Name	
Date	Period

DIRECT VARIATION

Recall that direct variation is a ______ function of the form y = _____, where k is the nonzero constant of variation.

For each function, determine whether y varies directly with x. If so, find the constant of variation and write the equation.

1.

x	-1	1	3
у	-3	3	9

2.	r	1	2	2
	\mathcal{X}	1	2	3
	У	1	4	9

3.

x	-2	2	5
у	-1	1	2.5

In each exercise, *y* varies directly with *x*. Find the missing value.

- 4. If y = 3 when x = 2, find x when y = 5.
- 5. If y = -4 when $x = \frac{1}{2}$, find y when $x = \frac{2}{3}$.
- 6. If y = -14 when x = -7, find *x* when y = 22.

INVERSE VARIATION

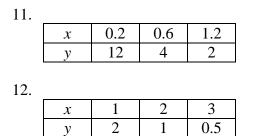
• A function of the form $y = _$ or xy = k, where $k \neq 0$.

Suppose that x and y vary inversely. Write a function that models each inverse variation. 7. (3, -5) 8. (0.3, 1.4) 9. (7, 4)

Is the relationship between the variables in each table a direct variation, an inverse variation, or neither? Write functions to model the direct and inverse variations.

10.

x	0.5	2	6
у	1.5	6	18



COMBINED VARIATION

• Combines direct and inverse variations in more complicated relationships

Examples of Combined Variations				
Combined Variation	Equations Form			
<i>y</i> varies directly with the square of <i>x</i>				
<i>y</i> varies inversely with the cube of <i>x</i>				
z varies jointly with x and y				
z varies jointly with x and y and inversely with w				
z varies directly with x and inversely with the				
product of w and y				

Write the function that models each relationship. Find *z* when x = 4 and y = 9.

13. *z* varies directly with *x* and inversely with *y*. When x = 6 and y = 2, z = 15.

14. *z* varies jointly with *x* and *y*. When x = 2 and y = 3, z = 60.

15. *z* varies directly with the square of *x* and inversely with *y*. When x = 2 and y = 4, z = 3.

16. *z* varies inversely with the product of *x* and *y*. When x = 2 and y = 4, z = 0.5.