

Let $\{x_1, x_2, x_3, \dots, x_m\}$ be m outcomes for a discrete random variable, x , and let $p_1, p_2, p_3, \dots, p_m$ be the associated probabilities.

1.) The MEAN, μ , or EXPECTED VALUE, $E(x)$, of x is

$$\mu = E(x) = x_1 p_1 + x_2 p_2 + x_3 p_3 + \dots + x_m p_m .$$

2.) The VARIANCE, $V(x)$, of x is

$$V(x) = (x_1 - \mu)^2 p_1 + (x_2 - \mu)^2 p_2 + (x_3 - \mu)^2 p_3 + \dots + (x_m - \mu)^2 p_m .$$

3.) The STANDARD DEVIATION, σ , of x is $\sigma = \sqrt{V(x)}$.

- 1) Consider the given dartboard with possible scores of 0 (miss the board), 1, 2, and 3. Let the random variable x be the score for 1 dart and assume the probabilities are given in the following table:

x	$P(x)$
0	0.07
1	0.3
2	0.52
3	0.11

- 2) Each week 1,000 lottery tickets are sold for \$1 each. Fifteen tickets are \$20 winners, 5 are \$50 winners, 2 are \$100 winners, & 1 is a \$300. If you buy a single ticket, what is your expected net monetary outcome?