

Comparing Linear, Exponential, and Quadratic Equations/Expressions

- Based on the difference in x-value & y-values, identify the table as linear, exponential, quadratic, or neither.
- If you identify the table as linear or exponential, write an equation.

1.

x	-3	-2	-1	0	1	2	3
y	14	10	6	2	-2	-6	-10

\checkmark \checkmark
 -4 -4
 $y = -4x + 2$ Linear

2.

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{2}$	1	2	4	8	16	32

\checkmark \checkmark
 $\times 2$ $\times 2$
 $y = 4(2)^x$ Exponential

3.

x	-3	-2	-1	0	1	2	3
y	21	12	5	0	-3	-4	-3

\checkmark \checkmark \checkmark
 -9 -7 -5
 \checkmark \checkmark
 $+2$ $+2$
 $Quadratic$

4.

x	-3	-2	-1	0	1	2	3
y	-16	-13	-10	-7	-4	-1	2

\checkmark \checkmark
 $+3$ $+3$
 $y = 3x - 7$ Linear

5.

x	-3	-2	-1	0	1	2	3
y	-14	-9	-4	1	6	11	16

\checkmark \checkmark
 $+5$ $+5$
 $y = 5x + 1$ Linear

6.

x	-3	-2	-1	0	1	2	3
y	-18	-6	-2	0	2	6	18

\checkmark \checkmark \checkmark \checkmark \checkmark \checkmark
 $+12$ $+4$ $+2$ $+2$ $+4$ $+12$
 \checkmark \checkmark \checkmark \checkmark \checkmark
 -8 -2 $+0$ $+2$ $+8$
 $neither$

7.

x	-3	-2	-1	0	1	2	3
y	4	8	16	32	64	128	256

\checkmark \checkmark \checkmark
 $\times 2$ $\times 2$ $\times 2$
 $y = 32(2)^x$ Exponential

8.

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{27}$	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9	27

\checkmark \checkmark \checkmark
 $\times 3$ $\times 3$ $\times 3$
 $y = 1(3)^x$ Exponential

9.

x	-3	-2	-1	0	1	2	3
y	30	20	12	6	2	0	0

$$\begin{array}{cccc} \checkmark & \checkmark & \checkmark & \checkmark \\ -10 & -8 & -6 & -4 \\ \checkmark & \checkmark & \checkmark & \\ +2 & +2 & +2 & \end{array}$$

Quadratic

10.

x	-3	-2	-1	0	1	2	3
y	11	9	7	5	3	1	-1

$$\begin{array}{ccc} \checkmark & \checkmark & \checkmark \\ -2 & -2 & -2 \end{array}$$

$y = -2x + 5$ Linear

11.

x	-3	-2	-1	0	1	2	3
y	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9	27	81

$$\begin{array}{ccc} \checkmark & \checkmark & \checkmark \\ \times 3 & \times 3 & \times 3 \end{array}$$

$y = 3(3)^x$ Exponential

12.

x	-3	-2	-1	0	1	2	3
y	-27	-9	-3	0	3	9	27

neither

13.

x	-3	-2	-1	0	1	2	3
y	0	5	8	9	8	5	0

$$\begin{array}{ccccccc} \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark \\ +5 & +3 & +1 & -1 & -3 & -5 & \\ \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & & \\ -2 & -2 & -2 & -2 & -2 & & \end{array}$$

Quadratic

14.

x	-3	-2	-1	0	1	2	3
y	3	0	-1	0	3	8	15

$$\begin{array}{ccccccc} \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark \\ -3 & -1 & +1 & +3 & +5 & +7 & \\ \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & & \\ +2 & +2 & +2 & +2 & +2 & & \end{array}$$

Quadratic

15.

x	-3	-2	-1	0	1	2	3
y	1	0	-1	-2	-1	0	1

$$\begin{array}{ccccccc} \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark & \checkmark \\ -1 & -1 & -1 & +1 & +1 & +1 & \end{array}$$

Neither

16.

x	-3	-2	-1	0	1	2	3
y	$\frac{9}{8}$	$\frac{9}{4}$	$\frac{9}{2}$	9	18	36	72

$$\begin{array}{cccc} \checkmark & \checkmark & \checkmark & \checkmark \\ \times 2 & \times 2 & \times 2 & \times 2 \end{array}$$

$y = 9(2)^x$ Exponential