MOVING STRAIGHT AHEAD: Linear Relationships

By: Chantale Woronka

Course/Grade Level: CMP/Grade 7

Time Span: Seven 38-minute periods

Tools: Moving Straight Ahead Student Edition
       Graph Paper
       Overhead Projector with TI 83 Adaptor
       Class Set of TI 83 Graphing Calculators
Overall Objectives:

- To recognize linear relationships from tables
- To determine whether a set of data is linear by examining its graph
- To recognize how the rate of change is represented between two variables in a table, graph, and equation
- To recognize that a change in rate will change the steepness of a line and the coefficient of x
- To interpret the meaning of the coefficient of x and the y-intercept of a graph of $y = mx + b$
- To connect solutions in graphs and tables to solutions of equations
- To find a solution common to two linear equations by graphing
- To understand how the y-intercept appears in tables and equations
- To understand how the rate of change appears in equations and affects the graph of a line

NCTM Standards Addressed:

**Algebra Standard:**

Understand patterns, relations, and functions.

- Represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules;
- Relate and compare different forms of representation for a relationship;
- Identify functions as linear or nonlinear and contrast their properties from tables, graphs, or equations.

Represent and analyze mathematical situations and structures using algebraic symbols.

- Develop an initial conceptual understanding of different uses of variables;
- Explore relationships between symbolic expressions and graphs of lines, paying particular attention to the meaning of intercept and slope;
- Use symbolic algebra to represent situations and to solve problems, especially those that involve linear relationships;
- Recognize and generate equivalent forms for simple algebraic expressions and solve linear equations.

Use mathematical models to represent and understand quantitative relationships.

- Model and solve contextualized problems using various representations, such as graphs, tables, and equations.

Analyze change in various contexts.

- Use graphs to analyze the nature of changes in quantities in linear relationships.
Connections Standard:

• Recognize and use connections among mathematical ideas.
• Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
• Recognize and apply mathematics in contexts outside of mathematics.

Representation Standard:

• Create and use representations to organize, record, and communicate mathematical ideas.
• Select, apply, and translate among mathematical representations to solve problems.
• Use representations to model and interpret physical, social, and mathematical phenomena.

New York State Standards Addressed:

Algebra Strand: Students will recognize, use, and represent algebraically patterns, relations, and functions.

7.A.7 Draw the graphic representation of a pattern from an equation or from a table of data.
7.A.8 Create algebraic patterns using charts/tables, graphs, equations, and expressions.
7.A.10 Write an equation to represent a function from a table of values.
8.A.15 Understand that numerical information can be represented in multiple ways: arithmetically, algebraically, and graphically.
8.A.16 Find a set of ordered pairs to satisfy a given linear numerical pattern (expressed algebraically); then plot the ordered pairs and draw the line.
8.A.19 Interpret multiple representations using equation, table of values, and graph.

Problem Solving Strand: Students will build new mathematical knowledge through problem solving.
Students will solve problems that arise in mathematics and in other contexts.
Students will monitor and reflect on the process of mathematical problem solving.

7.PS.3 Understand and demonstrate how written symbols represent mathematical ideas.
7.PS.6 Represent problem situations verbally, numerically, algebraically, and graphically.
7.PS.17 Evaluate the efficiency of different representations of a problem.
**Reasoning and Proof Strand:** Students will develop and evaluate mathematical arguments and proof.

7.RP.5 Develop, verify, and explain an argument, using appropriate mathematical ideas and language.

**Communication Strand:** Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others. Students will use the language of mathematics to express mathematical ideas precisely.

7.CM.4 Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models and symbols in written and verbal form.

7.CM.11 Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing.

**Connections Strand:** Students will recognize and use connections among mathematical ideas.

7.CN.1 Understand and make connections among multiple representations of the same mathematical idea.

**Representation Strand:** Students will create and use representations to organize, record, and communicate mathematical ideas. Students will select, apply, and translate among mathematical representations to solve problems.

7.R.1 Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations.

7.R.3 Recognize, compare, and use an array of representational forms.

7.R.4 Explain how different representations express the same relationship.

7.R.6 Use representations to explore problem situations.

7.R.7 Investigate relationships between different representations and their impact on a given problem.

7.R.8 Use representation as a tool for exploring and understanding mathematical ideas.

**Resources Used**

Materials Used

- Connected Mathematics: Moving Straight Ahead Student Edition
- Graph Paper
- Colored Pencils
- Ruler
- TI 83 Graphing Calculator
- Overhead Projector with TI 83 Adaptor

Unit Overview

**DAY 1:  Problem 2.2 - Changing the Walking Rate**

Class Description: Students will be expected to complete Problem 2.2 during class. The distance walked for three walking rates is represented in a table, graph, and an equation, and students observe how the rate affects all three representations. For homework, students will be expected to complete ACE Questions #1 - 3 on pg. 24.

**DAY 2:  Problem 2.3 – Walking for Charity**

Class Description: Students will be expected to complete Problem 2.3 during class. Students will explore how the rate of cost per mile and donation is represented in a table, graph, and an equation. For homework, students will be expected to complete ACE Question #6 on pg. 26.

**DAY 3:  Problem 2.4 – Walking to Win**  
Problem 2.5 – Crossing the Line

Class Description: Students will be introduced to Problem 2.4 during class and will be expected to complete Problem 2.5 during class to give mathematical evidence to support their answers. The concept of the y-intercept is introduced and students explore information a table, a graph, and an equation supply. For homework, students will be expected to complete ACE Questions #10 - 13 on pg. 27.

**DAY 4:  Problem 3.1 – Getting to the Point**  
Problem 3.2 – Graphing Lines

Class Description: Students will be introduced to the graphing calculators. Problem 3.1 will be completed during class. Students connect tables, graphs, and equations and interpret points on a graph in the context of a walkathon. Problem 3.2
will be introduced. For homework, students will be expected to complete pg. 49 #24-26.

**DAY 5: Problem 3.2 – Graphing Lines**

Class Description: Students will be expected to complete Problem 3.2 during class. Using a graphing calculator, students will make graphical representations of relationships focusing on what happens to the dependent variable as the independent variable changes. For homework, students will have pg. 44 ACE Question #5.

**DAY 6: Problem 3.2 – Graphing Lines**

Class Description: During class, students will be expected to complete pg. 44 ACE Questions #1-4. No homework will be assigned this evening.

**DAY 7: Problem 3.3 – Finding Solutions**

Class Description: Students will be expected to complete Problem 3.3 during class. Equations and their solutions as represented in a table and graph will be explored with the help of a graphing calculator. For homework, students will have pg. 51 #28 and 29 for homework.

**Daily Lesson Plans**

**DAY 1: Problem 2.2 - Changing the Walking Rate**

Essential Questions:

1) What is the effect of walking rates on time and distance walked?
2) How do rates affect the data in a table? A graph? An equation?

Materials: Handout - Problem 2.2: Changing the Walking Rate

Connected Mathematics: Moving Straight Ahead Student Edition

Graph Paper

Colored Pencils

Ruler

Launch: Review Problem 2.1 from yesterday and discuss how the time taken to travel a set distance was impacted by the different walking rates. Inform students that in today’s class we will be investigating how these different walking rates will appear in a graph, table, and equation.
Explore: Working with a partner, students will have the opportunity to complete Problem 2.2. It is important for the teacher to walk around at this time and make observations of the student work. Questions should be posed to each group to check for understanding.

Summarize: After students have completed Problem 2.2, each representation will be discussed highlighting how the constant rates of change appear. Students will need to be introduced to the term linear relationship at this time.

Assessment: Students will be expected to complete Problem 2.2 during class. For homework, students will be expected to complete ACE Questions #1 - 3 on pg. 24.

**DAY 2: Problem 2.3 – Walking for Charity**

**Essential Questions:**

1) What is the effect of walking rates on time and distance walked?  
2) How do rates paid per mile show up in the tables? In the graphs? In the equations?

**Materials:** Handout - Problem 2.3: Walking for Charity  
Connected Mathematics: Moving Straight Ahead Student Edition  
Graph Paper  
Colored Pencils  
Ruler

**Launch:** Review Problem 2.2 from yesterday. Provide an example of a non-linear relationship and compare its table and graph to those found in Problem 2.2. Help the class generalize what they have discovered thus far about linear relationships.

<table>
<thead>
<tr>
<th>Time (seconds)</th>
<th>Distance (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>

Introduce Problem 2.3 by telling a story about a walk-a-thon, spelling bee, or jump rope for heart fundraiser. Be sure to comment on the two different types of pledge plans – one with a donation and one without. Link to membership fees explored earlier in the unit Variables and Patterns.
Explore: Working with a partner, students will have the opportunity to complete Problem 2.3. It is important for the teacher to walk around at this time and make observations of the student work. Questions should be posed to each group to check for understanding.

Summarize: After students have completed Problem 2.3, each pledge plan will be discussed highlighting how the amount pledged per mile appears within each representation. A primary focus will be on how Alana’s $5 donation is represented in the graph, table, and equation. Ask students if each pledge plan represents a linear relationship.

Assessment: Students will be expected to complete Problem 2.3 during class. For homework, students will be expected to complete ACE Question #6 on pg. 26.

DAY 3: Problem 2.4 – Walking to Win
Problem 2.5 – Crossing the Line

Essential Questions:

1) What information is supplied in a table, a graph with intersecting lines, and an equation?

Materials: Transparency - Problem 2.4: Walking to Win
Handout - Problem 2.5: Crossing the Line
Connected Mathematics: Moving Straight Ahead Student Edition
Graph Paper
Colored Pencils
Ruler

Launch: Introduce Problem 2.4 and as a class decide on what would be a good distance to make the race so that Henri will win in a close race. In the process, students should also be able to describe three different ways to tackle the problem – making a table, making a graph, or writing an equation. Inform students that today’s class will be dedicated to using these strategies to determine a good distance for the race.

Explore: Working with a partner, students will have the opportunity to complete Problem 2.5. It is important for the teacher to walk around at this time and make observations of the student work. Questions should be posed to each group to check for understanding.
Summarize: After students have completed Problem 2.5, have pairs share their representations and comment on when Emile will overtake Henri. Students should be using their representations to explain and support how they know when Emile will overtake Henri.

Assessment: Students will be introduced to Problem 2.4 and will be expected to complete Problem 2.5 during class to give mathematical evidence to support their answers. For homework, students will be expected to complete ACE Questions #10 - 13 on pg. 27.

**DAY 4:**

**Problem 3.1 – Getting to the Point**  
**Problem 3.2 – Graphing Lines**

**Essential Questions:**

1) How does a point on a graph relate to a solution of an equation?  
2) How can I use a graphing calculator?  
3) What are window settings?  
4) How can I use the trace feature?  
5) How can I use the graphing calculator to make graphical representations of relationships?

**Materials:**  
Transparency/Handout - Problem 3.1: Getting to the Point  
Connected Mathematics: Moving Straight Ahead Student Edition  
TI 83 Graphing Calculator  
Overhead Projector with TI 83 Adaptor

**Launch:** Introduce the graphing calculator to the class by reviewing the tables, graphs, and equations of Leanne and Gilberto from Problem 2.3. Have students use the graphing calculator to represent each pledge plan and informally discuss how a point on a graph relates to a solution of an equation. Experiment with window settings and using the trace feature.

**Explore:** Working individually, students will have the opportunity to complete Problem 3.1. It is important for the teacher to walk around at this time and make observations of the student work and help students with their graphing calculator. It may be necessary to assist the class with using window settings with the trace feature.

**Summarize:** After students have completed Problem 3.1, Alana’s pledge plan will be discussed highlighting how the amount pledged per mile appears within each representation found on the graphing calculator. Problem 3.2 will be introduced.
Assessment: Students will be introduced to the graphing calculators. Problem 3.1 will be completed during class. Problem 3.2 will be introduced. For homework, students will be expected to complete pg. 49 #24-26.

DAY 5: Problem 3.2 – Graphing Lines

Essential Questions:

1) How does a point on a graph relate to a solution of an equation?
2) How can I use a graphing calculator?
3) What are window settings?
4) How can I use the trace feature?
5) How can I use the graphing calculator to make graphical representations of relationships?
6) What happens to the dependent variable as the independent variable changes in a graph? In a table? In an equation?

Materials: Handout - Problem 3.2: Graphing Lines
Connected Mathematics: Moving Straight Ahead Student Edition
TI 83 Graphing Calculator
Overhead Projector with TI 83 Adaptor

Launch: The graphing calculator will be re-introduced to the class by reviewing the tables, graphs, and equations of last night’s homework (y = 2x, y = 2/x, y = x^2). Students will be asked to state two questions that could be asked given a point on the graph using the trace feature along with whether or not each graph is linear. Window settings and using the trace feature will be explored further. Pledge Plan A of Problem 3.2 will be discussed in detail and completed with the class. Inform students that our goal is to observe what happens to the dependent variable as the independent variable changes in a graph, table, and equation.

Explore: Working with a partner, students will have the opportunity to complete Problem 3.2. It is important for the teacher to walk around at this time and make observations of the student work and help students with their graphing calculator. It may be necessary to assist the class with using window settings with the trace feature.

Summarize: After students have completed Problem 3.2, students’ answers to the problem will be discussed and students will be asked to substitute coordinates from the tables into the equations to check that they get an equality.

Assessment: Students will be expected to complete Problem 3.2 during class. For homework, students will have pg. 44 ACE Question #5.
DAY 6: Problem 3.2 – Graphing Lines

Essential Questions:

1) How does a point on a graph relate to a solution of an equation?
2) How can I use a graphing calculator?
3) What are window settings?
4) How can I use the trace feature?
5) How can I use the graphing calculator to make graphical representations of relationships?
6) What happens to the dependent variable as the independent variable changes in a graph? In a table? In an equation?

Materials: Connected Mathematics: Moving Straight Ahead Student Edition
TI 83 Graphing Calculator
Overhead Projector with TI 83 Adaptor

Launch: Inform the class that today’s class will be used to complete a series of ACE Questions that involve using the graphing calculator. They are meant to continue exploring what happens to the dependent variable as the independent variable changes in a graph, table, and equation.

Explore: Working with a partner, students will have the opportunity to complete ACE Questions #1-4 on pg. 44. It is important for the teacher to walk around at this time and make observations of the student work and help students with their graphing calculator. It may be necessary to assist the class with using window settings with the trace feature.

Summarize: After students have completed these questions, students’ answers to the problem will be discussed amongst each other.

Assessment: During class, students will be expected to complete pg. 44 ACE Questions #1-4. No homework will be assigned this evening.

DAY 7: Problem 3.3 – Finding Solutions

Essential Questions:

1) How does a point on a graph relate to a solution of an equation?
2) How can I use a graphing calculator?
3) What are window settings?
4) How can I use the trace feature?
5) How can I use the graphing calculator to make graphical representations of relationships?
6) How can I read data pairs from graphs and tables on the graphing calculator?
7) How are solutions in graphs and tables connected to solutions of equations?

**Materials:**
- Transparency - Problem 3.3: Finding Solutions
- Connected Mathematics: Moving Straight Ahead Student Edition
- TI 83 Graphing Calculator
- Overhead Projector with TI 83 Adaptor

**Launch:**
Discuss the relationship between a general equation and the equation you get by substituting a value for either x or y using the following examples:

\[
y = 5 + 0.5x \quad 8 = 5 + 0.5x \quad y = 5 + 0.5(3)
\]

Relate these equations to coordinate pairs and ask students to explain what (6,8) and (3,6.5) means in terms of the equations above. The pledge plan equations from Problem 3.2 will be used to explain this relationship further.

**Explore:**
Working with a partner, students will have the opportunity to complete Problem 3.3. It is important for the teacher to walk around at this time and make observations of the student work and help students with their graphing calculator.

**Summarize:**
After students have completed Problem 3.3, students’ answers to the problem will be discussed. Use the Follow-Up Questions on pg. 40 to ensure students understand the relationship between a general equation and specific instances of the equation.

**Assessment:**
Students will be expected to complete Problem 3.3 during class. For homework, students will have pg. 51 #28 and 29 for homework.
Mr. Goldberg’s gym class did an experiment to determine the walking rates of three students.

<table>
<thead>
<tr>
<th>NAME</th>
<th>WALKING RATE (meters per second)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terry</td>
<td>1</td>
</tr>
<tr>
<td>Jade</td>
<td>2</td>
</tr>
<tr>
<td>Jerome</td>
<td>2.5</td>
</tr>
</tbody>
</table>

A. Make a table showing the distance walked by each student after different numbers of seconds.

<table>
<thead>
<tr>
<th>TIME (seconds)</th>
<th>DISTANCE (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Terry</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</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>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

How does the walking rate affect the data in the table?

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
______________________________________
______________________________________
B. Graph the time and distance data for the three students on the same coordinate axes. Use a different color for each student’s data.

How does the walking rate affect the graphs?
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

C. For each student, write an equation that gives the relationship between the time and distance walked. Let $d$ represent the distance in meters and $t$ represent the time in seconds.

Terry’s Equation: _____________________________________________________________

Jade’s Equation: _____________________________________________________________

Jerome’s Equation: ___________________________________________________________

How does the walking rate affect the equations?
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
PROBLEM 2.3: WALKING FOR CHARITY

NAME: ____________________

Leanne’s pledge plan is $1 per mile.
Gilberto’s pledge plan is $2 per mile.
Alana’s pledge plan is a $5 donation plus $0.50 per mile.

A. Make a table showing the amount of money a sponsor would owe under each pledge plan if a student walked distances between 0 and 10 miles.

<table>
<thead>
<tr>
<th>DISTANCE (miles)</th>
<th>MONEY OWED ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leanne</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</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>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

What effect does increasing the amount pledged per mile have on the table?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

B. Graph the three pledge plans on the same coordinate axes. Use a different color for each plan.

What effect does increasing the amount pledged per mile have on the graph?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
C. For each pledge plan, write an equation that can be used to calculate the amount of money a sponsor owes, given the total distance the student walks.

Leanne’s Equation: ________________________________

Gilberto’s Equation: ________________________________

Alana’s Equation: ________________________________

What effect does increasing the amount pledged per mile have on the equation?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

D. If a student walks 8 miles in the walkathon, how much would a sponsor owe under each pledge plan? Explain how you got your answer.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

E. For a sponsor to owe a student $10, how many miles would the student have to walk under each pledge plan? Explain how you got your answer.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

F. Alana suggested that each sponsor make a $5 donation and then pledge $0.50 per mile. How is this fixed $5 donation represented in the table?
G. Alana suggested that each sponsor make a $5 donation and then pledge $0.50 per mile. How is this fixed $5 donation represented in the graph?
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

H. Alana suggested that each sponsor make a $5 donation and then pledge $0.50 per mile. How is this fixed $5 donation represented in the equation?
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

I. Write an equation for a pledge plan whose graph is a steeper line than any of the lines you graphed in the problem.
_____________________________________________________________________

J. Write an equation for a pledge plan whose graph is less steep than any of the lines you graphed in the problem.
_____________________________________________________________________
In Mr. Goldberg’s gym class, Emile finds out that his walking rate is 2.5 meters per second. When he gets home from school, he times his little brother Henri, as Henri walks 100 meters. He figures out that Henri’s walking rate is 1 meter per second. Henri challenges Emile to a walking race. Because Emile’s walking rate is faster, Emile gives Henri a 45-meter head start.

**What would be a good distance to make the race so that Henri will win in a close race?**

A. Make a table showing the distance each brother is from the starting line at several different times during the first 40 seconds.

<table>
<thead>
<tr>
<th>TIME (seconds)</th>
<th>HENRI’S DISTANCE FROM STARTING LINE (meters)</th>
<th>EMILE’S DISTANCE FROM STARTING LINE (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. On the same set of axes, graph the time and the distance from the starting line for both brothers.

C. Write an equation for each brother showing the relationship between the time and the distance from the starting line.

Henri’s Equation: ______________________________________________________

Emile’s Equation: ______________________________________________________

D. How far from the starting line will Emile overtake Henri? Explain how you can use the table and the graph to answer this question.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

E. After how many seconds will Emile overtake Henri? Explain how you can use the table and the graph to answer this question.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
PROBLEM 3.2: GRAPHING LINES

In each equation below, y is the amount owed in dollars, and x is the number of miles walked.

A. \( y = 3x \)

i) What does this pledge plan mean?

ii) Without using your graphing calculator, complete the following table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<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>

Using your table, decide if this pledge plan is reasonable. Explain how you made your decision.

iii) Graph the pledge plan with a graphing calculator. Use a window that shows the graph clearly. Make a sketch of the graph including the coordinates of the points where the line crosses the x- and y-axes.
iv) For the pledge plan provided, tell whether the y values increase, decrease, or stay the same as the x values increase. ______________________________

How can you tell from the graph?

______________________________________________________________

______________________________________________________________

______________________________________________________________

How can you tell from the table?

______________________________________________________________

______________________________________________________________

______________________________________________________________

How can you tell from the equation?

______________________________________________________________

______________________________________________________________

______________________________________________________________

B. y = -2x

i) What does this pledge plan mean?

______________________________________________________________

______________________________________________________________

ii) Without using your graphing calculator, complete the following table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<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>

Using your table, decide if this pledge plan is reasonable. Explain how you made your decision.

______________________________________________________________

______________________________________________________________

______________________________________________________________
iii) Graph the pledge plan with a graphing calculator. Use a window that shows the graph clearly. Make a sketch of the graph including the coordinates of the points where the line crosses the x- and y-axes.

iv) For the pledge plan provided, tell whether the y values increase, decrease, or stay the same as the x values increase. ____________________________

How can you tell from the graph?
______________________________________________________________
______________________________________________________________
______________________________________________________________

How can you tell from the table?
______________________________________________________________
______________________________________________________________
______________________________________________________________

How can you tell from the equation?
______________________________________________________________
______________________________________________________________
______________________________________________________________

C. \( y = 5x - 3 \)

i) What does this pledge plan mean?
______________________________________________________________
______________________________________________________________
ii) Without using your graphing calculator, complete the following table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<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>

Using your table, decide if this pledge plan is reasonable. Explain how you made your decision.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

iii) Graph the pledge plan with a graphing calculator. Use a window that shows the graph clearly. Make a sketch of the graph including the coordinates of the points where the line crosses the x- and y-axes.

_________________________________________________________________
_________________________________________________________________

iv) For the pledge plan provided, tell whether the y values increase, decrease, or stay the same as the x values increase. ______________________________

How can you tell from the graph?
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
How can you tell from the table?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
How can you tell from the equation?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

D. \( y = -x + 6 \)

i) What does this pledge plan mean?
________________________________________________________________________
________________________________________________________________________

ii) Without using your graphing calculator, complete the following table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<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>

Using your table, decide if this pledge plan is reasonable. Explain how you made your decision.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
iii) Graph the pledge plan with a graphing calculator. Use a window that shows the graph clearly. Make a sketch of the graph including the coordinates of the points where the line crosses the x- and y-axes.

iv) For the pledge plan provided, tell whether the y values increase, decrease, or stay the same as the x values increase. ______________________________

How can you tell from the graph?

How can you tell from the table?

How can you tell from the equation?

E.  y = 2

i) What does this pledge plan mean?

________________________________________________________
ii) Without using your graphing calculator, complete the following table.

<table>
<thead>
<tr>
<th>x</th>
<th>y</th>
</tr>
</thead>
<tbody>
<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>

Using your table, decide if this pledge plan is reasonable. Explain how you made your decision.

________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________

iii) Graph the pledge plan with a graphing calculator. Use a window that shows the graph clearly. Make a sketch of the graph including the coordinates of the points where the line crosses the x- and y-axes.

iv) For the pledge plan provided, tell whether the y values increase, decrease, or stay the same as the x values increase. ______________________________

How can you tell from the graph?
________________________________________________________________________________________________________
________________________________________________________________________________________________________
________________________________________________________________________________________________________
How can you tell from the table?
________________________________________________________________________

________________________________________________________________________

How can you tell from the equation?
________________________________________________________________________

________________________________________________________________________