

Patterns and Equations

Write a rule and an equation for the pattern in the table.

x	1	4	7	8	9
y	3	12	21	24	27

Think: How can I get to the value of y if I start at the value of x ?

Think: 3 is 1×3 12 is 4×3

State a theory: It seems that $3 \times x$ is equal to y .

Test the other pairs: $7 \times 3 = 21$ ✓ $8 \times 3 = 24$ ✓ $9 \times 3 = 27$ ✓

Write a rule: The value of y is the value of x times 3.

Write an equation: $y = x \times 3$, or $y = 3x$

Write a rule and an equation for the pattern in each table.

1.

x	3	6	11	13	15
y	5	8	13	15	17

2.

x	2	5	6	8	9
y	6	15	18	24	27

3.

x	4	12	20	36	40
y	1	3	5	9	10

4.

x	5	7	9	10	12
y	0	2	4	5	7

5. **Write a Problem** Complete the table to show a pattern. Then write a rule and an equation for the pattern.

x					
y					

6. **Writing to Explain** Explain how you would find the pattern in this table, and how you would write a rule and an equation for the pattern.

x	4	5	7	10	12
y	0	1	3	6	8

Name _____

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Write a rule and an equation to fit the pattern in each table in 1 through 6.

1.

x	0	1	2	3	4
y	5	6	7	8	9

2.

x	12	18	21	24	36
y	4	6	7	8	12

3.

x	11	14	18	21	25
y	3	6	10	13	17

4.

x	0	1	2	4	6
y	0	4	8	16	24

5.

x	3	9	13	22	27
y	10	16	20	29	34

6.

x	0	1	2	3	4
y	0	3	6	9	12

7. The Gadget Factory sells winkydiddles in different quantities, as shown by the table. How much would ten winkydiddles cost?

Number of Winkydiddles	7	12	26	31
Cost	\$24.50	\$42.00	\$91.00	\$108.50

8. Which equation best describes the pattern in the table?

x	4	9	12	16	19
y	2	4.5	6	8	9.5

A $y = 2x$

B $y = x - 1$

C $y = \frac{x}{2}$

D $y = x + 1$

9. **Writing to Explain** All the values of x in a table are greater than the corresponding values of y . If x is a positive integer, what operation(s) and circumstance(s) could explain this pattern?
