Construct and compare linear and exponential models and solve problems (F.LE.1-3)	
Standard I.F.LE.1: Distinguish between situations that can be modeled with linear functions and with exponential functions. **a.** Prove that linear functions grow by equal differences over equal intervals; exponential functions grow by equal factors over equal intervals. **b.** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **c.** Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	
Concepts and Skills to Master	
• Justify the fact that linear functions grow by equal difference over equal intervals using tables and graphs. • Justify the fact that exponential functions grow or decay by equal factors over equal intervals using tables and graphs. • Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. • Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	
Related Standards: Current Course	Related Standards: Future Courses
I.A.SSE.1, I.F.LE.2, I.F.LE.3, I.F.LE.5, I.F.IF.3, I.F.IF.6, I.F.BF.1, I.F.BF.2	II.A.SSE.1, II.F.IF.3, II.F.IF.4, II.F.IF.6, II.F.IF.9, II.F.BF.1, II.F.LE.3, III.F.LE.3, III.F.LE.4, III.F.LE.5, III.A.SSE.1, III.F.IF.3, III.F.IF.4, III.F.IF.6, III.F.IF.9, III.F.BF.1, P.F.BF.1

Support for Teachers

Critical Background Knowledge
• Use proportional relationships to solve percent problems (7.RP.3) • Describe where a function is increasing or decreasing (8.F.5) • Identify the constant rate of change (7.RP.2b, 8.EE.5, 8.F.4, 8.F.5) • Find a percent of a quantity as a rate per 100 (6.RP.3c)
Academic Vocabulary
interval, rate, factors, constant rate of change, percent rate per unit, growth, decay
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5600#70276

Construct and compare linear and exponential models and solve problems (F.LE.1-3)	
Standard I.F.LE.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).	
Concepts and Skills to Master	
• Construct a linear function and/or an arithmetic sequence given a situation, a set of ordered pairs, or a table. • Construct an exponential function and/or a geometric sequence given a situation, ordered pairs, or a table.	
Related Standards: Current Course	Related Standards: Future Courses
I.A.SSE.1, I.F.LE.1, I.F.LE.3, I.F.LE.5, I.F.IF.2, I.F.IF.3, I.F.IF.6, I.F.BF.1, I.F.BF.2	II.A.SSE.1, II.F.IF.3, II.F.IF.4, II.F.IF.6, II.F.IF.9, II.F.BF.1, II.F.LE.3, III.F.LE.3, III.F.LE.4, III.F.LE.5, III.A.SSE.1, III.F.IF.3, III.F.IF.4, III.F.IF.6, III.F.IF.9, III.F.BF.1, P.BF.1

Support for Teachers

Critical Background Knowledge
• Construct a function to model linear situation (8.F.4) • Use function notation (I.F.IF.2)
Academic Vocabulary
Exponential, linear, arithmetic, geometric, sequences
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5600#70276

Construct and compare linear and exponential models and solve problems (F.LE.1-3)	
Standard I.F.LE.3: Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly.	
Concepts and Skills to Master	
• Observe that a quantity increasing exponentially eventually exceeds a quantity increasing linearly using graphs and tables.	
Related Standards: Current Course	Related Standards: Future Courses
I.A.REI.6, I.F.IF.6, I.F.IF.7, I.F.IF.9, I.F.LE.1, I.F.LE.2, I.F.LE.5	II.A.REI.7, II.F.IF.4, II.F.IF.6, II.F.IF.7, II.F.IF.9, II.F.LE.3, II.F.IF.6, III.F.LE.3, P.F.IF.7

Support for Teachers

Critical Background Knowledge
• Perform operations using whole number exponents (6.EE.2c) • Identify, compare, and interpret rates of change (7.RP.2b, 8.F.2, 8.EE.5) • Identify linear and nonlinear functions from a graph or a table (8.F.4, 8.F.5)
Academic Vocabulary
Linear, exponential, increasing
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5600#70276

Interpret expressions for functions in terms of the situation they model. (F.LE.5)	
Standard I.F.LE.5: Interpret the parameters in a linear or exponential function in terms of a context. Limit exponential functions to those of the form $f(x)=b^x+k$.	
Concepts and Skills to Master	
• Interpret the parameters in a linear function in terms of a context. Parameters include slope and y- intercept • Interpret the parameters in an exponential function in terms of a context. Parameters include the base value and vertical shifts.	
Related Standards: Current Course	Related Standards: Future Courses
I.F.IF.3, I.F.IF.4, I.F.IF.7, I.F.IF.9, I.F.BF.1b, I.F.BF.2, I.F.BF.3, I.F.LE.1, I.F.LE.2, I.F.LE.3	II.F.IF.4, II.F.IF.6, II.F.IF.7, II.F.BF.1b, II.F.BF.3, II.F.LE.3, III.F.IF.4, III.F.IF.6, III.F.IF.7, III.F.BF.1b, III.F.BF.3, III.F.LE.5

Support for Teachers

Critical Background Knowledge (Access Background Knowledge)
• Compare proportional relationships $y=mx$ to other linear relationships $y = mx+b$ (7.RP.2, 8.F.3, 8.EE.5) • Compare properties of two functions (8.F.2), interpret the equation $y = mx+b$ (8.F.3), and interpret the rate of change and initial value (8.F.4)
Academic Vocabulary
parameters, base value, initial value, vertical shift
Resources
Curriculum Resources: http://www.uen.org/core/core.do?courseNum=5600#70276