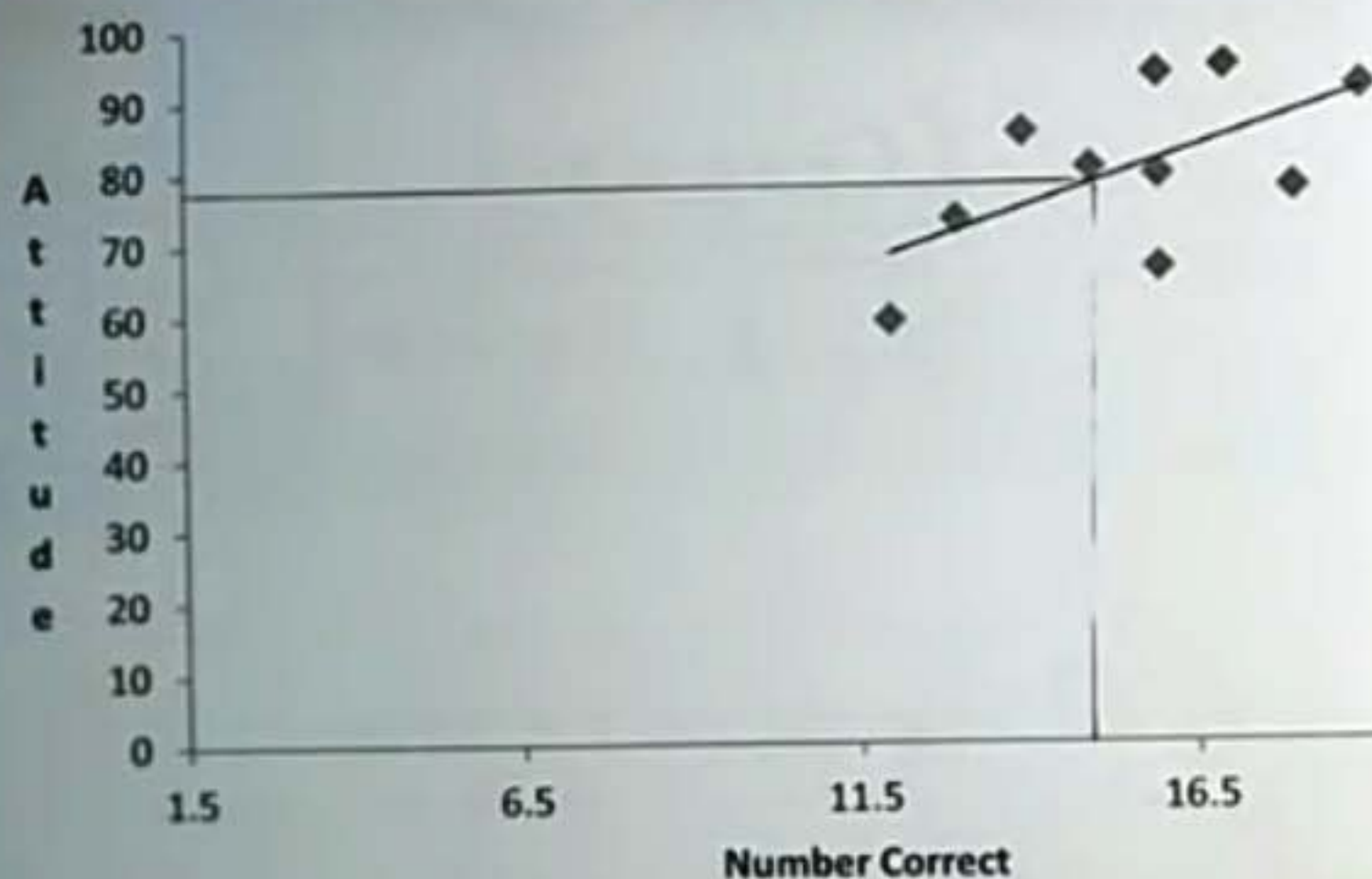


DATA SOURCE (SACKIN, 2014)

# CORRECT (x)	ATTITUDE (y)
17	94
13	73
12	59
15	80
16	93
14	85
16	66
16	79
18	77
19	91

Simple Linear Regression



Linear Regression Function

$$y = a + bx$$

Slope (b) of Regression Line

$$b = r \frac{S_y}{S_x}$$

Y-Intercept (a) of Regression Line

$$a = \bar{y} - b\bar{x}$$

DATA SOURCE (SACKIND, 2014)

# CORRECT (x)	ATTITUDE (y)	$(x - \bar{x})$	$(y - \bar{y})$	$(x - \bar{x}) \times (y - \bar{y})$	$(x - \bar{x})^2$	$(y - \bar{y})^2$
17	94	1.4	14.3	20.02	1.96	204.49
13	73	-2.6	-6.7	17.42	6.76	44.89
12	59	-3.6	-20.7	74.52	12.96	428.49
15	80	-0.6	0.3	-0.18	0.36	0.09
16	93	0.4	13.3	5.32	0.16	176.89
14	85	-1.6	5.3	-8.48	2.56	28.09
16	66	0.4	-13.7	-5.48	0.16	187.69
16	79	0.4	-0.7	-0.28	0.16	0.49
18	77	2.4	-2.7	-6.48	5.76	7.29
19	91	3.4	11.3	38.42	11.56	127.69

$$\bar{x} = 15.6$$

$$\bar{y} = 79.7$$

$$\Sigma = 134.8$$

$$\Sigma = 42.4$$

$$\Sigma = 1206.1$$

PEARSON CORRELATION COEFFICIENT (r)

$$S_y = \sqrt{\frac{\Sigma (y - \bar{y})^2}{n - 1}}$$

$$r = \frac{\Sigma ((x - \bar{x})(y - \bar{y}))}{\sqrt{\Sigma (x - \bar{x})^2 \Sigma (y - \bar{y})^2}}$$

$$= \sqrt{\frac{1206.1}{9}}$$

$$= 11.576$$

$$r = \frac{134.8}{\sqrt{42.4 \times 1206.1}}$$

$$= 0.596$$

$$S_x = \sqrt{\frac{\Sigma (x - \bar{x})^2}{n - 1}}$$

$$= \sqrt{\frac{42.4}{9}}$$

$$= 2.171$$

$$b = r \frac{S_y}{S_x} = 0.596 \times \frac{11.576}{2.171}$$

$$= 0.596 \times 5.332$$

$$= 3.178$$

$$a = \bar{y} - b \bar{x}$$

$$= 79.7 - 3.178 \times 15.6$$

$$= 79.7 - 49.577$$

$$= 30.123$$

$$x = 15$$

$$y = a + b x$$

$$= 30.123 + 3.178 x$$

$$y = 30.123 + (3.178 \times 15) = 77.803$$