Calculus CP Unit 2: Functions

Unit #:	APSDO-00019720	Duration:	4.0 Week(s)	Date(s):	

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Grades:
12
Subjects:
Mathematics

Unit Focus

In this unit students will be able to classify, analyze, and interpret every type of function. Students will also be able to apply the appropriate function model and its properties to any application. Summative assessments may include projects, labs and tests. Primary instructional materials include: Textbook titled Calculus with Applications 8thEdition, by Margaret L. Lial, Raymond N. Greenwell, and Nathan P. Ritchey, and the Calculus in Motion utility based on Geometer's Sketchpad.

Stage 1: Desired Results - Key Understandings

Established Goals

Common Core
Mathematics: 12

- Graph linear and quadratic functions and show intercepts, maxima, and minima. *CCSS.MATH.CONTENT.HSF.IF.C.7.A*
- Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. *CCSS.MATH.CONTENT.HSF.IF.C.7.B*
- Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. *CCSS.MATH.CONTENT.HSF.IF.C.7.C*
- For a function that models a relationship

Transfer

T1 (T50) Based on an understanding of any problem, initiate a plan, execute it and evaluate the reasonableness of the solution.
T2 (T53) Articulate how mathematical concepts relate to one another in the context of a problem or in the theoretical sense.
T3 (T51) Examine alternate methods to accurately and efficiently solve problems.
T4 (T52) Use appropriate tools strategically to deepen understanding of mathematical concepts.
T5 (T23) Use functions or equations to model relationships among quantities.

Meaning

Understandings	Essential Questions
U1 (U530) Every problem belongs to a category of problems that has a similar structure and set of characteristics; which	**Q1** (Q530) Is this problem similar to a problem I have solved before? **Q2** (Q530) Is this problem similar to a

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. *CCSS.MATH.CONTENT.HSF.IF.B.4*

- Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. *CCSS.MATH.CONTENT.HSF.IF.C.7.D*
- Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. *CCSS.MATH.CONTENT.HSF.IF.C.7.E*
- Model with mathematics. *CCSS.MATH.MP.4*
- Use appropriate tools strategically. *CCSS.MATH.MP.5*

means it can be solved using a similar model.
U2 (U531) Models can distort or reveal patterns; therefore it is essential to recognize the appropriate representation.
U3 (U206) A function can represent how quantities in the real world relate to one another.

problem I have solved before?
Q3 (Q201) How can I represent this information in symbols/equations/models?

Acquisition of Knowledge and Skill

Knowledge

Skills

S1

Evaluate quadratic, polynomial, rational, exponential, and logarithmic functions

S2

Graph quadratic, polynomial, rational, exponential, and logarithmic functions

S3

Solve quadratic, polynomial, rational, exponential, and logarithmic functions applications

Stage 3: Learning Plan

Coding	Code	Description of Learning Activity