Topic 4.1: Dividing Polynomials			
Essential Question:			
How do you calculate with functions defined as quotients of polynomials, and what are the			
key features of their graphs?			
Model and Discuss			
complete online.			
CONCEPT			
CONCE	CONCEPT Inverse Variation		
When a relation between x and y is an inverse variation, we say that x varies			
inversel	inversely as y. Inverse variation is modeled by the equation $y = \frac{k}{x}$ ,		
represe	represents the constant of variation, the number that relates the two		
variable	variables in an inverse variation.		
In this t	In this table, the constant of variation is 24.		
		Notice how as x doubles in	
x 1	2     3     4     6     8     12     24       12     8     6     4     3     2     1		
$\dots$ the value of y is halved from 24 to 12 to 6 to 3			
Concept Summary			
CONCEPT SUMMARY Inverse Variation and the Reciprocal Function			
	Inverse Variation	Transformations of the Reciprocal Function	
WORDS	An inverse variation is a relation between two variables such that as one variable increases, the other decreases proportionally.	The reciprocal function models the inverse variation, $y = \frac{1}{x}$ . Like other functions, it can be transformed.	
ALGEBRA	$y = \frac{k}{x}$ , where $k \neq 0$	$y = \frac{a}{x-h} + k$	
EXAMPLES	$y = \frac{1}{x}$ asymptotes: x = 0 y = 0	$y = \frac{1}{x - 4} - 2$ $h = 4$ $k = -2$ Parent is transformed down 2 and right 4. asymptotes: x = 4 $y = -2$	
Q: How does an inverse variation relate to the concept of reciprocal function?			

# Examples & Questions

## Examples 1

Q: What do you notice about the pattern?Q: How can you confirm that a table of values represents an inverse variation using multiplication?Q: What does it mean if the product of xy is not constant within a table?

## Examples 2

Q: How does the constant of variation k help determine the values of x and y? Q: What are two more pairs of values for x and y that would fit the relationship?

#### Examples 3

Q: What information about the inverse variation model is given that will be used to set up an equation?

Q: Using the inverse variation model, can you find the frequency for any string length?

## Examples 4

Q: What do you notice about the relationship between the x- and y-values?

Q: How does the reciprocal function relate to inverse variations?

Q: Why is the domain and range of the inverse function restricted?

# Examples 5

Q: How can you recognize and describe a translation on a coordinate plane? Q: What is a good point of reference when graphing a translation?

## Practice and Problem Solving

Complete MathXL for School: Additional Practice (online) Complete MathXL for School: Mixed Enrichment (online)

Challenge: #20, 21, 22, 25 – key will be posted in Power School Learning.

Lesson Quiz 4.1