td>60</td> </tr> <tr> <td></td> <td>100</td> </tr> <tr> <td>100</td> <td></td> </tr> </tbody> </table>	x	y	-2			10		60		100	100																									
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Preparing for upcoming lessons	<p>3. Caryssa makes bracelets to sell at craft fairs. The supplies she needed to start her business cost her \$45. In addition, the supplies for each bracelet cost her \$3. She sells her bracelets for \$5. What is the minimum number of bracelets she must sell to make a profit?</p> <p>Answer with supporting work:</p>	<p>4. Use the information in question 3 to write an equation that Caryssa could use to determine her total cost, C, for making n bracelets.</p> <p>Use the information in question 3 to write a separate equation that she could use to find the profit, P, she makes from selling n bracelets.</p>																																				
Focus skill: Scaling graphs	<p>5. Find an appropriate scale to use to graph the algebraic rule $y = 3x - 11$. Consider input values from -5 to 5.</p> <p>(Hint: Completing the input-output table may help.)</p> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>$y = 3x - 11$</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr><td>-5</td><td></td></tr> <tr><td>-4</td><td></td></tr> <tr><td>-3</td><td></td></tr> <tr><td>-2</td><td></td></tr> <tr><td>-1</td><td></td></tr> <tr><td>0</td><td></td></tr> <tr><td>1</td><td></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td></td></tr> </tbody> </table>	x	y	-5		-4		-3		-2		-1		0		1		2		3		4		5	
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LESSON 3: HOMEWORK

Notes or additional instructions based on whole-class discussion of homework assignment:

1. Consider the following situation: A high school assistant principal is making the school’s lunch period schedule. As shown in the diagram, the school has only one size of table for the lunch room and each table can seat 8 students. The assistant principal has decided that he will not push any tables together. When more tables are placed in the room, more students can be seated and fewer lunch periods are needed. The variables in this situation are as follows:

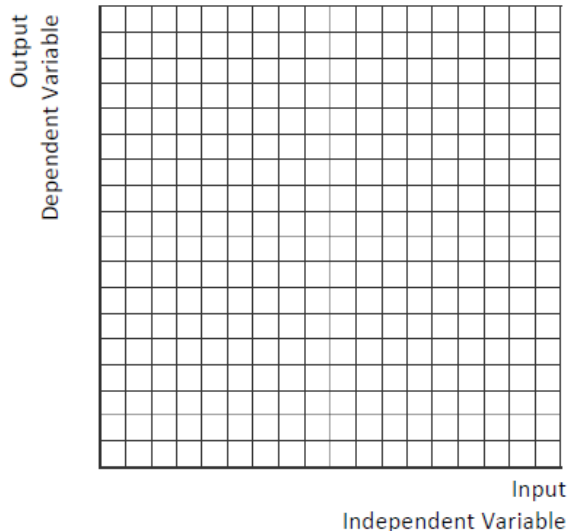
- Number of people to be seated
- Number of tables



- a. Which variable is the dependent variable? Which is the independent variable? Provide a convincing explanation.

- b. Create an input-output table and a graph for this situation. Add data to the table that make sense for this situation. Add the appropriate labels (Number of People or Number of Tables) to the table heading and the graph axes. Then plot the data on the graph.

Input INDEPENDENT VARIABLE ()	Process	Output DEPENDENT VARIABLE ()



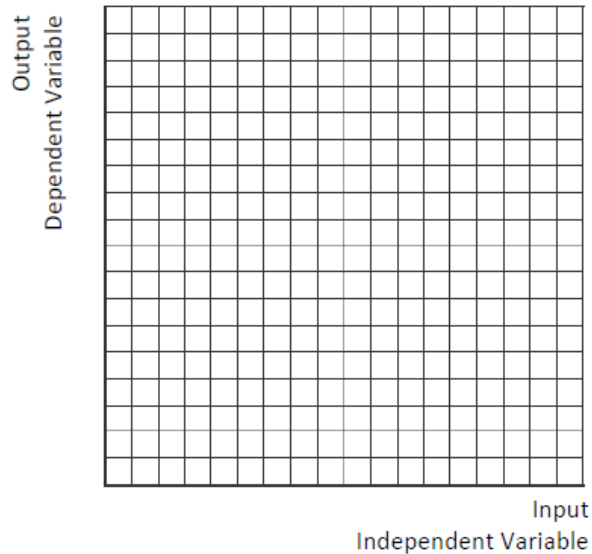
- c. Define the variables and write a function rule to describe the relationship between the number of people to be seated and the number of tables.

- d. Explain why your function rule makes sense in the context of the problem situation.

- e. Use your function rule to determine how many tables will be needed for 500 students.

2. Consider the following situation: The number of bacteria in a petri dish on the first day is 2, and the number doubles every day. The variables in this situation are as follows:
- Number of bacteria (measured in number)
 - Time (measured in days)
- a. Which variable is the dependent variable? Which is the independent variable? Provide a convincing explanation.
- b. Create an input-output table and graph for this situation. Add data to the table that make sense for this situation. Add the appropriate labels (Number of Bacteria or Time) to the table heading and graph axes. Then plot the data on the graph.

Input INDEPENDENT VARIABLE ()	Process	Output DEPENDENT VARIABLE ()



- c. Define the variables and write a function rule to describe the relationship between the number of bacteria and the number of days.
- d. Use your function rule to determine how many bacteria will be present after 20 days.
3. Now that you have some understanding of independent and dependent variables, complete this math journal entry. You may look back in your book and notes, but be sure to state the ideas in your own words and provide your own examples.

Vocabulary term	My understanding of what the term means	An example that shows the meaning of the term
Independent variable		
Dependent variable		

LESSON 3: STAYING SHARP

<p>Practicing skills & concepts</p>	<p>1. What is an algebraic rule for the following table?</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>0</td> </tr> <tr> <td>5</td> <td>2</td> </tr> <tr> <td>10</td> <td>7</td> </tr> <tr> <td>13</td> <td>10</td> </tr> </tbody> </table> <p>Answer with supporting work:</p>	x	y	3	0	5	2	10	7	13	10	<p>2. Which graph could represent the relationship shown in question 1?</p> <div style="display: flex; justify-content: space-around;"> <div> <p>Graph A</p> </div> <div> <p>Graph B</p> </div> </div> <p>Answer with supporting explanation:</p>																																												
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13	10																																																							
<p>Preparing for upcoming lessons</p>	<p>3. Rewrite each of the following expressions using exponents.</p> <p>a. $4 \cdot 4 \cdot 4 \cdot 4 =$</p> <p>b. $2 \cdot 2 \cdot 2 =$</p> <p>c. $-3 \cdot -3 \cdot -3 =$</p>	<p>4. Translate the following statements in to an expression using exponents.</p> <p>a. The number 5 is multiplied to itself x times.</p> <p>b. The number 3 is multiplied to itself n times.</p>																																																						
<p>Focus skill: Scaling graphs</p>	<p>5. State an appropriate scale to use to graph the data in the x-y table shown.</p> <table border="1"> <thead> <tr> <th>x</th> <td>1</td> <td>4</td> <td>6</td> <td>7</td> <td>12</td> <td>14</td> <td>21</td> </tr> </thead> <tbody> <tr> <th>y</th> <td>-4</td> <td>5</td> <td>11</td> <td>14</td> <td>29</td> <td>35</td> <td>56</td> </tr> </tbody> </table> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	x	1	4	6	7	12	14	21	y	-4	5	11	14	29	35	56	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>6. Arturo is trying to graph the data in this x-y table:</p> <table border="1"> <thead> <tr> <th>x</th> <td>-40</td> <td>-20</td> <td>0</td> <td>20</td> <td>40</td> <td>60</td> </tr> </thead> <tbody> <tr> <th>y</th> <td>45</td> <td>25</td> <td>5</td> <td>-15</td> <td>-35</td> <td>-55</td> </tr> </tbody> </table> <p>He chooses the scale:</p> <table border="1"> <tbody> <tr> <td>Min. x:</td> <td>-40</td> <td>Min. y:</td> <td>-40</td> </tr> <tr> <td>Max. x:</td> <td>60</td> <td>Max. y:</td> <td>60</td> </tr> <tr> <td>x increment:</td> <td>10</td> <td>y increment:</td> <td>10</td> </tr> </tbody> </table> <p>Identify one problem with Arturo's scale and suggest one improvement you would make.</p>	x	-40	-20	0	20	40	60	y	45	25	5	-15	-35	-55	Min. x :	-40	Min. y :	-40	Max. x :	60	Max. y :	60	x increment:	10	y increment:	10
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LESSON 4: HOMEWORK

Notes or additional instructions based on whole-class discussion of homework assignment:

Use the function rule from the Banquet Table Problem to answer the following questions. In the rule, n represents the number of hexagonal tables used and $p(n)$ represents the number of people seated. Show your work for each question on your own paper.

Banquet Table
$p(n) = 4n + 2$

1. If 10 hexagonal tables are used, then _____ people can be seated.
2. If 65 people need to be seated, then _____ tables should be used.

Apply what you have learned about function notation to answer these questions. Show your work on your own paper.

3. $f(x) = 2x$

a. $f(6) =$

b. $f(-11) =$

c. $f(2.75) =$

d. If $f(x) = 20$, $x =$

e. If $f(x) = -14$, $x =$

f. If $f(x) = 29$, $x =$

4. $f(x) = 5x + 50$

a. $f(7) =$

b. $f(-12) =$

c. $f\left(2\frac{4}{5}\right) =$

d. If $f(x) = 100$, $x =$

e. If $f(x) = 20$, $x =$

f. If $f(x) = -50$, $x =$

5. $h(x) = x^2 + 9$

a. $h(2) =$

b. $h(-3) =$

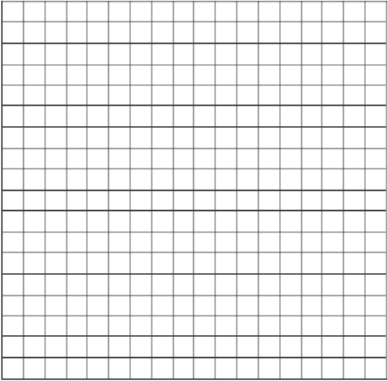
c. If $h(x) = 9$, $x =$

d. If $h(x) = 13$, $x =$

(Careful—there are two answers!)

6. Consider the sequence $-3, -7, -11, -15\dots$
- Is this sequence a function? Explain.
 - How do you get from one term to the next in this sequence?
 - Create a function rule for this sequence.
 - Use your rule to find the value of the 8th term.
 - Which term number has a value of -47 ? How did you find your answer?

LESSON 4: STAYING SHARP

<p>Practicing skills & concepts</p>	<p>1. What is an algebraic rule for the table shown below?</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10</td> </tr> <tr> <td>10</td> <td>10</td> </tr> <tr> <td>30</td> <td>10</td> </tr> <tr> <td>50</td> <td>10</td> </tr> </tbody> </table> <p>Answer with supporting work:</p>	x	y	0	10	10	10	30	10	50	10	<p>2. Graph the rule in question 1 on the grid below. Label and scale your axes.</p> 		
x	y													
0	10													
10	10													
30	10													
50	10													
<p>Preparing for upcoming lessons</p>	<p>3. Recall that in football, touchdowns are worth 7 points each (including the extra point), and field goals are worth 3 points each. List all of the different ways a football team could score 63 points, if they make at least one touchdown and at least one field goal.</p> <p>Answer with supporting work:</p>	<p>4. Recall that in basketball, a team can score 1-point baskets (free throws), 2-point baskets, or 3-point baskets. List all of the different ways a basketball team could score 24 points, without making any free throws.</p> <p>Answer with supporting work:</p>												
<p>Focus skill: Scaling graphs</p>	<p>5. For science class, Joan watches a bird as it moves up and down in a tree over time. You could make a graph to represent the relationship between the bird's height off the ground and time. If you made a graph, what variable would you put on each axis? Explain your answers.</p> <p>Independent (x-axis) variable:</p> <p>Dependent (y-axis) variable:</p>	<p>6. As Joan watches, the bird starts 10 feet above the ground and stays there for 5 seconds. Then it takes 10 seconds to fly up to 30 feet. After staying there for 15 seconds, it flies down to 20 feet. State an appropriate scale to use to graph the height of the bird during this period.</p> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:	
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Minimum y -value:														
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Increment for y -axis:														

LESSON 5: HOMEWORK

Notes or additional instructions based on whole-class discussion of homework assignment:

Write a recursive rule and an explicit rule for each of the following sequences.

1. $7, 5, 3, 1, -1\dots$

2. $42, 53, 64, 75, 86\dots$

3. $100, 50, 25, 12.5\dots$

4. In the design for an auditorium the first row of will have 15 seats. Each row after that will have 5 more seats than the row in front of it.
- Find a formula for the number of seats in any row.
 - How many seats are in the 18th row?

5. For each rule, generate the first 5 terms of the sequence that is defined. In each case, n is an integer and $n \geq 2$.

a. $f(1) = 4$

$$f(n) = 5 + f(n - 1)$$

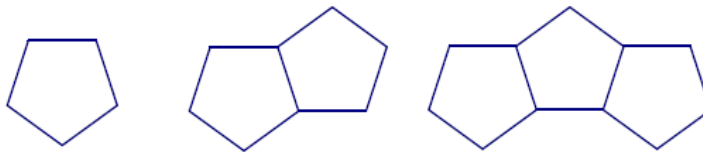
b. $f(1) = -3$

$$f(n) = -2 \cdot f(n - 1)$$

c. $f(1) = -4$

$$f(n) = 3 \cdot f(n - 1) + 4$$

6. A sequence is formed by the perimeters of adjacent congruent pentagons. Each pentagon has a side length of 1 unit.



a. Create a table showing the relationship between the figure number, n , and the perimeter, $f(n)$ for the first five figures.

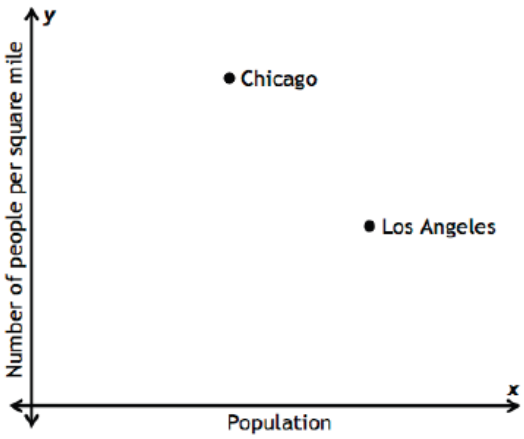
b. Write the sequence formed by the first five perimeters.

c. Create a recursive rule that represents the sequence of perimeter values, where n is the figure number and $f(n)$ is the perimeter. Don't forget to include the restriction on n .

d. Create an explicit rule that relates n and $f(n)$ directly.

e. What is the perimeter of the 20th figure? Which rule did you use, and why?

LESSON 5: STAYING SHARP

<p>Practicing skills & concepts</p>	<p>1. Study this graph. What conclusions can you draw from the graph? (Look for patterns in the data. State your conclusions in the context of the specific situation shown in the graph.)</p> 													
<p>Preparing for upcoming lessons</p>	<p>2. The rule $2d + 3.5m = c$ can be used to find the total cost in dollars, c, of buying d donuts, and m muffins at a bakery. What does the rule tell you about the cost of a donut and the cost of a muffin at this bakery?</p> <p>Answer with supporting work:</p>	<p>3. Trish is selling lemonade at a school fundraiser. She bought 2 bags of cups. Each bag contained 90 cups and cost \$3.60. The total cost of the ingredients to make the lemonade was \$80. She plans to sell the lemonade for 50¢ a cup. Assuming she has enough lemonade, did she buy enough cups to make a profit?</p>												
<p>Focus skill: Scaling graphs</p>	<p>4. You want to graph the algebraic rule $y = 7x - 20$. Suppose you want to consider only positive values for the input. State an appropriate scale for the axes for the graph. (<i>Hint: Consider what an input-output table for this rule might look like.</i>)</p> <table border="1"> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </table>	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>5. The amount of time it takes to repaint a school decreases as the number of helpers increases. You could make a graph to represent this relationship. If you made a graph, what variable would you put on each axis? Explain your answer.</p> <p>Independent (x-axis) variable:</p> <p>Dependent (y-axis) variable:</p>
Minimum x -value:														
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Increment for y -axis:														

Topic 6 More Practice

LESSON 6: HOMEWORK

Notes or additional instructions based on whole-class discussion of homework assignment:

Part II: Complete the online *More practice* for this topic. Note the skills and ideas for which you need more review, and refer back to related activities and animations to help you study.

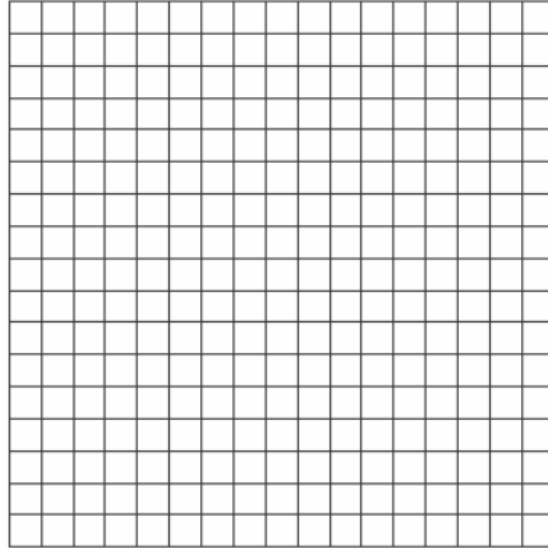
LESSON 6: STAYING SHARP

Practicing skills & concepts	<p>1. Valerie is planning a birthday party for her best friend. She is trying to figure out how much food to buy for the party. Which statement makes more sense?</p> <ol style="list-style-type: none"> The number of people she invites to the party depends on the amount of food she buys. The amount of food she buys depends on the number of people she invites to the party. <p>Answer with supporting explanation:</p>	<p>2. If you made a graph to represent the relationship you identified in question 1, what variable would you put on each axis? Explain your answer.</p> <p>Independent (x-axis) variable:</p> <p>Dependent (y-axis) variable:</p>																																										
Preparing for upcoming lessons	<p>3. Using n to represent “a number,” write an algebraic equation to represent the statement “19 more than 5 times a number is 244.”</p>	<p>4. Sofia believes that 7 is a value of x that makes the equation $3x + 4 = 25$ true. Is she correct?</p> <p>Answer with justification:</p>																																										
Focus skill: Scaling graphs	<p>5. State an appropriate scale to use to graph the data in the x-y table shown.</p> <table border="1"> <tbody> <tr> <td>x</td> <td>2</td> <td>5</td> <td>7</td> <td>8</td> <td>10</td> <td>13</td> <td>19</td> <td>25</td> </tr> <tr> <td>y</td> <td>26</td> <td>20</td> <td>16</td> <td>14</td> <td>10</td> <td>4</td> <td>-8</td> <td>-20</td> </tr> </tbody> </table> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	x	2	5	7	8	10	13	19	25	y	26	20	16	14	10	4	-8	-20	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>6. Amy is trying to graph the algebraic rule $y = 10x + 50$ with input values from 0 to 20. She chooses this scale:</p> <table border="1"> <tbody> <tr> <td>Min. x:</td> <td>0</td> <td>Min. y:</td> <td>0</td> </tr> <tr> <td>Max. x:</td> <td>20</td> <td>Max. y:</td> <td>250</td> </tr> <tr> <td>x increment:</td> <td>5</td> <td>y increment:</td> <td>1</td> </tr> </tbody> </table> <p>Identify one problem with Amy’s scale and suggest one improvement you would make. (<i>Hint: Consider what an input-output table for this rule might look like.</i>)</p>	Min. x :	0	Min. y :	0	Max. x :	20	Max. y :	250	x increment:	5	y increment:	1
x	2	5	7	8	10	13	19	25																																				
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Min. x :	0	Min. y :	0																																									
Max. x :	20	Max. y :	250																																									
x increment:	5	y increment:	1																																									

3. Write an algebraic representation for the relationship between the length of the side of a square flower bed and the perimeter of the flower bed. Explain how your rule relates to the concrete models.

4. Make a graphical representation of the relationship between the length of the side of a square flower bed and the perimeter of the bed.

5. Explain how the graphical representation relates to the concrete representation, the tabular representation, and the algebraic representation.



6. Anthony claims that the relationship between the length of the side of a square flower bed and the perimeter of the flower bed is a function.

He is correct.

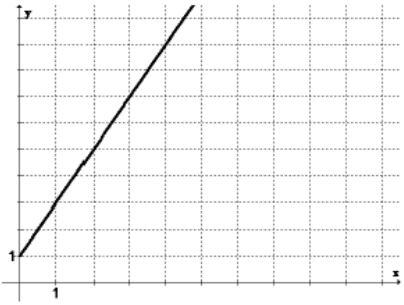
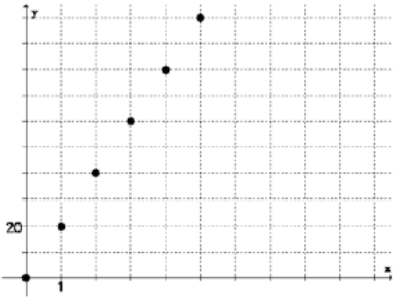
a. What is the domain of this function in the garden context?

b. What is the domain of the mathematical function without the real-world context?

c. If the domain of the mathematical function is the same as for the garden situation, explain why. If it is different than the garden situation, explain why.

LESSON 7: STAYING SHARP

<p>Practicing skills & concepts</p>	<p>1. Use the rule $y = 10x + 30$ to complete the table below.</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>2</td> <td></td> </tr> <tr> <td></td> <td>80</td> </tr> <tr> <td>11</td> <td></td> </tr> <tr> <td></td> <td>140</td> </tr> <tr> <td>31</td> <td></td> </tr> </tbody> </table>	x	y	2			80	11			140	31		<p>2. In question 1, if y represents the total cost of a nature tour and x represents the number of people attending the nature tour, write a verbal description that could represent the relationship described by the algebraic rule $y = 10x + 30$.</p>																																				
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<p>Preparing for upcoming lessons</p>	<p>3. Complete the table for this magic number puzzle.</p> <table border="1"> <thead> <tr> <th></th> <th>Specific number</th> <th>Any number</th> </tr> </thead> <tbody> <tr> <td>Step 1. Pick a number.</td> <td>11</td> <td>n</td> </tr> <tr> <td>Step 2. Multiply by 4.</td> <td></td> <td></td> </tr> <tr> <td>Step 3. Add 9.</td> <td></td> <td></td> </tr> </tbody> </table>		Specific number	Any number	Step 1. Pick a number.	11	n	Step 2. Multiply by 4.			Step 3. Add 9.			<p>4. Joaquin goes through the steps of the magic number puzzle in question 3 and gets an ending number of 37. What was his starting number?</p> <p>Answer with supporting work:</p>																																				
	Specific number	Any number																																																
Step 1. Pick a number.	11	n																																																
Step 2. Multiply by 4.																																																		
Step 3. Add 9.																																																		
<p>Focus skill: Scaling graphs</p>	<p>5. Henry collects rainwater for his garden. His tank begins with 30 gallons of water. Over 5 days, the tank collects 12 more gallons of water from the rain. Then in 1 day, he uses 18 gallons to water his garden. Then over 4 days, 7 gallons evaporate. Then over 3 days, the tank collects 11 more gallons from the rain.</p> <p>State an appropriate scale to use to graph the volume of water in the tank over time.</p> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p>6. State an appropriate scale to use to graph the data in the x-y table shown.</p> <table border="1"> <tbody> <tr> <td>x</td> <td>-10</td> <td>-8</td> <td>-6</td> <td>-4</td> <td>-2</td> <td>0</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>y</td> <td>95</td> <td>59</td> <td>31</td> <td>11</td> <td>-1</td> <td>-5</td> <td>-1</td> <td>11</td> <td>31</td> <td>59</td> <td>95</td> </tr> </tbody> </table> <table border="1"> <tbody> <tr> <td>Minimum x-value:</td> <td></td> </tr> <tr> <td>Maximum x-value:</td> <td></td> </tr> <tr> <td>Increment for x-axis:</td> <td></td> </tr> <tr> <td>Minimum y-value:</td> <td></td> </tr> <tr> <td>Maximum y-value:</td> <td></td> </tr> <tr> <td>Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	x	-10	-8	-6	-4	-2	0	2	4	6	8	10	y	95	59	31	11	-1	-5	-1	11	31	59	95	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:	
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<p>A.</p> $y = 2x - 1$	<p>G.</p> $y = 1.5x$																												
<p>B.</p> 	<p>H.</p> 																												
<p>C.</p> <p>The plant was growing at a rate of 1.5 inches per week.</p>	<p>I.</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>-5</td> </tr> <tr> <td>-1</td> <td>-3</td> </tr> <tr> <td>0</td> <td>-1</td> </tr> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>3</td> </tr> <tr> <td>3</td> <td>5</td> </tr> </tbody> </table>	x	y	-2	-5	-1	-3	0	-1	1	1	2	3	3	5														
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<p>D.</p> <table border="1"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>1.5</td> </tr> <tr> <td>-1</td> <td>1.5</td> </tr> <tr> <td>0</td> <td>1.5</td> </tr> <tr> <td>1</td> <td>1.5</td> </tr> <tr> <td>2</td> <td>1.5</td> </tr> <tr> <td>3</td> <td>1.5</td> </tr> </tbody> </table>	x	y	-2	1.5	-1	1.5	0	1.5	1	1.5	2	1.5	3	1.5	<p>J.</p> <p>The Math Club found a company that will sell it t-shirts for \$5.00 each, but there is a set-up fee of \$50.</p>														
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<p>F.</p> $y = 2x + 1$	<p>L.</p> $y = 1.5$																												

Use the function rules from the Roses Project to answer the following questions. In each rule, x represents the number of roses ordered and $f(x)$ represents the cost of the order. Show your work for each question on your own paper.

Roses-R-Red	Flower Power
$f(x) = 20 + 0.75x$	$f(x) = 60 + 0.50x$

- If the soccer team orders 120 roses from Roses-R-Red, they will pay \$_____.
- If the soccer team orders 120 roses from Flower Power, they will pay \$_____.
- From Roses-R-Red, the soccer team can get _____ roses for \$95.
- From Flower Power, the soccer team can get _____ roses for \$95.

LESSON 8: STAYING SHARP

<p>Practicing skills & concepts</p>	<p>1. Write a rule for the following graph:</p> <p>Answer with supporting work:</p>	<p>2. Use the graph and/or your rule for question 1 to complete the table below.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">y</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">-4</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">0</td> </tr> <tr> <td style="padding: 5px;">16</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">60</td> <td style="padding: 5px;"></td> </tr> </tbody> </table>	x	y	-4			0	16			5	60																									
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<p>Preparing for upcoming lessons</p>	<p>3. To calculate a basketball team's score in a game, you can use the equation $3x + 2y + z = p$, where x represents the number of three-point baskets, y represents the number of two-point baskets, z represents the number of free throws (one-point baskets) and p represents the team's total points. How many points did the team score if $x = 8$, $y = 27$, and $z = 17$?</p> <p>Answer with supporting work:</p>	<p>4. Use the equation in question 3 to figure out the number of two-point baskets a team scored if the team made 7 three-point baskets and 11 free throws, and scored a total of 84 points.</p> <p>Answer with supporting work:</p>																																				
<p>Focus skill: Scaling graphs</p>	<p>5. Find an appropriate scale to use to graph the algebraic rule $y = 3x + 11$. Consider input values from -5 to 5.</p> <p><i>(Hint: Completing the input-output table may help.)</i></p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 5px;">Minimum x-value:</td> <td style="width: 50px;"></td> </tr> <tr> <td style="padding: 5px;">Maximum x-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Increment for x-axis:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Minimum y-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Maximum y-value:</td> <td></td> </tr> <tr> <td style="padding: 5px;">Increment for y-axis:</td> <td></td> </tr> </tbody> </table>	Minimum x -value:		Maximum x -value:		Increment for x -axis:		Minimum y -value:		Maximum y -value:		Increment for y -axis:		<p style="text-align: center;">$y = 3x + 11$</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">x</th> <th style="padding: 5px;">y</th> </tr> </thead> <tbody> <tr><td style="padding: 5px;">-5</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">-4</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">-3</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">-2</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">-1</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">0</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">1</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">2</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">3</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">4</td><td style="padding: 5px;"></td></tr> <tr><td style="padding: 5px;">5</td><td style="padding: 5px;"></td></tr> </tbody> </table>	x	y	-5		-4		-3		-2		-1		0		1		2		3		4		5	
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