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Module 16 Solving Rational Equations
Lesson 3 Solving Problems Using Inverse Variation

Lesson Objectives

- Determine whether a function is an inverse variation, identify the constant of variation, and write the equation.
- Solve problems using inverse variation.

An inverse variation is a function in which the product xy is a **nonzero constant**.

The nonzero constant is called the **constant of variation**, which we represent with the variable k .

For an inverse variation function $xy = k$, we say y **varies inversely** as x .

1 Does y vary inversely as x ? Explain.

x	y
4	9
-2	-18
72	0.5

Yes. The product of x and y in each row is 36.

2 Write an equation for the inverse variation.

x	y
4	9
-2	-18
72	0.5

$xy = 36$

- 3 Is this an inverse variation? Explain.

x	y
1	0
-2	0
0	2

No. The product of x and y cannot be zero for an inverse variation function.

- 4 The frequency of the vibrations of a guitar string varies inversely as the string's length. A 20-inch vibrates at a frequency of 288 cycles per second. What is the frequency of 24-inch guitar string?

240 Hz

- 5 Lizzie has enough money to buy six books priced at \$3.25 each. How many books priced at \$1.50 can she buy with the same amount of money?

13 books