Example: Find the mean value of the random variable X:

X	1	4	5
p	0.3	0.5	0.2

$$\mu_X = 1 \cdot 0.3 + 4 \cdot 0.5 + 5 \cdot 0.2$$

$$= 0.3 + 2 + 1 = 3.3$$

$$\sigma_X^2 = (1 - 3.3)^2 \cdot 0.3 + (4 - 3.3)^2 \cdot 0.5 + (5 - 3.3)^2 \cdot 0.2 = 2.41$$

$$\sigma_X = \sqrt{2.41} = 1.55$$

Example: Given two independent random variables, X and Y:

	Mean	SD
X	10	2
Y	20	5

$\mu_{a+bX} = a + b\mu_X$

$\sigma_{a+bX} = |b|\sigma_X$

Find the mean and SD of

(a) $3X$

$\mu_{3X} = 3\mu_X = 3 \cdot 10 = 30$

$\sigma_{3X} = 3\sigma_X = 3 \cdot 2 = 6$

(b) $Y+6$

$\mu_{Y+6} = \mu_Y + 6 = 20 + 6 = 26$

$\sigma_{Y+6} = \sigma_Y = 5$

(c) $X-Y$

$\mu_{X-Y} = \mu_X - \mu_Y = 10 - 20 = -10$

$\sigma_{X-Y} = \sqrt{\sigma^2_{X-Y}} = \sqrt{\sigma_X^2 + \sigma_Y^2} = \sqrt{2^2 + 5^2} = \sqrt{29}$