

Unit 17 – Graphing Data

Text: Cord Math/Financial Algebra

Volume: _____ **Chapter:** _____

Unit number: 19 **Title of unit:** Graphing Data

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Attach the Following Documents:

- 1. Lab Instructions**
- 2. Student Handout(s)**
- 3. Rubric and/or Assessment Tool**

Short Description (Be sure to include where in your unit this lab takes place):

Students use real-world application/discussion on the stock market to reinforce using graphing paper and using Excel to graph data, draw a line of best fit, identify equation, calculate slope, and determine x- and y-intercepts.

Bull or Bear Market

LAB PLAN

TEACHER: *(Teacher Prep/Lab Plan)*

▲ **Lab Objective**

Students will work collaboratively to collect data and present price variation data on a stock over a two-week period of time.

▲ **Statement of prerequisite skills needed** *(Vocabulary, Measurement Techniques, Formulas, etc.)*

Students need to understand graphing order pairs on a coordinate system.

Plotting a best fit line from a set of ordered pairs.

Students understand slope and intercepts.

▲ **Vocabulary**

Scatterplot

Slope

Slope intercept form

Line of Best Fit

▲ **State Standards addressed:** *(Highlight “Green” Standards, you may use your District's Power Standards if applicable)*

▲ **Math:**

A1.1.B Solve problems that can be represented by linear functions, equations, and inequalities.

A1.6.B – Make valid inferences and draw conclusions based on data

A1.8.B Select and apply strategies to solve problems

▲ **Reading:**

1.2.2 Apply strategies to comprehend words and ideas.

Use graphic features to clarify and extend meaning.

⤴ **Writing:**

Demonstrates understanding of different purposes for writing.

Writes to learn (e.g., double-entry journal in math, science; portfolio selection defense).

⤴ **Leadership Alignment:**

1.4 Be involved in activities that require applying theory, problem-solving and using critical thinking skills while understanding the outcomes of related decisions

2.1 Communicate, participate and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals.

⤴ **SCAN Skills/Workplace Skills:**

1.5 The student will use **interpersonal skills** to communicate, participate, and advocate effectively in pairs, small groups, teams, and large groups in order to reach common goals. This means that the student can effectively work on teams, teach others, serve customers, lead, negotiate, and work effectively with people from culturally diverse backgrounds.

⤴ **Teacher Preparation:** (*What materials and set-up are required for this lesson?*)

⤴ Materials: Computer, graph paper, Internet access

⤴ Set-Up Required: Divide into groups of five. Work as a team, but each person is expected to report individually. Pass out sheet describing the activity along with questions to answer.

⤴ **Lab Organizational Strategies:**

(Lab can be one or two period depending on time)

Facilitator provides brief overview of the project

Students will pair up with another student. At random each group will select a public company of their choice. Duplicate selections will be mitigated by drawing names from a hat, and alternative group(s) finding a new company. Comment that groups will be competing for the top spot. They will be working in groups of two, but each student will be responsible for creating his/her own graphs/worksheets.

Groups will record their Company choice on a master list. They will then go on their computers online and research the company stock ticker symbol. They will record each of the fifteen data points. Then they will record the stock closing price for the last fifteen business days.

Based on a \$10000 initial investment 15 business days prior, calculate the daily value of your stock investment from three weeks ago to the present. Plot the data on graph paper and Excel. Determine the line of best fit, slope intercept equation, standard form equation, and slope. Extrapolate the value of the portfolio five more days on and record this data. Share the grading rubric with students.

Have appropriate little prizes for teams that earned the most to date and are targeted to earn the most five days out.

⤴ **Post Lab Follow-Up/Conclusions** (*to be covered after student completes lab*)

⤴ Discuss real world application of learning from lab:

Opportunity for students to share about learning and come up with applications for the real-world – business, marketing, technology, manufacturing, etc.

⤴ Career Applications:

This can correlate to new product proposals and testing in biotechnology, manufacturing, science, military, retail, and other fields.

⤴ Optional or Extension Activities:

You can increase the complexity of the activity for higher level students by adding companies and initial investment amounts to bring more variables into the

calculations. You can also discuss other variables potentially impacting the stock values of the companies.

	Un-satisfactory	Developing	Satisfactory	Proficient	Excellent	Score		
	2	4	6	8	10			
Scatterplot graph is accurate on graph paper	Scatterplot graph, variables, marked axes, and legend are not present.	One or more components (graph, variables, marked axes, legend) are missing.	All components are present, but the graph shows mistakes in data plotting (e.g. variables are graphed on wrong axis).	All components are present. There are minimal mistakes in graph and data presented.	Graph shows perfect plot of two-variable data points. Presentation shows accurately marked axes and legend of variables.	5 points possible		Student and Teacher feedback
Scatterplot graph is accurate on Excel worksheet	Scatterplot graph, variables, marked axes, and legend are not present.	One or more components (graph, variables, marked axes, legend) are missing.	All components are present, but the graph shows mistakes in data plotting (e.g. variables are graphed on wrong axis).	All components are present. There are minimal mistakes in graph and data presented.	Graph shows perfect plot of two-variable data points. Presentation shows accurately marked axes and legend of variables.	5 points possible		Student and Teacher feedback
Line of best fit is accurate on graph paper	Line of best fit and equation are not on presentation graph. Group does not provide explanation of line of best fit in discussion.	Line of best fit, equation, or student explanation on the calculation are not present.	Line of best fit, equations, and student group explanation are completed. End data or explanations are inaccurate.	Line of best fit, equation, and students explanation of steps to determine the line of best fit show some mistakes.	Group shows line of best fit, equation for line, and the graphing calculator or Excel steps in calculating the line.	5 points possible		Student and Teacher feedback
Line of best fit is accurate on Excel worksheet	Line of best fit and equation are not on presentation graph. Group does not provide explanation of line of best fit in discussion.	Line of best fit, equation, or student explanation on the calculation are not present.	Line of best fit, equations, and student group explanation are completed. End data or explanations are inaccurate.	Line of best fit, equation, and students explanation of steps to determine the line of best fit show some mistakes.	Group shows line of best fit, equation for line, and the graphing calculator or Excel steps in calculating the line.	5 points possible		Student and Teacher feedback
Accurate equations for slope intercept and standard form	Slope intercept and standard form equations are not listed.	Slope intercept or standard form are noted, but the equations are inaccurate.	Slope intercept and standard form equations are completed. End data or explanations are inaccurate.	Slope intercept and standard form equations are completed and reasonably accurate, but student has not provided sufficient explanation of solution.	Accurate equations and work are shown for slope intercept and standard form.	5 points possible		Student and Teacher feedback
Extrapolation of data via graph and equation	Data has not been extrapolated for five extra business days.	Data has been minimally extrapolated, but values are inaccurate.	Data has been extrapolated for graph or equation, but not both	Data has been extrapolated for graph and equation. Student has not provided adequate explanation of work.	Data has been extrapolated for graph and equation. Student provided written documentation of work performed to calculate information.	10 Points Possible		Student and Teacher feedback
Participation in group activity.	Student did not provide any input or presentation materials for activity.	Student provided minimal feedback and participation. They did not provide individual part during presentation.	Student provided individual part during presentation, but they provided minimal additional feedback and participation.	Student was reasonably engaged with group project and discussion. They missed some discussion or requirement for the group activity.	Student was actively engaged and participating with group on project. This included providing product and variable ideas, research, group discussion, and individual presentation to class.	20 points possible		Teacher assessment
Individual's presentation during group presentation	Student did not provide any part of the group presentation to the class.	Student shows lack of understanding of key terms and concepts. Student provides minimal data/information during group presentation and most data presented is inaccurate and/or unclear.	Individual provided necessary material for individual presentation. Information shows misunderstandings of concepts and/or inaccurate data.	Individual provided necessary material for individual presentation. Information shows basic understandings of concepts and/or reasonably accurate data.	Individual shows strong understanding of material. Presentation shows accurate explanation, graphing, and display of products, variables, and terminology. Student shows good ability to synthesize information and convey compelling understanding of relationships.	30 points possible		Teacher assessment
Student participation, insight, and feedback on rubric sheets for other students.	Student provides no rubric assessment for own or other groups.	Student provides only some rubric assessments for own or other groups.	Student provides all rubric assessments for own and other groups. No insight or comments are provided.	Student provides all rubric assessments for own and other groups. Some insight and perceptive feedback comments are provided.	Student provides all rubric assessments. Student provides articulate, perceptive, critical, and constructive feedback and comments.	10 Points Possible		Teacher assessment with some student feedback
TOTAL SCORE						0		

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Group/Self Evaluations

Group Name: _____

<u>Evaluator</u>	<u>Star</u>	<u>Star</u>	<u>Wish</u>
1			
2			
3			
4			

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