

## HOMEWORK: CORRELATION

(Problem 1) The data below shows the reading and math scores of 12 students. Calculate the correlation coefficient.

Reading Scores	Math Scores
1	4
1	7
2	3
3	8
3	5
4	7
5	9
6	4
6	8
7	10
8	10
8	9

$$\sum X = 54; \sum Y = 84; \sum XY = 423; \sum X^2 = 314; \sum Y^2 = 654$$

(Problem2)

The data below shows the hourly earnings (tips included) of 10 employees at a bar and their attractiveness scores (0 = not at all attractive ... 10= extremely attractive). Is there a correlation between attractiveness and hourly earnings.

Attractiveness Score	Hourly Earnings
0	\$20
1	24
2	25
3	26
4	20
5	30
6	32
7	38
8	34
9	40

$$\sum X = 45; \sum Y = 289; \sum XY = 1472; \sum X^2 = 285; \sum Y^2 = 8801$$

(Problem 3)

The data below shows the score on a promotion test given to police officers and the number of hours studied. Calculate the correlation coefficient.

Hours Studied	Score on promotion test
0	0
1	0
2	1
3	4
4	5
6	6
8	8
16	8

$$\sum X = 40; \sum Y = 32; \sum XY = 262; \sum X^2 = 386; \sum Y^2 = 206$$

(Problem 4)

The data below shows the height of students and the overall high school average. What is the correlation coefficient?

Height in Inches	High School Average
73	100
79	95
62	90
69	80
74	70
77	65
81	60
63	40
68	30
74	20

$$\sum X = 720; \sum Y = 650; \sum XY = 46,990; \sum X^2 = 52,210; \sum Y^2 = 49,150$$

(Problem 5)

The data below shows the number of pounds overweight and hourly wage of 10 employees working as secretaries in a law firm. Calculate the correlation coefficient.

Pounds Overweight	Hourly Wage
50	\$12
30	14
20	15
20	13
18	15
13	14
10	20
4	19
0	22
0	25

$$\sum X = 165; \quad \sum Y = 169; \quad \sum XY = 2308; \quad \sum X^2 = 4809; \quad \sum Y^2 = 3025$$