Graphing Linear Equations and Functions

by Beata Jankowski

November, 04
Title: Graphing Linear Equations and Functions

Algebra 1

Grade: 9

Time Span: 5 days, regular schedule

Sources Used:


Algebra 1, Chapter 4 Resource Book, McDougal Littell, Evanston, IL: McDougal Littell A Houghton Mifflin Company, 2004

Internet Web Site: http://www.classzone.com
Objectives for the unit:

- Students will use linear equations and their graphs to model real-life situations
- They will draw and make predictions from scatter plots
- The students will graph linear equations using a variety of techniques, including a table of values, two points, and a point and the slope of the line.
- They will be able to identify equations of vertical, horizontal, and parallel lines.
- Students will use their graphs of linear functions to model and solve real-life problems.

NCTM Standards addressed:
1,3,5,6,9,10

New York State Standards addressed:
1A, 3A, 4A, 4B, 5A, 5B, 6B, 7A, 7B
Materials and equipment needed:

Day 1
- graphing calculator per student or a computer with spreadsheet software for each pair of students
- keystroke blackline (Chapter 4 Resource Book, p.15)
- overhead projector
- transparencies: Chapter 4 Resource Book, p.11, 12
- SE – Student Edition of the textbook
- TE – Teacher’s Edition of the Textbook

Day 2
- Transparencies: Chapter Resource Book p.26, 27
- Overhead projector
- SE – Student Edition of the textbook
- TE – Teacher’s Edition of the textbook
- Chapter 4 Resource Book
- calculators

Day 3
- Transparencies: Chapter Resource Book p. 38, 39
- Overhead projector
- SE – Student Edition of the textbook
- TE – Teacher’s Edition of the textbook

Day 4
- Transparencies: Chapter 4 Resource Book p. 52
- 2 metric rulers per group
- 3-5 books per group
- Activity Support Master (Chapter 4 Resource Book, p. 53)
- SE – Student Edition of the textbook
- TE – Teacher’s Edition of the Textbook
Day 5
- Transparencies: Chapter 4 Resource Book p.78
- Graphing calculator per student (or a computer with graphing software for each pair of students)
- Keystroke blackline (Chapter 4 Resource Book, p. 84)
- SE – Student Edition of the textbook
- TE – Teacher’s Edition of the textbook
Overview

Day 1: Coordinates and Scatter Plots
1. Opening – Daily Quiz
2. Main Activities
   - Plotting Points in a Coordinate Plane
   - Making a scatter plot
   - Describing Patterns from a Scatter Plot
   - Graphing a Scatter Plot
3. Closing Activities

Day 2: Graphing Linear Equations
1. Opening – Daily Quiz
2. Main Activities
   - Verify Solutions of an Equation
   - Graphing a Linear Equation
   - Using a Graph of a Linear Model
   - Graphing y = b
   - Graphing x = a
3. Closing Activities

Day 3: Quick Graphs Using Intercepts
1. Opening – Daily Quiz
2. Main Activities
   - Finding Intercepts
   - Making a Quick Graph
   - Drawing Appropriate Scales
   - Writing and Using a Linear Model
3. Closing Activities

**Day 4: The Slope of a Line**

1. Opening – Daily Quiz
2. Main Activities
   - Finding the Slope of a Line
   - Lines with Positive Slope, Zero Slope, Negative Slope and Undefined Slope
3. Closing Activities

**Day 5: Quick Graphs Using Slope-intercept Form**

1. Opening – Daily Quiz
2. Main Activities
   - Writing Equations in Slope – Intercept Form
   - Graphing Using Slope and y-intercept
   - Identifying a Family of Parallel lines
3. Closing Activities
Day 1: Coordinates and Scatter Plots

Goals:
1. Plot points in a coordinate plane.
2. Draw a scatter plot and make predictions about real-life situations.

Opening Activity:
1. Daily quiz: Chapter 4 ResourceBook, p. 11 (also Transparencies)

Main Activities:
1. Lesson Opener (Application): Chapter 4 Resource Book, p.12 (also Transparencies)
2. Examples 1-3: SE p.203-205, TE p.203-205

Closing Activities:
1. Closure Question: TE p.205
2. Homework Assignment: SE 10-26 even, 27-32,35-38,42-52 even
Day 2: Graphing Linear Equations

Goals:
1. Graph a linear equation using a table or a list of values
2. Graph horizontal and vertical lines

Opening Activity:
1. Daily Homework Quiz: TE p.208 (Transparency)

Main Activities:
1. Motivating the Lesson: TE p.211
2. Lesson Opener: Chapter 4 Resource Book, p.27 (also Transparency)

Closing Activities:
1. Closure Question: TE p.213
2. Homework Assignment: SE 12-35, 36-50 even
Day 3: Quick Graphs Using Intercepts

Goals:
1. Find the intercepts of the graph of a linear equation
2. Use intercepts to make a quick graph of a linear equation in a real life problem

Opening Activity:
1. Daily Quiz: TE p. 217 (Transparency)

Main Activities:
1. Motivating the Lesson: TE p.219
2. Lesson Opener (Activity): Chapter 4 Resource Book, p. 39 (Transparency)
4. Guided Practice: SE p. 221, TE p. 221

Closing Activities:
1. Closure Question: TE p. 220

Day 4: The Slope of a Line

Goals:
1. Find the slope of a line using two of its points
2. Interpret slope as a rate of change in a real-life problem
Opening Activity:
1. Daily Quiz: TE p. 223

Main Activities:
1. Motivating the Lesson: TE p. 227
2. Examples: 1-6, p.226-229

Closing Activities:
1. Closure Question: TE p.229
2. Homework Assignment: Activity Assessment: TE p.225 (Journal), SE 16-47 odd, 48,52,67,75,80,95

Day 5: Quick Graphs Using Slope-Intercept Form
Goals:
1. Graph a linear equation in slope-intercept form
2. Graph and interpret equations in slope-intercept form in a real-life
Opening Activity:
1. Daily Quiz: TE p. 233, Chapter 4 Resource Book p. 66 (Transparency)

Main Activities:
1. Motivating the Lesson: TE p. 242
3. Technology Activity; SE p.248-249, TE p. 248-249
4. Guided Practice; SE p.244, TE p. 244

Closing Activities:
1. Closure Question: TE p.243