UNIT OF STUDY

Title: Graphing, independent and dependent variables **Subject/Course**: Algebraic Connections **Length: 10 days**

Topic: CS2 unit 6 **Grade:** 12th **Designer:** Prado

UNIT GOALS AND EXPECTATIONS

IMPORTANT CONCEPTS/UNDERSTANDINGS:

- Graphing can give an interpretation of many kinds of situation.
- The graph of a situation can also be interpreted in writing and orally.
- Real-life problems can be depicted by graphs
- Knowing the slopes of two lines can tell whether they are parallel, perpendicular, if both lines are the same or if they are none of the above.

ESSENTIAL QUESTIONS:

- What is an independent and dependent variable?
- How is an interpretation made from a graph?
- How is a graph created for a given situation?
- What everyday life problems can be depicted by graphs?
- What makes two lines parallel, perpendicular, or neither?
- What is a piece-wise and step function?
- How is a piece-wise and step function graphed?
- When do two linear equations represent the same line?

STUDENT LEARNING EXPECTATIONS:

LF.2.AC.1 Create, given a graph without an explicit formula, a written or oral interpretation of the relationship between the independent and dependent variables

LF.2.AC.2 Create, given a situation, a graph that models the relationship between the independent and dependent variables

LF.2.AC.4 Determine the independent and dependent variables, domain and range of a relation from an algebraic expression, graph, set of ordered pairs, or table of data.

LF.2.AC.6 Determine, using slope, whether a pair of lines are parallel, perpendicular, or neither.

LF.2.AC.8 Graph, with and without appropriate technology, functions defined as piece-wise and step

SPECIFIC DECLARATIVE KNOWLEDGE – What I know

- Explain in the vocabulary: slope, parallel, perpendicular, function, piece-wise function, integer, step function, linear equation, domain, range, independent variable, dependent variable, equation, and coordinates
- Identify the interpretation of the graph in writing or orally
- Identify the independent and dependent variables of a situation to create a graph
- Identify the rate of change (slope) and intercepts in everyday life problems.
- Identify whether a line is parallel, perpendicular, or neither.
- Identify a piece-wise and step function

SPECIFIC PROCEDURAL KNOWLEDGE – What I need to do

- Create a written or oral interpretation of the relationship between the independent and dependent variables
- Create a graph that models a relationship in a situation between independent and dependent variables
- Interpret the rate of change and intercepts within a real-life problem
- Determine the slope of a parallel and perpendicular line
- Determine whether a pair of lines are parallel, perpendicular or neither using only the slope
- Create a graph that represents a piece-wise and step function
- Determine when two linear equations represent the same line by examining the slopes and y-intercepts of the two lines.

UNIT ASSESSMENTS **(Include tasks related to Dimensions 3 and 4 and Bloom's Taxonomy)**	
Traditional Assessments: Unit 6 Exam Vocabulary Quiz Quizzes	**Other Evidence of Learning:** Homework Class work Getting Started Exercises

ACTIVITIES AND LEARNING EXPERIENCES	Resources
Explaining a graph in writing ◆ S will learn vocabulary using the 4-step process: domain, range, independent variable, dependent variable and coordinates ◆ S will do Getting Started activity sheet ◆ T will model finding an explanation from observing a graph ◆ S will do in-class worksheet on creating a written explanation from a graph ◆ T will go over worksheet ◆ T will model creating a graph from a written explanation ◆ S will do in-class worksheet on creating a graph from a written explanation ◆ T will go over worksheet , relate the worksheets to each other, and assign homework	◆ 4 step vocabulary sheets ◆ Getting Started problems ◆ Worksheets on creating a written explanation from a graph ◆ Smart board ◆ Newspaper ads as I find them (to show the students that ads can be misleading)
Find the rate of change and create a linear equation from a rate of change ◆ S will learn vocabulary: linear equation, ◆ S will do Getting Started activity sheet ◆ T will model how to find the rate of change and fixed cost in context ◆ S will do in-class worksheet on finding the rate of change and fixed cost in context ◆ T will go over worksheet ◆ T will model how to create a linear equation from a rate of change problem, review the slope ratio, and how to rewrite a linear equation in slope y-intercept form. ◆ S will do in-class worksheet on creating a linear equation from a rate of change problem ◆ T will go over worksheet, relate the worksheets to each other, and assign homework	◆ Getting Started problems ◆ Worksheets on how to find the rate of change and fixed cost in context and how to create a linear equation from a rate of change and fixed cost in context ◆ Smart board ◆ Newspaper ads as I find them ◆ Internet websites as I find them to give some real life examples
Determine the slope of parallel and perpendicular lines and then decide if two lines are parallel, perpendicular, or neither ◆ S will learn vocabulary: slope, parallel lines, perpendicular lines ◆ S will do Getting Started activity sheet ◆ T will model how to determine the slope of parallel and perpendicular lines ◆ S will do in-class worksheet on being able to determine the slope of parallel and perpendicular lines ◆ T will go over worksheet ◆ T will model how to determine if the pairs of lines are parallel, perpendicular, or neither and use the y-intercept form to determine when two equations of lines have the same slope whether they represent two distinct lines or the same line.	◆ Getting Started problems ◆ Worksheets on determining the slope of parallel and perpendicular lines and determine if the pairs of lines are parallel, perpendicular, or neither ◆ Smart board ◆ Internet websites (I will fill these in when I find some good ones)

♦ S will do in-class worksheet on being able to determine if the pairs of lines are parallel, perpendicular, or neither ♦ T will go over worksheet, relate the worksheets to each other, and assign homework **Evaluate a function and evaluate a piecewise function** ♦ S will learn vocabulary: function, piecewise function ♦ S will do Getting Started activity sheet ♦ T will model how to evaluate a function and how to decide if when you find the input in a function, is the output given (reverse function) ♦ S will do in-class worksheet on being able to evaluate functions ♦ T will go over worksheet ♦ T will model how to evaluate a piecewise function ♦ S will do in-class worksheet on evaluating a piecewise function ♦ T will go over worksheet, relate the worksheets to each other, and assign homework **Create a table from a piecewise and graph a piecewise table** ♦ S will do Getting Started activity sheet ♦ T will model how to create a table from a piecewise ♦ S will do in-class worksheet on being able create a table from a piecewise ♦ T will go over worksheet ♦ T will model how to graph a piecewise table ♦ S will do in-class worksheet on graphing a piecewise table ♦ T will go over worksheet, relate the worksheets to each other, and assign homework **Evaluate a step wise function and graphing a step wise function** ♦ S will learn vocabulary: step wise function ♦ S will do Getting Started activity sheet ♦ T will model how to evaluate a step wise function ♦ S will do in-class worksheet on evaluating a step wise function ♦ T will go over worksheet ♦ T will model how to graph a step function ♦ S will do in-class worksheet on graphing a step function ♦ T will go over worksheet, relate the worksheets to each other, and assign homework	♦ Getting Started problems ♦ Worksheets on evaluating a function and evaluating a piecewise function ♦ Smart board ♦ Getting Started problems ♦ Worksheets on creating a table from a piecewise and graphing piecewise tables ♦ Smart board ♦ Getting Started problems ♦ Worksheets on step wise functions and graphing a step wise function ♦ Smart board
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