

Teacher / Team Name: 8th grade

Topic: Ups &amp; Downs

Days: 0

Subject(s):

Grade(s):

Know:

Understand:

Do:

Extension:

- \*Use formal language: constant rate of change, increasing more and more, and growth factor
- \*Linear- Constant rate of change, graph is straight line
- \*Exponential- graph is curved, growth factor, decay when growth factor is less than 1
- \*Formulas- Be able to represent a linear situation using a recursive and direct formula using situational variables

New Knowledge:

- \*Quadratic- Second difference in table is the same, graph is curved
- \*Periodic- repeating graph that has a cycle (section that repeats) and a period (the amount of time it takes for one cycle)
- \*Analyze the relationship between situation, table, graph and equation
- \*Input/output tables can be used as a tool

Patterns in change allow us to identify and compare different functions and their representations and use them to model real-world situations.

**2.3 -- Unranked**

Compare the rates of change in tables and graphs and classify them as linear or nonlinear

\*discern different types of graphs (straight line- linear function, periodic, exponential growth or decay, growth graphs in Section A-- focus on rate of change)

**2.4 -- Unranked**

Recognize exponential rates of growth and decay in tables and graphs

\*discern different types of graphs (straight line- linear function, periodic, exponential growth or decay, growth graphs in Section A-- focus on rate of change)

**2.5 -- Unranked**

Use an algebraic expression to represent any term in a numeric or geometric pattern

\*use recursive and direct formulas

**2.6 -- Unranked**

Write an equation given the tabular or graphic form of a linear problem

\*Discern different types of formulas or equations- linear: constant rate of change, quadratic: second difference is equal

**2.9 -- Unranked**

Use tables, graphs and symbolic reasoning to identify functions as linear or nonlinear

\*discern different types of graphs (straight line- linear function, periodic, exponential growth or decay, growth graphs in Section A-- focus on rate of change)

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<p>to generate a function rule.</p> <p>*Functions can be represented algebraically, graphically, numerically in tables, or by verbal descriptions.</p> <p>*Some representations of a function may be more useful than others depending on the context.</p> <p>*Some representations of functions may show only part of the function.</p> <p>*Functions are used to model real-world phenomena</p>		
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Which standards are students learning in this unit?

**2.3 -- Unranked**

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**2.4 -- Unranked**

Recognize exponential rates of growth and decay in tables and graphs

**2.5 -- Unranked**

Use an algebraic expression to represent any term in a numeric or geometric pattern

**2.6 -- Unranked**

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**2.9 -- Unranked**

Use tables, graphs and symbolic reasoning to identify functions as linear or nonlinear

Algebraic Reasoning: Student will develop Algebraic and an understanding of patterns and Functions by solving problems in which there is a need to recognize and extend a variety of patterns; to progress from the concrete to the abstract using physical models, equations and graphs; to describe, represent, and analyze relationships among variable quantities; and to analyze, represent, model and describe real- world functional relationships.

Math Practices;

3.) Construct viable arguments and critique the reasoning of others.

4.) Model with mathematics.