

## Section 5.6 - Properties of Linear Relations

A **Linear Relation** occurs when there is a constant change in the independent and dependent variable

### **How to tell if a Relation is Linear:**

#### **Table of Values or Ordered Pairs:**

A table of values or ordered pairs represents a linear relation if there is a constant change in the independent and dependent variables. It has to be constant in BOTH!!

#### **Graphs:**

A graph represents a linear relation if it forms a straight line.

Table of values:  
Determine if the following tables of values represents a linear relation.

The relation between temperature in degrees Celsius,  $C$ , and temperature in degrees Fahrenheit,  $F$

$C$	$F$
0	32
5	41
10	50
15	59
20	68

b) The relation between the current,  $I$  amps, and power,  $P$  watts, in an electrical circuit

$I$	$P$
0	0
5	75
10	300
15	675
20	1200

The relation between the amount of goods and services tax charged,  $T$  dollars, and the amount of the purchase,  $A$  dollars

$A$	$T$
60	3
120	6
180	9
240	12
300	15

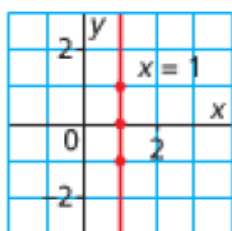
The relation between the number of bacteria in a culture,  $n$ , and time,  $t$  minutes.

$t$	$n$
0	1
20	2
40	4
60	8
80	16
100	32

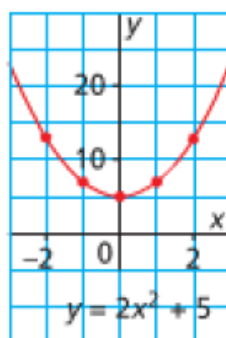
Graphs:

Are the following graphs linear relations

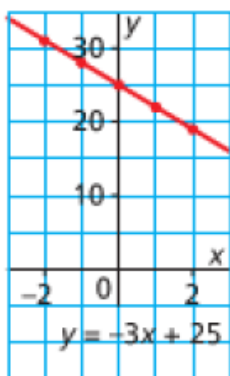
$$x = 1$$



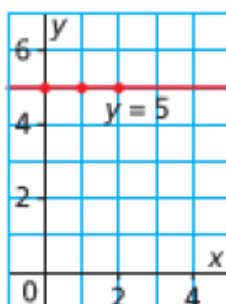
$$y = 2x^2 + 5$$



$$y = -3x + 25$$



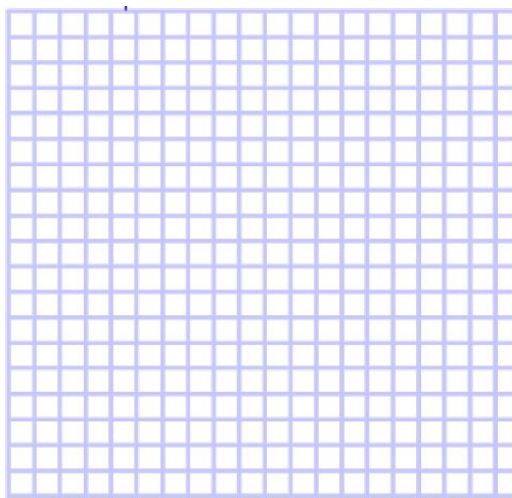
$$y = 5$$



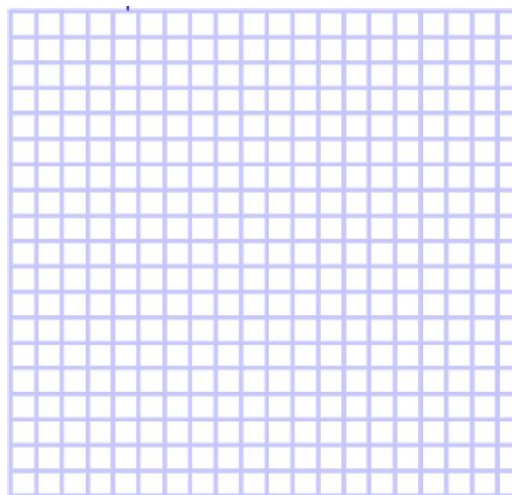
**Ordered Pairs:**

Determine if the following ordered pairs are linear relations. Then graph them.

$(2, 4), (3, 6), (4, 8), (5, 10), (6, 12), (7, 14)$



$(-3, 7), (0, 10), (3, 13), (6, -5), (9, 16), (12, 19)$



a) Graph each equation.

i)  $y = -3x + 25$

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

iii)  $y = 5$

iv)  $x = 1$

b) Which equations in part a represent linear relations?  
How do you know?

Homework:  
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