

| X | Y | $X \cdot Y$ | $X \cdot X$ | $Y \cdot Y$ |
|-----|-----|-------------|-------------|-------------|
| 1 | 3 | 3 | 1 | 9 |
| 2 | 7 | 14 | 4 | 49 |
| 3 | 10 | 30 | 9 | 100 |
| 4 | 12 | 48 | 16 | 144 |
| 5 | 14 | 70 | 25 | 196 |
| 6 | 17 | 102 | 36 | 289 |
| 7 | 20 | 140 | 49 | 400 |
| 8 | 24 | 192 | 64 | 576 |

Step 2: Find the sum of every column to get:

$$\sum X = 36, \quad \sum Y = 107, \quad \sum X \cdot Y = 599, \quad \sum X^2 = 204, \quad \sum Y^2 = 1763$$

Step 3: Use the following formula to work out the correlation coefficient.

$$r = \frac{n \cdot \sum XY - \sum X \cdot \sum Y}{\sqrt{[n \sum X^2 - (\sum X)^2] \cdot [n \sum Y^2 - (\sum Y)^2]}}$$

$$r = \frac{8 \cdot 599 - 36 \cdot 107}{\sqrt{[8 \cdot 204 - 36^2] \cdot [8 \cdot 1763 - 107^2]}} \approx 0.9952$$