

## Exercício 01

	$x_i$	$y_i$	$x_i \times y_i$	$x_i^2$
$n = 6$	2	13	26	4
	7	21	147	49
	9	23	207	81
	1	14	14	1
	5	15	75	25
	12	21	252	144
$\Sigma$	36	107	721	304

$$\bar{x} = \frac{\sum x_i}{n} = \frac{36}{6} = 6$$

$$\bar{y} = \frac{\sum y_i}{n} = \frac{107}{6} = 17,8333$$

$$a = \frac{n \times \sum x_i \times y_i - (\sum x_i \times \sum y_i)}{n \times \sum x_i^2 - (\sum x_i)^2} = \frac{6 \times 721 - 36 \times 107}{6 \times 304 - (36)^2} = \frac{474}{528} \Rightarrow a = 0,8977$$

$$b = \bar{y} - a \times \bar{x} = 17,8333 - 0,8977 \times 6 \Rightarrow b = 12,447$$

**a)**  $y^{\wedge} = ax + b \Rightarrow \boxed{y^{\wedge} = 0,90x + 12,45}$

**b)**  $y^{\wedge} = 0,90 \times 8 + 12,45 = 19,65 \cong 20 \text{ carros}$

## Exercício 02

	$x_i$	$y_i$	$x_i \times y_i$	$x_i^2$
$n = 7$	0	2,2	0	0
	2	1,8	3,6	4
	4	1,5	6	16
	6	1,4	8,4	36
	8	1,1	8,8	64
	10	1,1	11	100
	12	0,9	10,8	144
$\Sigma$	42	10	48,6	364

$$\bar{x} = \frac{\sum x_i}{n} = \frac{42}{7} = 6$$

$$\bar{y} = \frac{\sum y_i}{n} = \frac{10}{7} = 1,4286$$

$$a = \frac{n \times \sum x_i \times y_i - (\sum x_i \times \sum y_i)}{n \times \sum x_i^2 - (\sum x_i)^2} = \frac{7 \times 48,6 - 42 \times 10}{7 \times 364 - (42)^2} = \frac{-79,8}{784} \Rightarrow a = -0,1018$$

$$b = \bar{y} - a \times \bar{x} = 1,4286 - (-0,1018 \times 6) \Rightarrow b = 2,039$$

$$y^{\wedge} = ax + b \Rightarrow \boxed{y^{\wedge} = -0,1x + 2,04}$$

$$y^{\wedge} = -0,10 \times 5 + 2,04 = 1,54 \quad \boxed{\cong 2 \text{ PPM}} \quad (\text{Resíduo de cloro})$$

### Exercício 03

	$x_i$	$y_i$	$x_i \times y_i$	$x_i^2$	$y_i^2$
$n = 5$	6,4	14,3	91,52	40,96	204,49
	9,9	15,7	155,43	98,01	246,49
	15,1	17,9	270,29	228,01	320,41
	27,7	19,1	529,07	767,29	364,81
	34,8	22,3	776,04	1211,04	497,29
	Σ	93,9	1.822,35	2.345,31	1.633,49

#### Questão “a”

$$r = \frac{n \times \sum x_i \times y_i - (\sum x_i \times \sum y_i)}{\sqrt{[n \times \sum x_i^2 - (\sum x_i)^2] \times [n \times \sum y_i^2 - (\sum y_i)^2]}}$$

$$r = \frac{5 \times 1.822,35 - 93,9 \times 89,3}{\sqrt{[5 \times 2.345,31 - (93,9)^2] \times [5 \times 1.633,49 - (89,3)^2]}}$$

$$r = \frac{726,48}{\sqrt{561.386,25}} = \frac{726,48}{749,26} \Rightarrow \boxed{r = 0,97}$$

#### Questão “b”

$$\bar{x} = \frac{\sum x_i}{n} = \frac{93,9}{5} = 18,78$$

$$\bar{y} = \frac{\sum y_i}{n} = \frac{89,3}{5} = 17,86$$

$$a = \frac{n \times \sum x_i \times y_i - (\sum x_i \times \sum y_i)}{n \times \sum x_i^2 - (\sum x_i)^2} = \frac{5 \times 1.822,35 - 93,9 \times 89,3}{5 \times 2.345,31 - (93,9)^2} = \frac{726,48}{2.909,34} \Rightarrow a = 0,2497$$

$$b = \bar{y} - a \times \bar{x} = 17,86 - 0,2497 \times 18,78 \Rightarrow b = 13,171$$

$$b) y^{\wedge} = ax + b \Rightarrow \boxed{y^{\wedge} = 0,25x + 13,17}$$

## Exercício 04

	$x_i$	$y_i$	$x_i \times y_i$	$x_i^2$
$n = 9$	3	39	117	9
	5	35	175	25
	8	29	232	64
	11	23	253	121
	12	21	252	144
	13	19	247	169
	15	15	225	225
	18	9	162	324
	21	3	63	441
$\Sigma$	106	193	1.726,00	1.522,00

### Questão “b”

$$\bar{x} = \frac{\sum x_i}{n} = \frac{106}{9} = 11,7778$$

$$\bar{y} = \frac{\sum y_i}{n} = \frac{193}{9} = 21,4444$$

$$a = \frac{n \times \sum x_i \times y_i - (\sum x_i \times \sum y_i)}{n \times \sum x_i^2 - (\sum x_i)^2} = \frac{9 \times 1.726 - 106 \times 193}{9 \times 1.522 - (106)^2} = \frac{-4.924}{2.462} \Rightarrow a = -2$$

$$b = \bar{y} - a \times \bar{x} = 21,4444 - (-2) \times 11,7778 \Rightarrow b = 45$$

$$y^{\wedge} = ax + b \Rightarrow \boxed{y^{\wedge} = -2x + 45}$$

### Questão “a” e “c”

