ST. JEAN DE BREBEUF MATHEMATICS

CHAPTER 6.1

EXPLORE NON-LINEAR RELATIONS

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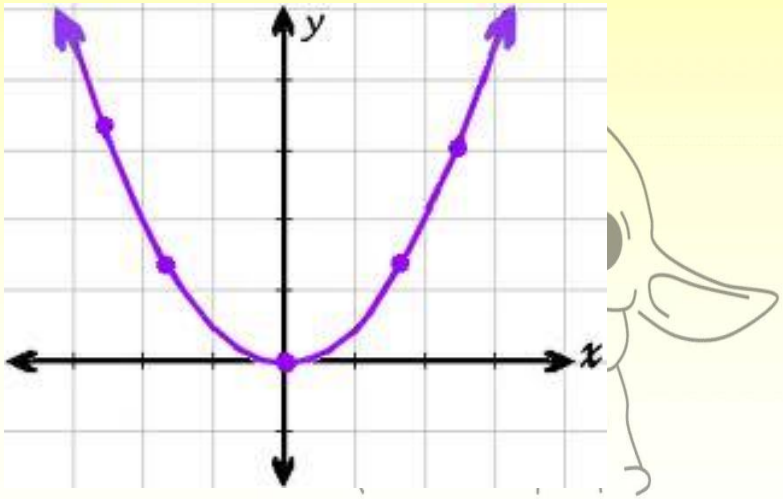
KEY CONCEPTS

A **quadratic relation** is one type of *non-linear* relation.
→an equation that describes a parabola
→an equation of the form $y = ax^2 + bx + c$, where $a \neq 0$

The graph of a quadratic relation is called a **parabola**, which is a *symmetrical* U-shaped graph



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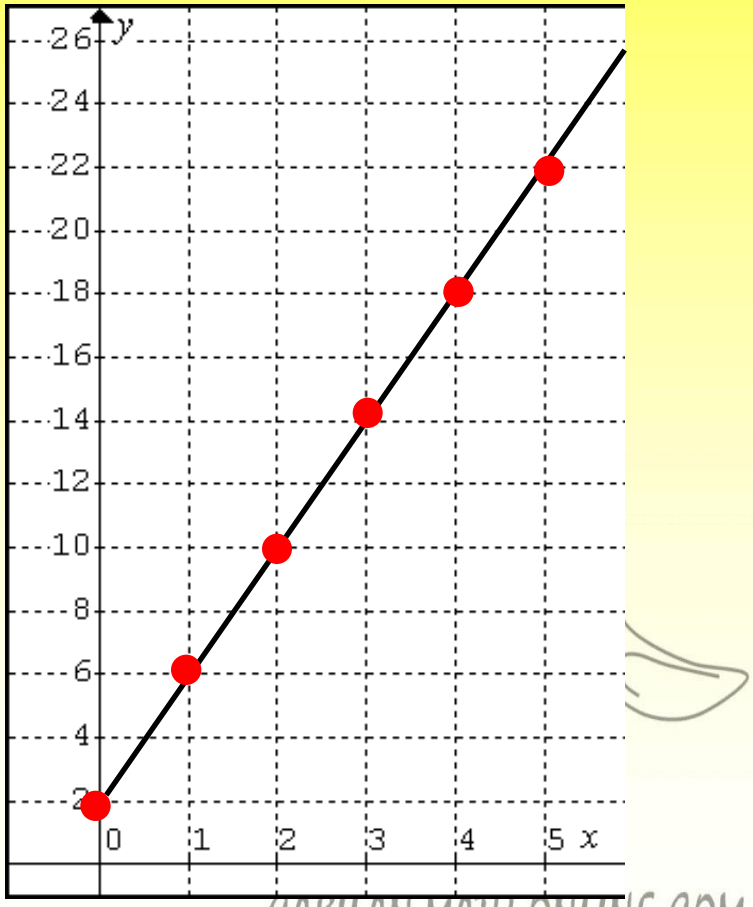
EXAMPLE 1 *Drawing a Line or Curve of Best Fit*

Graph the data in each table. Draw a **line** or **curve** of best fit. Explain your reason

(a)

x	y
0	2
1	6
2	10
3	14
4	18
5	22

(0, 2)
(1, 6)
(2,10)
(3,14)
(4,18)
(5,22)



Explanation:

A line can easily be drawn through all the points.

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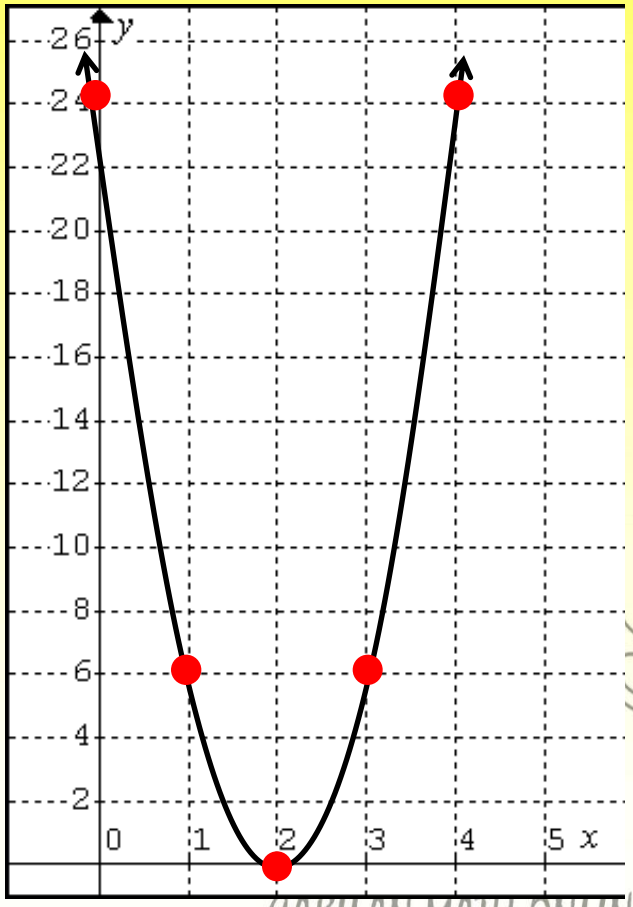
EXAMPLE 1 *Drawing a Line or Curve of Best Fit*

Graph the data in each table. Draw a **line** or **curve** of best fit. Explain your reason

(b)

x	y
0	24
1	6
2	0
3	6
4	24

(0, 24)
(1, 6)
(2, 0)
(3, 6)
(4,24)



Explanation:

→A line cannot be drawn through the points
→A smooth curve going up can be drawn through the points

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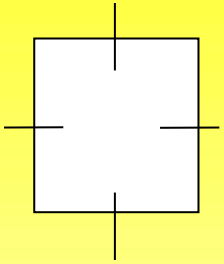
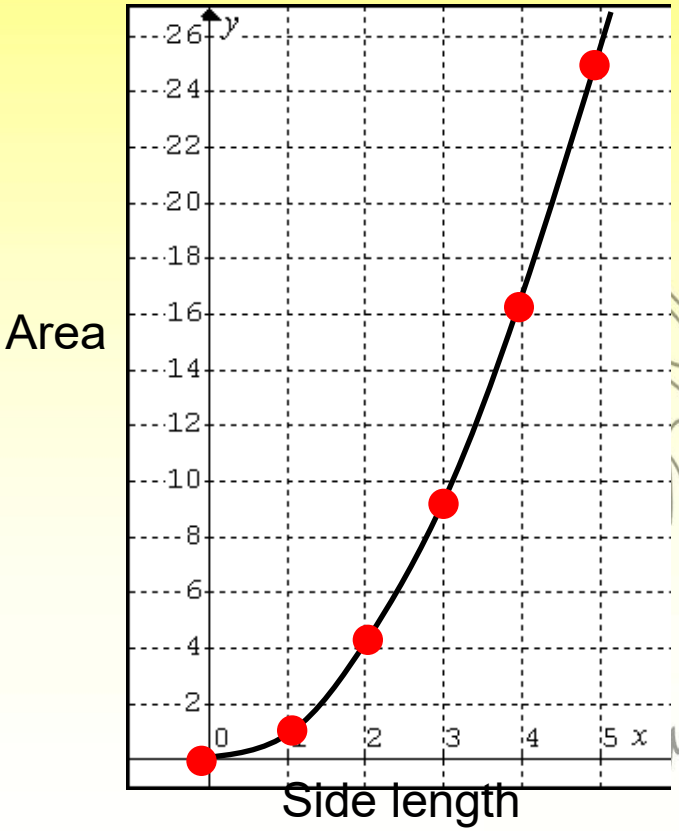
EXAMPLE 2 *Area of a Square*



The formula for the area of a square is $\mathbf{A = s^2}$, where *s* represents the side length of a square.

Complete the table below and draw a smooth curve through all the points.

Side length (cm)	$A = s^2$ (in cm^2)	
0	$(0)^2 = \mathbf{0}$	(0, 0)
1	$(1)^2 = \mathbf{1}$	(1, 1)
2	$(2)^2 = \mathbf{4}$	(2, 4)
3	$(3)^2 = \mathbf{9}$	(3, 9)
4	$(4)^2 = \mathbf{16}$	(4, 16)
5	$(5)^2 = \mathbf{25}$	(5, 25)



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