

TOPIC 3 OVERVIEW

TOPIC FOCUS: In this topic students focus on defining, evaluating and comparing functions. They use arrow diagrams, tables and graphs to determine if the relation is a function, linear or nonlinear, and analyze initial value and the constant rate of change. Students will represent linear functions using the equation $y=mx+b$.

ESSENTIAL QUESTION: How can you use functions to model linear relationships?

STANDARDS: The major focus standard for this topic is **8.F.A**, Define, evaluate, and compare functions and **8.F.B**, Use functions to model relationships between quantities.

ASSESSMENT: Topic 3 is the only topic to provide explicit instruction on these standards, so the information from the End of Topic Assessment should be used Summatively.

Virtual Nerd video tutorial link

REQUIRED ASSESSMENT

Resources for Formative and Summative Assessment from enVision Mathematics

Pre-Assessment - Topic Readiness Assessment or Review What you Know (Google Form Link) (recommendation)

Lesson Quizzes - To be used formatively to guide Step 3 Differentiation

Topic 3 Mid-Topic Checkpoint and/or Mid-Topic Performance Task (TE pg 183-184) Administer as a formative assessment to determine student progress.

Topic 3 End of Topic Assessment: Form or Printable or **Topic 3 Performance Task** (TE pg 211C - 211D) Administer as a summative assessment (unit development recommendation).

STANDARDS The standards are clustered with Learning Intentions and Success Criteria (LI/SC) and are identified to provide coherence in teaching and learning. Students should spend the large majority of their time on the major work of the grade. Major clusters (□) address the most important standards at that grade level. Supporting clusters (△) are strongly connected to the content of the major clusters, and additional clusters (▢) address other content to be taught at that grade level.	LEARNING INTENTIONS LI Identified on Math Background: Focus pg	SUCCESS CRITERIA SC identified on Topic Planner - math objectives
8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output and that the graph of a function is the set of ordered pairs consisting of an input and the corresponding output. 8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. 8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a	3-1: We are learning that a relation is a set of ordered pairs. A function is a relation in which each input, or x-value, has exactly one output, or y-value. Arrow diagrams and tables can be used to determine whether a relation is a function. 3-2: We are learning that different representations, such as equations, tables, and graphs, can represent a function. The graph of a linear function is a straight line; the graph of a nonlinear function is not a straight line. 3-3: We are learning that two functions presented in different representations can be compared by looking at their properties: initial value	3-1: I can identify whether a relation is a function. I can interpret a function. 3-2: I can identify functions in different representations: equations, tables, and graphs. I can identify linear and nonlinear functions in different representations. 3-3: I can compare properties of linear functions in different representations.

linear function in terms of the situation it models, and in terms of its graph or a table of values.  8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing and sketching a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	and constant rate of change. 3- Act Math: We are learning that many real-world problem situations can be represented with a mathematical model, but that model may not represent a real-world situation exactly. 3-4: We are learning that a function that represents a linear relationship between two quantities can be represented by an equation written in the form $y=mx+b$. 3-5: We are learning the relationship between two quantities can be represented in a qualitative graph that shows the behavior of the function in different intervals. 3-6: We are learning that you can use what you know about the behavior of a function in different intervals to sketch a qualitative graph of a function.	I can compare properties of linear and nonlinear functions in different representations. 3- Act Math: I can use mathematical modeling to represent a problem situation and to propose a solution. I can test and verify the appropriateness of their math models. I can explain why the results from a mathematical model may not align exactly to the problem situation. 3-4: I can construct a linear function to model a relationship using an equation in the form $y=mx+b$. 3-5: I can describe qualitatively the behavior of a function by analyzing its graph. I can describe the graph of a function at each interval. 3-6: I can draw a qualitative graph of a function based on a verbal description.
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8th Grade

Pocatello/Chubbuck School District #25
Use Functions to Model Relationships

Pacing: 16 -18 Days

		I can analyze and interpret the sketch of a graph of a function.
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