Here's the probability distribution of a random variable X:

x	**1**	**2**	**3**	**4**	**5**
P(X = x)	0.1	0.25	0.35	0.2	0.1

1. What's the value of E(X)?

Multiply each value by the probability of it occurring, and take the sum of all the results.

$$E(X) = \sum xP(X=x)$$
$$= 1\times0.1 + 2\times0.25 + 3\times0.35 + 4\times0.2 + 5\times0.1$$
$$= 0.1 + 0.5 + 1.05 + 0.8 + 0.5$$
$$= 2.95$$

2. What's the value of Var(X)?

Go through each value x and work out what $(x - \mu)^2$ is. Then multiply it by the probability of getting x. Once you've done that, add the whole lot up together.

$$Var(X)^2 = E(X - \mu)^2$$
$$= \sum(x - \mu)^2P(X=x)$$
$$= (1-2.95)^2\times0.1 + (2-2.95)^2\times0.25 + (3-2.95)^2\times0.35 + (4-2.95)^2\times0.2 + (5-2.95)^2\times0.1$$
$$= (-1.95)^2\times0.1 + (-0.95)^2\times0.25 + (0.05)^2\times0.35 + (1.05)^2\times0.2 + (2.05)^2\times0.1$$
$$= 3.8025\times0.1 + 0.9025\times0.25 + 0.0025\times0.35 + 1.1025\times0.2 + 4.2025\times0.1$$
$$= 0.38025 + 0.225625 + 0.000875 + 0.2205 + 0.42025$$
$$= 1.2475$$