

ISIC Unit Planning Instrument

| Stage 1 Desired Results | | | |
|--|--|---|--|
| <p>ESTABLISHED GOALS/ STANDARDS <i>What relevant goals will this unit address?</i></p> <p><i>What Content Standards, Program and/or Mission related goal(s) will this unit address?</i></p> <p>Construct and compare linear, quadratic, and exponential models and solve problems. F.IF.1 Distinguish between situations that can be modeled with linear functions and with exponential functions.</p> <p>a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.</p> <p>b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.</p> <p>c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.</p> <p>2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).</p> <p>3. Observe, using graphs and tables, that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.</p> <p>F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. <i>Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</i></p> | Transfer | | |
| | <i>What kinds of long-term, independent accomplishments are desired?</i> Students will be able to independently use their learning in new situations to... | | |
| | Enduring Understanding <i>What are the big ideas? What are the specific understandings about them are desired? What inferences should they make?</i> | Unit Guiding Questions (Essential Questions) <i>What provocative questions will foster inquiry, understanding and the transfer of learning?</i> | Lesson Guiding Questions <i>What questions will guide your lesson planning to make connections to the unit understandings?</i> |
| | 1. | 1. | 1a. 1b. |
| | | 2. | 2a. 2b. |
| Acquisition | | | |
| <i>What facts and basic concepts should students know and be able to recall?</i> Students will know... function notation and the concept of domain and range; explore sequences; how to interpret functions given graphically, numerically, symbolically, and verbally; how to work with functions given graphically or in tables, understanding that the given context may require representations to be approximate or incomplete; how to reason with the units in which the quantities of the function are measured; how to compare and contrast linear and exponential functions, distinguishing between additive and multiplicative change; how to interpret arithmetic sequences as linear functions and geometric sequences as exponential functions. | | <i>What discrete skills and processes should students be able to use?</i> Students will be skilled at... <ul style="list-style-type: none"> • Using function notation and formal language to describe functions. (MP6) • Reasoning abstractly and quantitatively when interpreting functions graphically, numerically, algebraically and verbally (MP2). • Using information from tables or points on graphs to determine equations for functions (MP8). • Using key features of graphs and tables to describe a relationship between two quantities (MP7). • Model linear and exponential functions (MP4). | |