Study Guide

Writing Equations From Patterns

You can find equations from relations. Suppose you purchased a number of packages of blank cassette tapes. If each package contained three tapes, you could make a chart to show the relationship between the number of packages of blank cassette tapes and the number of tapes purchased. Use x for the number of packages and y for the number of tapes.

x	1	2	3	4	5	6
y	3	6	9	12	15	18

This relationship can also be shown as an equation. Since y is always three times x, the equation is $y = 3x$. Another way to discover this relationship is to study the difference between successive values of x and y.

+1 ⌢ +1 ⌢ +1 ⌢ +1 ⌢ +1 ⌢ +1

x	1	2	3	4	5	6
y	3	6	9	12	15	18

+3 ⌣ +3 ⌣ +3 ⌣ +3 ⌣ +3 ⌣ +3

This suggests the relation $y = 3x$.

Write an equation for each relation. Then complete each chart.

1.

x	−1	0	1	2	3	4
y	−2	2	6			

2.

x	−2	−1	0	1	2	3
y	10	7	4			

3.

x	−4	−3	−2	−1	0	1
y	$\frac{5}{2}$	$\frac{9}{4}$	2			

4.

x	0	1	2	3	4	5
y	3	$\frac{12}{5}$	$\frac{9}{5}$			

5. $\left\{ (-10, -5), (-4, -2), (0, 0), (2, 1), \left(5, \frac{5}{2}\right) \right\}$

6. $\{ (-3, -10), (-1, -4), (0, -1), (2, 5), (4, 11) \}$