

$X = \text{points from normal shots}$

$$n_X = 16, \quad p = 0.43$$

$$X \sim \text{Bin}(16, 0.43)$$

$Y = \text{successful money shots}$

$$n_Y = 4, \quad p = 0.43$$

$$Y \sim \text{Bin}(4, 0.43)$$

$Z = \text{points from money shots}$

$$Z = 2 * Y$$

$W = \text{total points scored}$

$$W = X + Z$$

### 1. What is the expected value of points scored?

$$\mathbb{E}[X] = n_X p = 16 * 0.43 = 6.88$$

$$\mathbb{E}[Y] = n_Y p = 4 * 0.43 = 1.72$$

$$\mathbb{E}[Z] = 2 * \mathbb{E}[Y] = 2 * 1.74 = 3.44$$

Since X and Z are independent:

$$\mathbb{E}[W] = \mathbb{E}[X + Z] = \mathbb{E}[X] + \mathbb{E}[Z] = 6.88 + 3.44 = 10.32$$

The expected value of points scored is 10.32.

### 2. What is the standard deviation of the total points scored?

$$V(X) = n_X p(1 - p) = 16 * 0.43 * 0.57 = 3.9216$$

$$V(Y) = n_Y p(1 - p) = 4 * 0.43 * 0.57 = 0.9804$$

$$V(Z) = 2^2 * V(Y) = 4 * 0.9804 = 3.9216$$

Since X and Z are independent:

$$V(W) = V(X + Z) = V(X) + V(Y) = 3.9216 * 2 = 7.8432$$

$$\sigma_W = \sqrt{V(W)} = \sqrt{7.8432} = 2.800$$