

Unit 3---Lesson 4(b)-Inverse Variation

Review of Inverse Variation

Any equation that fits the form:

It is said that one variable is _____ with or is _____ to another variable.

To solve an inverse variation problem:

1. Plug given information into _____
2. Solve for _____
3. Rewrite equation using _____
4. Plug new information into equation from step 3 and solve.

EXAMPLES:

1. Find y when $x=18$ if y varies inversely as x , and $y=3$ when $x=4$
2. Find t when $s=20$ if t varies inversely as s , and $t=5$ when $s=16$.

3. If b varies inversely as the cube of a and $b=3$ when $a=2$, find b when $a=5$

4. The frequency of a vibrating guitar string varies inversely as its length. Suppose a guitar string 0.65 meters long vibrates 4.3 times per second. What frequency would a string 0.5 meters long have?

5. X varies inversely as the cube of y . x is 16 when y is 5. Find x when y is 2.

6. The time it takes you to get to campus varies inversely as your driving speed. Averaging 20 miles per hour in bad traffic, it takes you 1.5 hours to get to campus. How long would the trip take averaging 50 miles per hour?

7. The volume of gas in a container at a constant temperature varies inversely as the pressure. If the volume is 32 cubic centimeters at a pressure of 8 pounds, find the pressure when the volume is 60 cubic centimeters.

8. If r varies directly as the cube of s , and $r=5$ when $s=3$, find r when $s=2$.

Unit 3---Lesson 4(b)-CLASSWORK/HOMEWORK

1. The length of a pipe (in feet) is inversely proportional to its pitch l (in hertz.) The inverse variation is modeled by the equation $p = \frac{495}{l}$. Find the length required to produce a pitch of 220 Hz.
2. Suppose that x and y varies inversely. Write a function that models the inverse variation when $x=7$ and $y=2$.
3. Suppose x and y vary inversely. If $x=4$ when $y=2$, what is x when y is 9?
4. The volume V of gas varies inversely to the pressure P . The volume of a gas is 200 cm^3 under pressure of 32 kg/cm^2 . What will be its volume under the pressure of 40 kg/cm^2 ?
5. The time it takes to fly from Los Angeles to New York varies inversely as the speed of the plane. If the trip takes 6 hours at 900 km/h , how long would it take at 800 km/h ?
6. The time T required to do a job varies inversely as the number of people P working. It takes 5 hours for 7 volunteers to pick up rubbish from 1 mile of roadway. How long would it take 12 volunteers to complete the job?