Unit 06: Variables, Tables & Graphs

Content Area: **TEMPLATE**
Course(s):
Time Period: **Full Year**
Length: **3 weeks**
Status: **Published**

General Overview, Course Description or Course Philosophy

In this unit, students will develop the ability to recognize, describe and analyze the relationship between two variables. They will learn to identify the independent and dependent variables in real world situations as well as describe patterns of change in words, data tables, graphs, and equations.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Essential Questions:

- Which variables depend on or change in relation to others?
- How can you use a table, graph, or equation to represent and analyze a relationship between variables?

Essential Understandings:

- Linear patterns can be found in tables and graphs of numerical data and those patterns can be expressed in words and in symbolic equations or formulas.
- Information given in tables, graphs, and symbolic expressions can be used to solve problems and make decisions about linear relationships.

CONTENT AREA STANDARDS

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.7	Look for and make use of structure.
MA.6.EE.B.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
MA.6.EE.B.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.
MA.6.EE.C.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

LA.K-12.NJSLSA.R7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
LA.K-12.NJSLSA.SL1	Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
LA.K-12.NJSLSA.L1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
CS.K-12.3.a	Identify complex, interdisciplinary, real-world problems that can be solved computationally.
CS.K-12.7	Communicating About Computing and Design
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.

STUDENT LEARNING TARGETS

Declarative Knowledge

Students will understand:

- How to identify independent and dependent variables.
- How to identify the difference between linear versus nonlinear patterns.
- How to calculate average speed from a data table and graph.

Procedural Knowledge

Students will be able to:

- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.
- Analyze the relationship between the dependent and independent variables using graphs and tables, and relate them to the equation.
- Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.
- Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all non-negative rational numbers.

EVIDENCE OF LEARNING

Formative Assessments

- Observations/Checklists
- Classwork
- Do Now Questions/Exit Tickets
- Self Assessment Questions
- Illustrative Math Performance Task: 6.EE.C.9 Chocolate Bar Sales
- IXL Skills Practice
- Student Proficiency Scale

Summative Assessments

- Portfolio Artifacts

Averages are based upon participation/preparation, classwork, and quizzes. Student marking period grades are either O (outstanding), S (satisfactory), or U (unsatisfactory).

RESOURCES (Instructional, Supplemental, Intervention Materials)

- *CMP3 Variables & Patterns*
- Savvas Realize (teacher and student resources)
- Khan Academy
- IXL- Recommended Skills Practice
  - BB.2 Identify Independent and Dependent Variables in Tables and Graphs
  - BB.3 Write an Equation from a Graph using a Table
  - BB.11 Identify the Graph of an Equation
  - BB.12 Complete a Table and Graph of a Two-Variable Equation
  - BB.14 Interpret a Graph: Word Problems
- Desmos Activity: Turtle Crossing
- MathXL for School
- Illustrative Mathematics Performance Tasks
- NCTM Illuminations
- Quiz Review Sheet (see classroom teacher)

INTERDISCIPLINARY CONNECTIONS

- Computations
- Financial/Economic/Business/Entrepenerial Literacy
- Data Collection/Analysis

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.