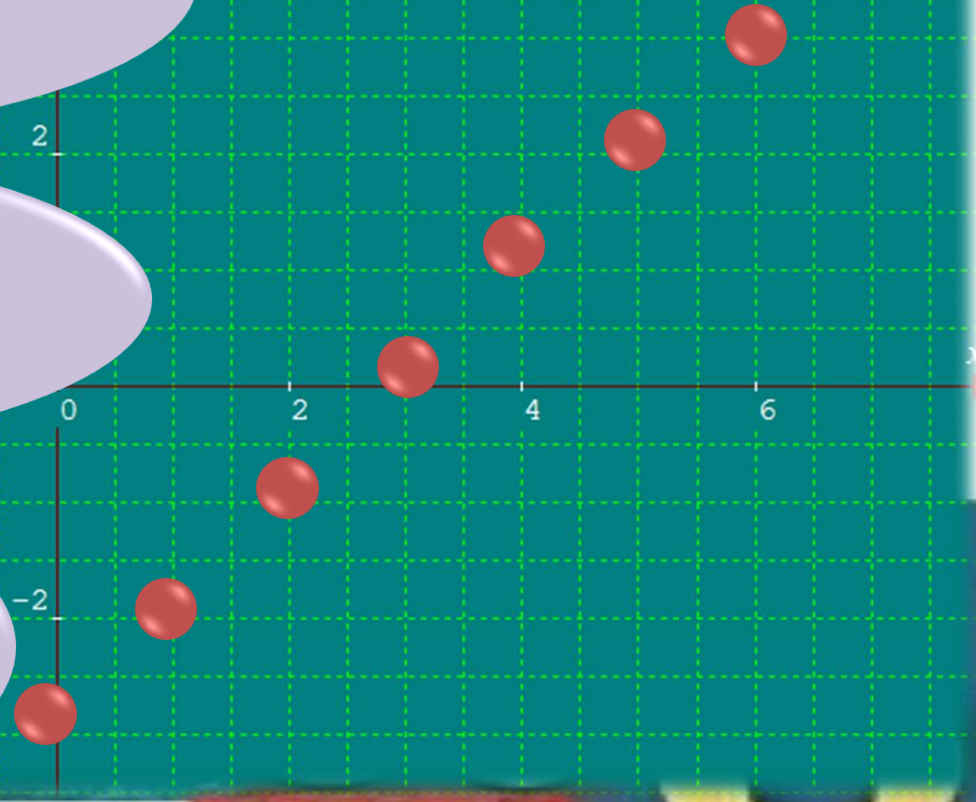


Linear Relations

Relations that
have

Straight Line
Graphs

Are called
Linear
Relations



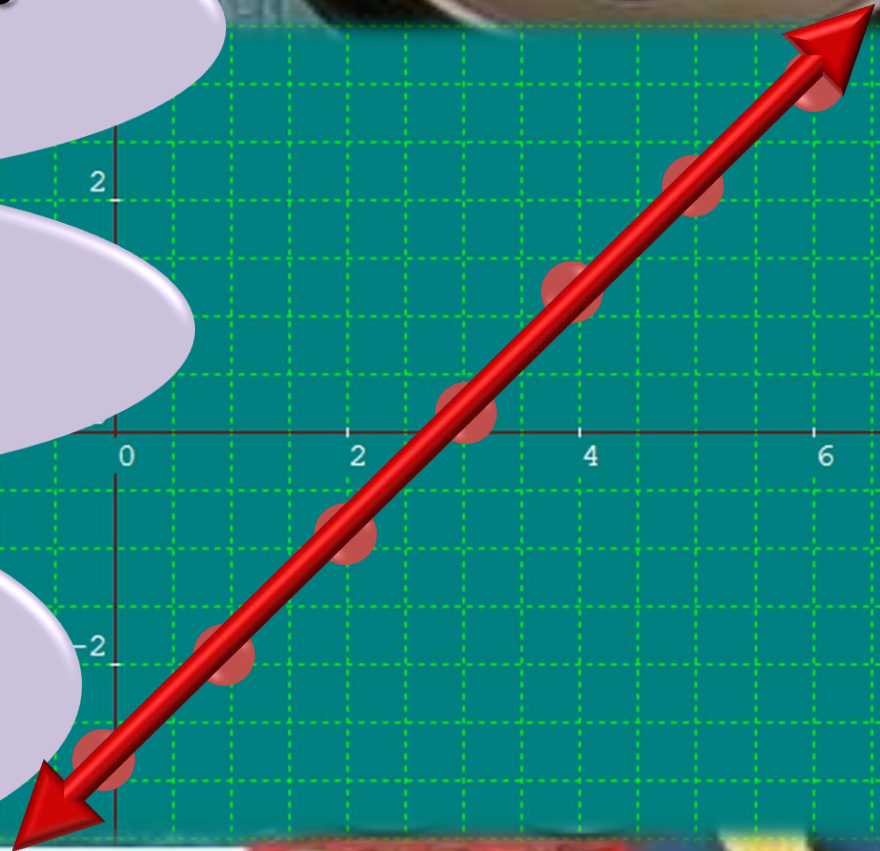
Nº 7

Nonlinear Relations

**Relations that
have**

**Straight Line
Graphs**

**Are called
Linear
Relations**



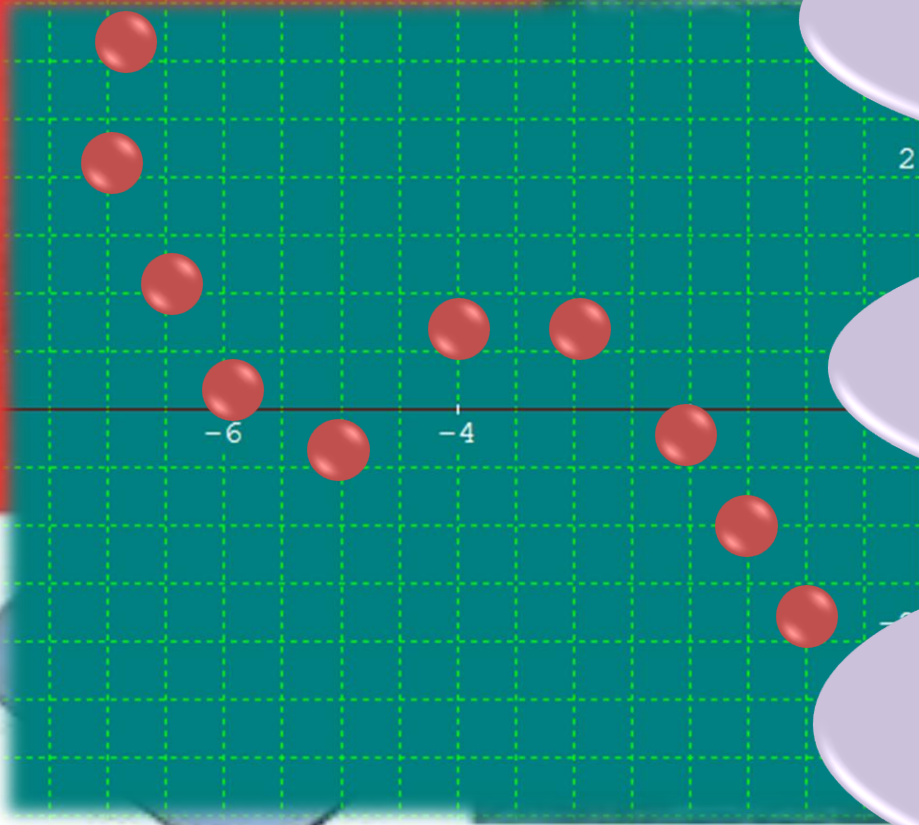
Nº 7

Nonlinear Relations

**Relations that
are**

**Not
Linear**

**Are called
Nonlinear
Relations**



Linear Functions

$$4x \oplus 3y = -12$$

$$x \ominus 6y = 4$$

Have only
Addition and
Subtraction

Linear Functions

$$4x + 3y = -12$$

$$x - 6y = 4$$

Have only
Multiplication
of a variable by
a constant

$$4x + 3y^{\textcircled{2}} = -12$$

No variable should
appear with an
exponent other than 1

$$y = \sqrt{x} + 6$$

Remember
Radicals are rational
exponent

$$3x - 2(xy) = 1$$

Variables may not be multiplied together

$$y = \frac{4}{x} + 6$$

**Variables may not
appear in a
denominator**

Standard Form of Linear Equations

$$Ax + By = C$$

A, B, and C must be integers


$$Ax + By = C$$

A

B

C

a

b

c

Greatest Common Factor One

$$Ax + By = C$$

A

B

C

a

b

c


$$Ax + By = C$$


$$A \geq 0$$



$Ax + By = C$

The image shows a wooden sign with the equation $Ax + By = C$ written in white. Two pink arrows point from the bottom towards the variables A and B in the equation.

**A and B are not
both zero**

Not in the form $Ax + By = C$

A is not an integers

$$-\frac{4}{5}x = 8y + 2$$

$$A < 0$$

GCF is not one

$$\frac{4}{5}x = 8y + 2$$

$$-8y$$

$$-8y$$

Subtract 8y from each side

$$-5\left(-\frac{4}{5}x - 8y = 2\right)$$

Multiply each side by -5

$$\frac{4x}{2} + \frac{40y}{2} = -\frac{10}{2}$$

Divide all terms by 2

$$2x + 20y = -5$$

$$A = 2, B = 20, C = -5$$

$$2x + 20y = -5$$

$$A = 2, B = 20, C = -5$$

$$2x + 20y = -5$$

$$A = 2, B = 20, C = -5$$

Graph the Line Using Intercepts

$$\text{Graph : } -2x + 7y = 14$$

1

Find: x -intercept

Substitute $y = 0$

$$-2x + 7(0) = 14$$

$$-2x = 14$$

$$x = -7$$

$$\text{Graph : } -2x + 7y = 14$$

2

Find: y -intercept

Substitute $x = 0$

$$-2(0) + 7y = 14$$

$$7y = 14$$

$$y = 2$$

x -intercept $(-7, 0)$

y -intercept $(0, 2)$

