

Mathematics CSOs

Grades 9-12

Module 2.1

Graphing Student Profiles

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Standard 2 Algebra (MA.S.2)

The students will:

- *demonstrate an understanding of patterns, relations, and functions;
- *represent and analyze mathematical situations and structures using algebraic symbols;
- *use mathematical models to represent and understand quantitative relationships; and
- *analyze change in various contexts through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics.

Objectives:

MA7.7.11 plot lines within the Cartesian coordinate plane from a table of values.

A1.2.8 determines the slope of a line given an equation of a line, the graph of a line and two points to be identified.

A1.2.9 graph linear equations using slope-intercept, point slope, and x-and y-intercepts.

Best Practices for Instruction and Instructional Strategies

This applied math instructional activity is designed to focus and reinforce plotting ordered pairs, as well as, entering data (ordered pairs) into lists on the graphing calculator. This data will then be graphed on the graphing calculator for a final profile/product. The lesson's intent is to be broken into three instructional classes.

Day one: students will be paired into groups of 2-3. Each group will be given an opportunity to use the digital camera and take pictures of one another's profile. After all pictures are taken, the discs will be placed in the printer for individual printouts. Students will be given a coordinate plane transparency with the x and y-axis mark. Students will tape transparency over profiles; be given instructions for graphing (plot points), using transparency markers, beginning in quadrant I; continuing around the profile through quadrant IV. Once this is complete, students will write points on a separate sheet of paper (x/y table) for later use .

Day two: students will enter data points from "x/y table" (following calculator instructions) to graphing calculator as list 1 and list 2. Once data lists are entered, students will graph on calculator. The final product should be a close, if not exact, replica of the original, profile graph from transparency.

Calculator Instructions

Day three: After students have a final product on the ti-83 screen, they will link the ti with a computer that has the ti interactive software. The student will perform screen capture and save the picture onto a disc. The picture can then be opened up in the paint program, where they can perform a variety of tasks to the picture. Final products will be put on display on the bulletin board.

Linking Instructions

Assessment: Have students compare the original transparency with the graphed data; if the profiles look exact (similar), they will be able to determine mastery level.

Using Performance Descriptors to Measure Student Achievement

Distinguished – The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standards in **Algebra I**. This student will understand the 4 quadrants of the Cartesian coordinate plane; plot points on the Cartesian coordinate plane; read coordinates for a point from a graph; demonstrates knowledge of TI-83 by putting ordered pairs into lists; graphing the ordered pairs from the list; transfer calculator image onto computer software.

Distinguished Student Work Sample

Above Mastery – The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **Algebra I**. This student will understand the 4 quadrants of the Cartesian coordinate plane; plot points on the Cartesian coordinate plane; read coordinates for a point from a graph; demonstrates knowledge of TI-83 by putting ordered pairs into lists; graphing the ordered pairs from the list; transfer calculator image onto computer software.

Application will determine the difference between distinguished and above mastery.

Above Mastery Student Work Sample

Mastery – The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **Algebra I**. This student will understand the 4 quadrants of the Cartesian coordinate plane; plot points on the Cartesian coordinate plane; read coordinates for a point from a graph; demonstrates knowledge of TI-83 by putting ordered pairs into lists; graphing the ordered pairs from the list.

Mastery Student Work Sample

Partial Mastery

The student demonstrates basic but consistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **Algebra I**. Performance needs further development. This student will understand the 4 quadrants of the Cartesian coordinate plane; plot points on the Cartesian coordinate plane; read coordinates for a point from a graph.

Partial Mastery Student Work Sample

Novice – The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **Algebra I**. This student will plot points on the Cartesian coordinate plane; read coordinates for a point from a graph.

Novice Student Work Sample

Adaptations for Diverse Learners

Adaptations/modifications for students can be easily made with the help of a collaborative teacher and/or special educator. Teachers have the right to access a confidential file on their special education student(s) and SBAT (504) students. Modifications are listed on the IEP/504 plans, along

with present levels of performance. You may want to consult with a special educator/collaborative math teacher regarding students with necessary modifications.

Other adaptations: Break lesson into four days.

- a. Day one – pictures/printing; plotting points around picture/transparency
- b. Day two - Locating points on table
- c. Day three - Entering points into graphing calculator
- d. Day four – Linking to the computer

Additional Resources for Adaptations

Student Assistance Team Manual

West Virginia Department of Education
Division of Instructional and Student Services
Office of Student Services and Assessment

The Teacher's Resource Guide

Hawthorne Educational Services, Inc.
800 Gray Oak Drive
Columbia, MO 65201
Telephone: (573) 874-1710
Fax: 1-800-442-9509

Adapting Curriculum and Instruction in Inclusive Classrooms: a Teacher's Desk Reference

The Center for School and Community Integration
Institute for the Study of Developmental Disabilities
2853 East Tenth Street
Bloomington, Indiana 47408-2601
(812) 855-6508

Websites:

[LDOOnline](#)

Integration of Technology

Standard 3: Technology Productivity Tools

Students will:

- Use technology tools to enhance learning, increase productivity, and promote creativity; and
- Use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Technology Productivity Tools Objectives:

TEC.9-12.3.2 Select and use appropriate technology tools to efficiently collect, analyze, and display data that is relevant to class assignments.

Instructional Materials

Needed materials:

Digital camera

Disc (floppy)

Individual Pictures

Graph transparencies

Tape

Transparency markers

[X/Y table worksheet](#) (printable Worksheet)

Graphing calculator (each person)

[Graph paper \(printable\)](#)

WEB-BASED RESOURCES

[TI Interactive](#)

[Simple Plot](#)