

additional practice

NAME _____

DATE _____

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

Does y vary inversely as x ? If so, find the constant of variation and write an equation for the inverse variation.

1.

x	y
-2	-27
3	18
6	9

2.

x	y
-1	-5
1	5
2	10

3.

x	y
-6	5
2	-15
15	-2

4.

x	y
$-\frac{3}{4}$	$\frac{4}{9}$
9	$-\frac{1}{27}$
$\frac{3}{5}$	$-\frac{5}{9}$

5. The variable y varies inversely as x : y is 12 when x is 3. Find x when y is 9.

6. The variable y varies inversely as x : y is 10 when x is -3. Find y when x is 5.

7. The variable y varies inversely as x : y is 1.3 when x is -0.4. Find x when y is 0.26.

8. The variable y varies inversely as x : y is $1\frac{2}{3}$ when x is $-\frac{3}{5}$. Find y when x is $\frac{3}{7}$.

9. The time it takes to clean the house varies inversely with the number of people cleaning. If it takes 1 person 4 hours to clean the house, how long will it take 3 people?

10. The time needed to rake the leaves varies inversely as the number of people raking. If 5 people rake the leaves in 2 hours, how long will it take for 4 people?

11. A rectangle has a length of 10 cm and a width of 4 cm. A second rectangle with the same area has a length 8 cm. What is the width of the second rectangle?

12. The volume of a gas varies inversely as applied pressure. If the pressure acting on 45 m^3 of a gas is lowered from 3 atmospheres to 2 atmospheres, what new volume does the gas occupy?

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13. The frequency of a vibrating string varies inversely as its length. If a 30-inch guitar string vibrates at a frequency of 440 cycles per second, find the frequency of a 32-inch string.

15. As oxygen is heated, its density varies inversely as its volume. The density of 2.4 m^3 of oxygen at 0°C is 1.6 kg/m^3 . When the oxygen is heated, it expands to a volume of 3.6 m^3 . What is the approximate density of the heated oxygen?

17. Time varies inversely as the rate of travel. If Jennifer drove 13 hours at an average rate of 54 mi/h, how long would the trip take at a rate of 65 mi/h?

19. Mass, m , varies inversely as acceleration, a . The constant of variation is force, f . Write an equation to express this relationship.

14. The frequency of a vibrating string varies inversely as its length. If a 40 cm violin string vibrates at a frequency of 660 cycles per second, how long is a string that vibrates at 440 cycles per second?

16. The time it takes to complete a given trip varies inversely as the speed traveled. If it takes Tim 10 hours to travel from Cleveland to Albany at 42 mi/h, how long will it take him to make the trip at 60 mi/h?

18. Rita rode her bicycle to Mallory's house at a rate of 10 mi/h. She returned home at a rate of 6 mi/h. The first leg of the trip took 45 minutes. How long did the second leg of the trip take?

20. Area, a , varies inversely as pressure, p . The constant of variation is force, f . Write an equation to express this relationship.
