Unit 5 - *Rational Expressions and Functions*

Overview

Students will perform operations on rational expressions: simplifying, adding, subtracting, multiplying and dividing. They will also solve rational equations. They will be able to graph rational functions by finding the vertical and horizontal asymptotes, intercepts, and testing points.

21st Century Capacities: Analyzing, Collective Intelligence

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 1 Make sense sense of problems and persevere in solving them
MP4 Model with Mathematics
MP5 Use appropriate tools strategically
MP6 Attend to precision

A.APR.6 Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.

A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Transfer:

Students will be able to independently use their learning in new situations to...

1. Model relationships among quantities.
2. Manipulate equations/expressions to create order and establish relationships.(Analyzing)
3. Draw conclusions about graphs, equations. (Analyzing)
4. Work respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective (Collective Intelligence)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Mathematicians identify relevant tools, strategies, relationships, and/or information in order to draw conclusions.
2. Mathematicians examine the impact of operations and how they relate to one another.
3. A graph can be used to get a broad understanding of a function

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

A. What math tools/models/strategies can I use to solve the problem?
B. How can I simplify this problem?
C. What does the graph tell me?

	Acquisition:	
	Students will know…	*Students will be skilled at…*
	1. The difference between a rational expression and a rational equation and simplifying, versus solving. 2. Vocabulary: asymptote	1. Finding the restrictions on the domain 2. Graphing (sketch) rational functions, including x and y intercepts and vertical and horizontal asymptotes and slant asymptotes (time permitting) 3. Manipulating rational expressions(add/subtract/multiply/divide) 4. Solving rational equations