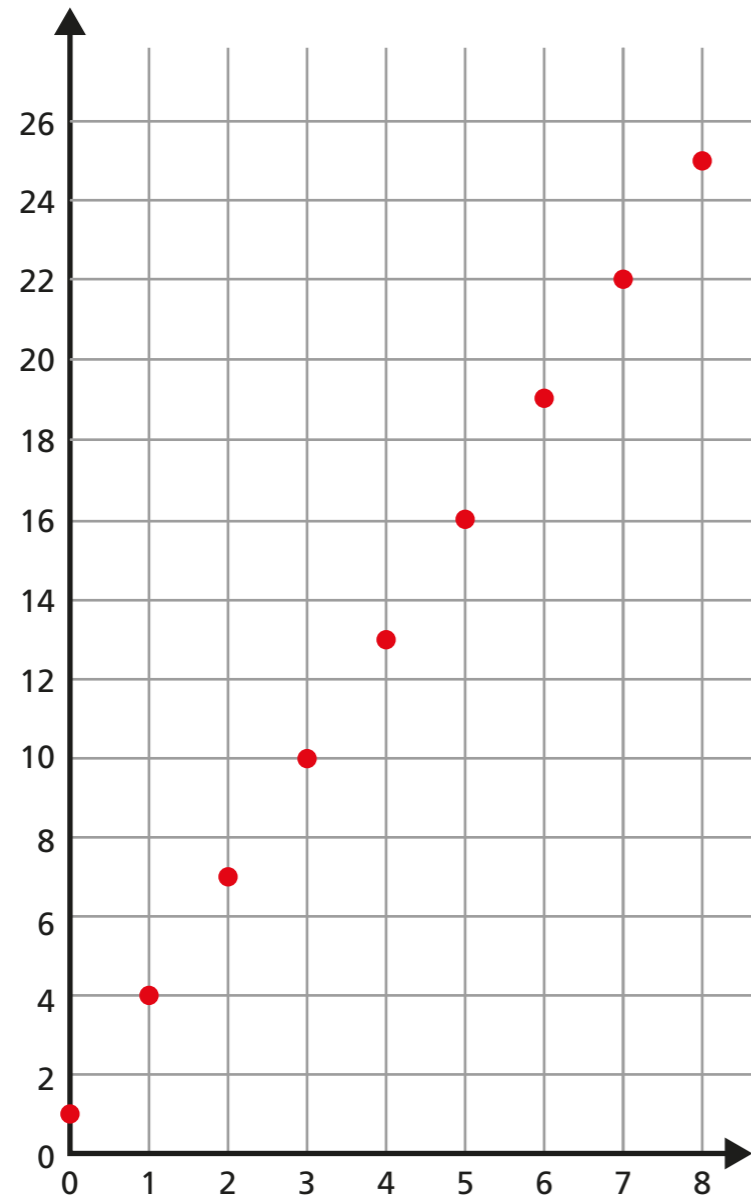


# Represent functions graphically

1 Here is a graph for the sequence  $3n + 1$



a) Use a graphing program to plot the line  $y = 3x + 1$

b) What is the same about the graphs?

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c) What is different about the graphs?

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2 Use a graphing program to plot each of the following pairs.

a)  $y = 4x$     $y = 3x - 1$

What do you notice about the lines?

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b)  $y = -4x$     $y = 6 - 5x$

What do you notice about the lines?

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c)  $y = 3$     $y = -5$

What do you notice about the lines?

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3 Use a graphing program to plot these lines.

a)  $y = \frac{x}{2} + 3$

c)  $y = \frac{x+3}{2}$

b)  $y = 0.5x + 3$

d)  $y = x^2 + 3$

What are the similarities and differences?

Explain how this links to linear and non-linear sequences.

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4 Compare the graphs of  $y = x^3$  and  $y = 3x$ .

a) What are the similarities and differences?

b) Which graph is linear? \_\_\_\_\_

c) Which graph is non-linear? \_\_\_\_\_

5 Plot the graphs to compare the equations.

$y = 2x$

$y = x^2$

$y = x^2 + 2$

$y = x^2 - 2$

$y = 2x^2$

$y = 2^x$

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

Tick the equations that show linear graphs.



6 How can you tell from an equation whether a graph is going to be linear?

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7 Tick the equations that will produce a linear graph.

a)  $y = 2x - 5$

h)  $y = \frac{x}{2} + 5$

b)  $y = 5 - 2x$

i)  $y = \frac{1}{2}x + 5$

c)  $y = 2(x - 5)$

j)  $y = 5 - \frac{1}{2}x$

d)  $y = x^2 + 5$

k)  $y = 2x$

e)  $y = 2x^2 + 5$

l)  $y = \frac{x}{2}$

f)  $y = 0.2x - 5$

m)  $y = \frac{2}{x}$

g)  $y = -5 - 0.2x$

n)  $y = 2$

Check your answers with a graphing program.