24- Day Lesson Plan
Unit: Linear Equations
Algebra I: Grade 9/10
Time Span: 42 minute class periods
By: Kathlene Hockaday

Tools: Overhead projector with TI-83 adapter
Math Book
Graph Paper
TI-84 plus Calculators
Computers
Calculator-Based Ranger (CBR 2)
Green Globes Software
Fathom Software
Pencils
Paper
Notebook
Unit Objectives

Given a twenty-four day instruction on linear equations, the following are unit objectives:

• Learn new vocabulary.
• Given a technology instruction on how to use Fathom. Students will be able to find information on the World Wide Web and put it into charts and graphs using Fathom.
• Given a technical briefing on the TI-84 plus calculator with a CBR unit attached, the students will be able to mimic a slope given on the TI-84 plus.
• Given linear equations, students will be able to solve for y in terms of x. Students will then be able to make a scatter plot of the points found by using a table of x values to find corresponding y-values.
• Given linear equations, students will calculate the x and y intercepts on the graph.
• Given linear equations, students will be able to draw conclusions about linear equations.
• Given the slope formula, students will be able to find the slope of a line.
• Given the slope-intercept formula, the students will be able to rewrite linear equations into the slope-intercept form.
• Using the Green Globs software the students will be able to write linear equations of given graphs, as well as identify given points.
• Given the slope and a point on the line, students will be able to write linear equations.
• Given two points, students will be able to write linear equations.
• Students will be able to write linear equations in slope-intercept form and standard form.
New York State Standards

Standard 3: Mathematics

• A.PS.4 – Use multiple representations to represent and explain problem situations.
• A.CM.2 – Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, function, equations, charts, graphs, Venn diagrams, and other diagrams.
• A.R.3 – Use representation as a tool for exploring and understanding mathematical ideas.
• A.G.9 – Solve system of linear equations graphically.
• A.R.1 – Use physical objects, diagrams, charts, tables, graphs, symbols, equation, or objects created using technology as representation of mathematical concepts.
• A.G.4 – Identify and graph linear functions
• Given a technical briefing on the TI-83 calculator, the students will be able to graph linear equations.
• A.PS.4 – Use multiple representations to represent and explain problem situations.
• A.A.33 – Determine the slope of a line, given the coordinates of two points on the line.
• A.A.34 – Write the equation of a line, given its slope and the coordinates of a point on the line.

NCTM Standards

• Create and use representations to organize, record, and communicate mathematical ideas.
• Use Mathematical models to represent and understand quantitative relationships.
• Understand patterns, relations, and functions.
• Organize and consolidate their mathematical thinking through communication.
• Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
• Analyze and evaluate the mathematical thinking and strategies of others.
• Represent and analyze mathematical situations and structures using algebraic symbols.
• Apply and adapt a variety of appropriate strategies to solve problems.

Recourses


Getting Started with the CBR 2 Sonic Motion Detector, Texas Instruments, Holden Custom Products, pages 10-13, copyright 2004.


24-Day Overview
Day 1: **4.1: Coordinates and Scatter plots**
- Class discussion on what are coordinates and how to plot a point.
- Handout: McDougal Notetaking Guide section 4.1 pg 67-69
- Homework: McDougal Resource book Chapter 4 pg 17

Day 2: **4.2: Graphing linear equations using a table**
- Class discussion on what a linear equation is and how to set up a table to find coordinate points
- Handout: McDougal Notetaking Guide section 4.2 pg 70-72
- Homework: McDougal Resource book Chapter 4 pg 29

Day 3: **Review**
- Homework: study for quiz

Day 4: **Quiz on 3.8-4.2**

Day 5: **4.3: Quick graphs using intercepts**
- Class discussion on what x-intercepts and y-intercepts are and how to find and graph them.
- Handout: McDougal Notetaking Guide section 4.3 pg 73-75
- Homework: McDougal Resource book Chapter 4 pg 41

Day 6: **4.4: Slope of a line**
- Class discussion on what the slope stands for and what it represents. How to graph the slope.
- Handout: McDougal Notetaking Guide section 4.4 pg 76-78
- Homework: McDougal Resource book Chapter 4 pg 56

Day 7: **4.4: Cont.**

Day 8: **Review**
- Homework: study for quiz

Day 9: **Quiz: 4.2-4.4**

Day 10: **4.6: Graphing using \(y=mx+b\)**
- Class discussion on what is the slope-intercept formula and what \(m\) and \(b\) represent. Then how to graph a line using \(y=mx+b\)
- Handout: McDougal Notetaking Guide section 4.6 pg 81-83
- Homework: McDougal Resource book Chapter 4 pg 87

Day 11: **4.5: Direct variation**
- Class discussion on what direct variation means and how that correlates to a linear graph. Then how do you find the constant variation given \( y \) and \( x \).
- Handout: McDougal Notetaking Guide section 4.1 pg 79-80
- Homework: McDougal Resource book Chapter 4 pg 69

**Day 12:** Review: Computer lab, using Fathom and linear statistics
- Class discussion on how to find data on the internet and then how to use the program Fathom to see the correlation between the data.
- Homework: study for quiz

**Day 13:** Quiz: 4.6-4.5

**Day 14:** 5.1: Review horizontal, vertical and parallel lines. Writing linear equations in Slope-Intercept Form
- Class discussion on horizontal (\( y = \)) vertical (\( x = \)) and parallel (\( m = m \)) lines. Then more on slope-intercept form of a line.
- Handout: McDougal Notetaking Guide section 5.1 pg 91-92
- Homework: McDougal Resource book Chapter 5 pg 14

**Day 15:** 5.2: Write equations given a point and slope
- Class discussion on slope-intercept form and the substitution of \( x \), \( y \) and \( m \) to find \( b \). Then putting back into slope-intercept form.
- Handout: McDougal Notetaking Guide section 5.2 pg 93-95
- Homework: McDougal Resource book Chapter 5 pg 27

**Day 16:** 5.2 Cont: Graphing Calculator Lab: Slope activity.
- Class discussion on real life situations where slope exists, then introduction into the CBR Lab of mimicking a slope given by the TI-84 Plus and distance versus time.
- Handout: Slope Activity Worksheet
- Homework: Questions on the handed out worksheet

**Day 17:** 5.3: Linear equations using 2 points
- Class discussion on what is needed to graph a line. Then how to find slope and \( y \)-intercept to put together to graph the line.
- Handout: McDougal Notetaking Guide section 5.1 pg 96-98
- Homework: McDougal Resource book Chapter 5 pg 41

**Day 18:** Review
- Homework: study for quiz

**Day 19:** Quiz: 5.1-5.3

**Day 20:** 5.6: Standard form of a linear equation
Class discussion on review of horizontal and vertical lines and then what standard form is.
- Handout: McDougal Notetaking Guide section 5.1 pg 104-105
- Homework: McDougal Resource book Chapter 5 pg 85

**Day 21:** 5.6 cont.
- Homework: McDougal Book pg 311-312

**Day 22:** Review
- Homework: study for quiz

**Day 23:** Computer lab: Green Globs
- Class discussion on review about points and how to write the equation of a line given the graph. Students then spend the rest of the period exploring green globs and how to find the equation of the given line.
- Homework: study for quiz

**Day 24:** Quiz 5.6 and review.
Day One Lesson Plan

**Lesson Topic:** 4.1 Coordinates and Scatter plot

**Grade Level:** 9/10

**Materials:**
- McDougal Littell Notetaking guide (page 67-69) and Resource Book
- Overhead
- Chalkboard

**Lesson Overview/ Objectives:**
1. Learn the vocabulary: Coordinate plane
   Ordered pair
   X-coordinate
   Y-coordinate
   Graph
   Scatter plot
2. Plot points
3. Learn about scatter plot graphs and how to graph them and interpret them

**Closure:** Ask the students to think of some situations that pertain to their everyday lives that could be put into a scatter plot graph. Then tell me how to change that date into points and how to graph them.

**Assessment:** McDougal Littell Resource Guide Chapter 4 pg 17 1-12 all
Day Two Lesson Plan

**Lesson Topic:** 4.2 Graphing linear equations using a table

**Grade Level:** 9/10

**Materials:** - McDougal Littell Notetaking guide (page 70-72) and Resource Book
  - Overhead
  - Chalkboard

**Lesson Overview/Objectives:**
1. Vocabulary learned: Solution of an equation
   Graph of an equation
2. Learn what verify the solution to an equation means and then the process of substitution of the point into the equation of the line to check.
3. Graph a linear equation using a table by first rewriting the equation in function form by solving for $y$ then choosing a few values of $x$ and making a table of values. Finally, plotting the points and drawing a line through them.
4. Learn the equations of Horizontal and vertical lines and how to graph them

**Closure:** Ask the students to recap what the solution of an equations means and how to find it. Also review the process in solving for $y$.

**Assessment:** McDougal Littell Resource Guide Chapter 4 pg 29 1-33 even
1. Find the average speed of a person boating 126 miles in 5 hours.  
(4 points)

2. Convert 250 pesos to dollars. The exchange rate is 9.99 pesos per United States dollar.  
(4 points)

3. What percent of people were in favor of a survey question if 162 people voted NO out of a total of 525 voters?  
(5 points)

4. Label the points A-I shown below.  
(20 points)
5. \(6x-2y=10\) 
(11 points)

(a) Solve this equation for \(y\). (3 points)
(b) Use the equation from part (a) to make a table of values for \(x=-5, x=-2, x=1, x=4\) (4 points)
(c) Plot the points and draw the line. Make sure to label the line appropriately. (4 points)

6. \(12y-24x=36\) 
(11 points)
(d) Solve this equation for $y$. (3 points)

(e) Use the equation from part (a) to make a table of values for $x=-3, x=-1, x=0, x=2$ (4 points)

(f) Plot the points and draw the line. Make sure to label the line appropriately. (4 points)
Day Five Lesson Plan

**Lesson Topic**: 4.3 Quick graphs using intercepts

**Grade Level**: 9/10

**Materials**: - McDougal Littell Notetaking guide (page 73-75) and Resource Book
  - Overhead
  - Chalkboard

**Lesson Overview/Objectives**:
1. Vocabulary learned: X-intercept
   Y-intercept
2. Explain that the x-intercept is where the graph crosses the x-axis and that the value for y at that point is always zero. Therefore to find the x-intercept, let $y=0$.
3. Explain that the y-intercept is where the graph crosses the y-axis and that the value for x at the point is always zero. Therefore to find the y-intercept, let $x=0$.
4. Learn to make a graph using the x-intercept and y-intercept by plotting the points found. Make sure that the students do not put the x-intercept and y-intercept together in one point. Remind them that they are different points.

**Closure**: Ask the students to re-explain what x-intercept and y-intercept stand for and how to find them.

**Assessment**: McDougal Littell Resource Guide Chapter 4 pg 41 1-32 even
Day Six Lesson Plan

**Lesson Topic:** 4.4 Slope of a line

**Grade Level:** 9/10

**Materials:**
- McDougal Littell Notetaking guide (page 76-78) and Resource Book
- Overhead
- Chalkboard

**Lesson Overview/Objectives:**
1. Vocabulary learned: Slope
   - Rate of Change
2. Find the slope of a line by learning that slope is a line passing through two different points. Also referred to as rise over run or change in y over change in x or \( \frac{y_2 - y_1}{x_2 - x_1} \). Slope is also written in a fraction.
3. Classification of lines by slope: negative slope, positive slope, horizontal line: zero slope, and vertical line: undefined slope.
4. Find the slope of the line passing through two points. Then classify the line as positive, negative, zero or undefined slope.

**Closure:** Ask the students to tell me three different ways of saying the formula for slope. What letter stands for slope, and real life situations where slope exists.

**Assessment:** McDougal Littell Resource Guide Chapter 4 pg 56 1-32 even
Algebra Quiz 8

Points: 63

Name ______________________________

Show all work clearly for full credit.

1.12 Find the x and y intercepts for the following linear equations:

a. \(2y = 5x + 3\)

b. \(2y + 3x = 6\)

c. \(\frac{1}{2}x + y = 7\)

x- int: __________  x- int: __________  x- int: __________

y- int: __________  y- int: __________  y- int: __________

2.6 Rewrite the equation in function form.

a. \(3x - 5y = -6\)

b. \(2y = x - 6\)

c. \(\frac{2y}{4} + 4 = -6x\)

3.9 Find the slope of the line through the following points:

a. \((-3, 4) \& (-1, -3)\)

b. \((5, 1) \& (6, -2)\)

c. \((-7, 5) \& (6, -9)\)

4.9 Find the slope of the line through the following points, and identify whether the slope is positive, negative, zero, or undefined.

a. \((4, 1) \& (6, 1)\)

b. \((-6, 2) \& (4, -2)\)

c. \((3, 6) \& (3, 0)\)
5.8

3y + 9 = 9x

(g) Solve this equation for \( y \) in terms of \( x \). (2 points)
(h) Use the equation from part (a) fill in the table below for the 3 given x-values. (3 points)
(i) Plot the points and draw the line. Make sure to label the line appropriately. (3 points)

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
<th>( (x, y) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.5

a) Graph the following equations in the same coordinate plane (4 points)

\[
\begin{align*}
y &= 2 \\
2x &= -2
\end{align*}
\]

b) Name their point of intersection. (1 point)
7.7 Graph the following linear equation using the intercept method.

\[ 7x - 2y = 14 \]

8.7 Graph the following linear equation using the intercept method.

\[ \frac{1}{2}x + \frac{1}{3}y = 2 \]
Day Ten Lesson Plan

Lesson Topic: 4.6 Quick graphing using slope-intercept form

Grade Level: 9/10

Materials: - McDougal Littell Notetaking guide (page 81-83) and Resource Book
  - Overhead
  - Chalkboard

Lesson Overview/Objectives:
  1. Vocabulary learned: Slope-Intercept Form
         Parallel
  2. Graph a linear equation in slope-intercept form. First put the equation in slope-intercept form. Then practice identifying the slope and y-intercept.
  3. Graph a line using the identified slope and y-intercept
  4. Learn what a parallel line is and what makes it unique. Given different lines, tell which ones are parallel by finding the slopes and comparing which have the same slope.
  5. Graph and interpret equations in slope-intercept form that model real-life situations

Closure: Ask what makes two lines parallel. Identify 3 objects in the classroom that are associated with parallel lines. Ask which letter in the slope-intercept formula represents the slope and which represents the y-intercept.

Assessment: McDougal Littell Resource Guide Chapter 4 pg 87 1-30 even
Day Eleven Lesson Plan

Lesson Topic: 4.5 Direct Variation

Grade Level: 9/10

Materials:  - McDougal Littell Notetaking guide (page 79-80) and Resource Book
    - Overhead
    - Chalkboard

Lesson Overview/Objectives:
(1) Vocabulary learned: Constant Variation  
    Direct variation \( y=kx \)
(2) Write linear equations that represent direct variation. Start out with introducing the equation and graph of \( y=x \). Stress that the \( y \)-intercept is always zero, so the graph goes through the origin. Then start multiplying \( x \) by a constant to see how the graph changes. Conclude that the constant \( k \) is greater than zero, the slope of the graph is positive and the bigger \( k \) is, the steeper the slope is. If \( k \) is less than zero, the slope of the graph is negative and the smaller \( k \) is, the more flat the slope is.
(3) How to find the value of \( k \) given an \( x \) and \( y \).
(4) Use a ratio to write an equation for direct variation. Given an \( x \) and \( y \) find the value of find the value of \( y \) when \( x \) is a certain number. First have to find \( k \), then you need to substitute the \( k \) back into the formula \( y=kx \) to again solve for \( y \) with given \( x \) value.

Closure: Relate constant variation and direct variation to real life situations. Have students come up with the situations themselves. Some suggestions might be (if students get stuck) When going up a hill, the slope is really steep and the more acceleration you will need from the car to get up. The constant is going to get bigger to make it over the hill.

Assessment: McDougal Littell Resource Guide Chapter 4 pg 69 1-26 even
Day Twelve Lesson Plan

Lesson Topic: Review: Computer Lab

Grade Level: 9/10

Materials: - PC computers
- Fathom program

Lesson Overview/Objectives:
(1) Look on the internet for a nice set of linear data
(2) Learn how to open the program Fathom and what this program is mainly used for.
(3) Show how to drag the little icon “collection” onto the main screen and how to drag the internet icon onto the collection box.
(4) Show how to highlight the collection box and then drag down a table icon and how a table automatically appears. Show how it’s the same data that they saw on the internet.
(5) Show how to drag down the graph icon and how to put values on the graph. If you have two sets of data, you may put both on the same graph by putting the second one on the little “+” sign on the bottom left side. This is good to compare two sets of data. See if they are linear or not. Have a class discussion about what they see and what it means.

Closure: Ask students what else they can graph. How would a table and/or a graph be make it easier for them to understand the data being displayed. Which type of graph would be better: linear, dot plot, box and whisker, etc…

Assessment: No homework other than study for quiz
1.6 Solve the following equations
   a. \(17 = 2(3x + 1) - x\)  
   b. \(9(x - 4) - 7x = 5(3x - 2)\)

2.5 Find three consecutive integers such that the sum of first two integers is 24 more than the third integer.

3.6 Find the slope of the line through the following points:
   a. \((-5, 4) \& (-2, -7)\)  
   b. \((4, -3) \& (6, -2)\)

4.8 Find the value of \(y\) so that the line passing through the two points has the given slope.
   a. \((-1, 5), (3, y), m = 5\)  
   b. \((3, y), (1, 4), m = \frac{-1}{2}\)
5.5 Graph the equation $y = \frac{2}{5}x - 4$ using slope intercept method

6.6 Graph the equation $3x + 2y = 6$ using slope-intercept method

7.6 Graph the equation $2y - 5x = -10$ using x and y intercept method.
8.3 When \( x=4 \), \( y = 6 \). Given that \( y \) varies directly as \( x \).

a.) Find the Constant of variation, 
b.) Write an equation that relates \( x \) to \( y \). 
c.) Determine \( y \) when \( x \) is 8 

9.3 When \( x = 6 \), \( y = 8 \) Given that \( y \) directly as \( x \).

a.) Find the Constant of 
b.) Write an equation that 
c.) Determine \( y \) when \( x \) is 24 

10.12 Rewrite the equation so that \( y \) is a function of \( x \), then state the slope and \( y \)-intercept.

a. \( 4x + 5y = 15 \)  
b. \( x - 2y = 0 \)  
c. \( 2x - 4y - 8 = 0 \)

\[
\text{Slope} = \frac{-4}{5} \quad \text{Slope} = \frac{-1}{2} \quad \text{Slope} = \frac{2}{4}
\]

\[
\text{y intercept} = -3 \quad \text{y intercept} = 0 \quad \text{y intercept} = 2
\]
Day Fourteen Lesson Plan

Lesson Topic: 5.1 Writing linear equations in slope-intercept form

Grade Level: 9/10

Materials: - McDougal Littell Notetaking guide (page 91-92) and Resource Book
- Overhead
- Chalkboard

Lesson Overview/Objectives:
1. Vocabulary learned: Slope-intercept form
2. Use the slope-intercept form to write the equation of a line. Given $m$ and $b$.
3. Write the equation of a line from a graph. Using the y-intercept and counting for the slope, not the slope formula.

Closure: Recap what slope stands for and how to find it. Then go over situations in real life that a linear equation can be written. Explain how a table can be written, to relate to previous lessons, to find future values.

Assessment: McDougal Littell Resource Guide Chapter 5 pg 14 1-22 all
Day Fifteen Lesson Plan

Lesson Topic: 5.2 Writing linear equations given the slope and a point

Grade Level: 9/10

Materials: - McDougal Littell Notetaking guide (page 93-95) and Resource Book
  - Overhead
  - Chalkboard

Lesson Overview/Objectives:
(1) Use slope and any point on the line to write an equation of the line. First identify the x, y and m values. Next, substitute into the slope-intercept formula to find b. Finally substitute m and b back into slope-intercept formula.
(2) Write the equation of a line that is parallel to another given line and goes through a point. Reiterate that the lines are parallel and have the same slope.
(3) Use a linear model to make predictions about a real-life situation.

Closure: Relate monthly rent or bank accounts to a linear model. Ask the students to come up with a few more examples that are in their lives.

Assessment: McDougal Littell Resource Guide Chapter 5 pg 27 1-24 even
Day Sixteen Lesson Plan

Lesson Topic: 5.2 Cont.: Slope Activity on Graphing Calculator

Grade Level: 9/10

Materials: - Slope activity worksheet
- TI-84 Plus Calculator
- Overhead and Calculator overhead adapter
- CBR Unit with cords
- Chalkboard
- Tape
- Measuring stick (meters)

Lesson Overview/Objectives:
(1) Review slope: what it is, the slant: negative, positive, zero and undefined, and how to find it.
(2) Go over the activity. Explain Distance versus Time. The marks on the floor.
   How to mimic the pictured graph.
(3) Have them answer pre-made questions.

Closure: Real life situations (ie) CSI shows on TV. If a TV falls from a building and
   hits a guy on the head. Which floor did it fall from. We know there was a TV on
   a balcony where there was no one home. Did it fall from there, or did it fall from
   the one above it where there was a person home, and was it intentional? Find the
   slope of the fall and we can tell where the (y-) intercept was.

Assessment: Slope activity worksheet, questions 1-8
Slope Activity: Match the Graph

Objective: To match the graph on the calculator as closely as possible.

Real world situations: Distance vs Time

Questions:

1. What label represents the x-axis?

2. What label represents the y-axis?

3. Should you walk forward or backward for a segment that slopes up?

4. Should you walk forward or backwards for a segment that slopes down?

5. What should you do for a segment that is flat?

6. What did you learn about slope using Distance vs Time?

7. List some situations that you can think of where slope is used and what is the significance behind slope?
Day Seventeen Lesson Plan

Lesson Topic: 5.3 Writing linear equations given two points

Grade Level: 9/10

Materials: - McDougal Littell Notetaking guide (page 96-98) and Resource Book
- Overhead
- Chalkboard

Lesson Overview/Objectives:
(1) Write the equation of a line given two points. Step 1. Find the slope. Substitute the coordinates of the two given points into the formula for slope,

\[ m = \frac{y_2 - y_1}{x_2 - x_1} \]

Step 2. Find the y-intercept. Substitute the slope \( m \) and the coordinates of one of the points into the slope-intercept form, \( y = mx + b \). Step 3. Write an equation. Substitute the slope \( m \) and the y-intercept \( b \) into the slope-intercept form \( y = mx + b \).

Closure: Have two different students stand apart from each other. Use the floor tiles as one measurement. Have other students figure out slope between the two students. Have them predict what they think the slope is going to be at first, weather it’s positive, negative, zero or undefined.

Assessment: McDougal Littell Resource Guide Chapter 5 pg 41 1-15 all
1. Graph the following linear equations using the slope-intercept method. (12 pt)
   a) \( y = \frac{2}{3} x - 5 \)
      slope = ________
      y-int = ________

   b) \( 4y + 3x = 16 \)
      slope = ________
      y-int = ________

3. Write the equation of the line whose slope is -7 and whose y-intercept is 5. (2 pt)

4. Write the equation of the line whose slope is 10 and passes through the point (0, -6). (2 pt)

5. Write the equation of the line that passes through (-2, 7) and has slope of \( m = 5 \). (4 pt)
6. Write the equation of the line shown in the graph. (2 pt)

7. Write an equation of the line that is parallel to \( y = \frac{2}{3} x + 8 \) and passes through (9,4). (4 pt)

8. Write the equation of the line that is parallel to \( 3x - 5y = 15 \) that passes through the point (10, 6). (5 pt)

9. Write the equation of a line that passes through (2,6) and (-5,8). (5 pt)
10. Suppose your family rents a canoe for a deposit of $10 plus $28 per day. (4 pt)

a) Write an equation to model the total cost \( y \) of renting a canoe for \( x \) days.

b) Use the equation to find the cost of renting a canoe for 3 days.

9. Find four consecutive odd integers such that the sum of the first 3 is three less than twice the least. (5 pt)

12. Find the value for \( y \) given the following two points and the slope. (4 pt)

a) \((2,3)\) \((4,y)\); \( m = 4 \)

13. When \( x = -4, y = 12 \). Given that \( y \) varies directly as \( x \), (8 pt)

a) Find the constant of variation.

b) Write an equation that relates \( x \) to \( y \).

c) Determine \( y \) when \( x = 10 \).

d) Determine \( x \) when \( y = 81 \).
Day Twenty and Twenty-One Lesson Plan

Lesson Topic: 5.6 The Standard Form of a Linear Equation

Grade Level: 9/10

Materials: - McDougal Littell Notetaking guide (page 104-105) and Resource Book
- Additional handout
- Overhead
- Chalkboard

Lesson Overview/Objectives:
(1) Vocabulary: Standard Form
(2) Write the linear equation in standard form. \( Ax + By = C \) where \( A, B, \) and \( C \) are all real numbers and \( A \) and \( B \) are not both zero.

Closure: Work on additional worksheet handed out in the beginning of class. Review how to solve simplify fractions into integers (multiply by the denominator of the fraction).

Assessment: Day 1: McDougal Littell Resource Guide Chapter 5 pg 85 1-28 even
Day 2: McDougal Littell Book Section 5.6 pg 311-312 18-60 every other even
Chapter 5- Writing Linear Equations

5.6 The Standard Form of a Linear Equation

**Equation of Lines**

Slope-Intercept Form:

Vertical Line (undefined slope):

Horizontal Line (zero slope):

Standard Form:

**Examples:**

Write in Standard form.

1. \( x + 3y - 4 = 0 \)

2. \( 2x - 3y - 14 = 0 \)

3. \( y = 3x - 8 \)

4. \( 3x + 9 = \frac{7}{2}y \)
<table>
<thead>
<tr>
<th>Equation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. ( y = \frac{5}{2}x + 9 )</td>
</tr>
<tr>
<td>6. ( y = -\frac{1}{7}x + \frac{6}{7} )</td>
</tr>
</tbody>
</table>

7. Write an equation in standard form of the line that passes through (-8,3) with a slope of 2.

8. Write an equation in standard form of the line that passes through (-1,4) with a slope of -3.

9. Write \( y = \frac{2}{5}x - 3 \) in standard form with integer coefficients.

10. Write \(-5x + 11 = \frac{1}{2}y\) in standard form with integer coefficients.

11. Write the standard form of the equation:
    (a) of the horizontal line through the point (6,-5)
    (b) of the vertical line through the point (-2,-7)
Day Twenty-Two and Twenty-Three Lesson Plan

Lesson Topic: Review and Computer Lab

Grade Level: 9/10

Materials: - PC computers
- Green Globs Program

Lesson Overview/Objectives:
(3) Review coordinate points, slope, y-intercept, slope-intercept formula
(4) Write the location of the given point. Write the equation of the given line.

Closure: Green Globs will help a student better understand what a point is and how to come up with the equation of a line. Have students compete on who can get the most number of equations correct in a specific amount of time. Have a prize available.

Assessment: Study for quiz
Algebra Quiz 11

Points: ________

Name__________________________

Show all work for full credit.

1.6 Find the missing value for $y$.

a. $(2, 4) \ (6, y); \ m = 4$

b. $(-1, 5) \ (3, y); \ m = -\frac{1}{2}$

2.30 Write the following equations in standard form.

a. $3x = 2y + 8$

b. $2y + 5x - 9 = 0$

c. $y = \frac{2}{3}x + 5$

d. $m = 3, \ \text{through} \ (2, -4)$

e. parallel to $2x - 4y = 8, \ \text{through} \ (-4, 1)$

f. $\frac{2}{5}x - 8 = \frac{1}{5}y$

g. $x = 4y - 5$

h. $(2, 5) \ (6, 7)$

i. parallel to $y = 4, \ \text{through} \ (3,5)$

j. $(3, -6) \ (6, -9)$
3.12 Solve using algebraic techniques.

a. One number is four more than another. Four times the smaller is four less than three times the larger. Find the numbers.

b. You have four consecutive even integers. The sum of the first three is two more than twice the largest. Find the integers.

c. Presale tickets are $2.00 and day-of tickets are $3.00. If you sell twice as many day-of tickets as presale tickets and you make $160.00, how many of each type of ticket of each ticket was sold?

4.8 X and Y vary directly. If \( y = 12 \) when \( x = -3 \),

a. Find the constant of variation.  
   b. Write the equation that relates \( x \) and \( y \).

   c. Find \( x \) when \( y = 24 \).  
   d. Find \( y \) when \( x = -8 \).

6.12 Graph the following linear equation using the slope-intercept method.

a. \( y = -\frac{4}{5}x + 6 \)  
   slope = ________  
   y-int = ________

b. \( 2y - 3x = 12 \)  
   slope = ________  
   y-int = ________