variance

variance

exercise 2

variance

The variance is given by

$$V(X) = E[(X - E(X))^2 = \sum_x (x - E(X))^2 \cdot P(X = x) = E[X^2] - E[X]^2$$

the standard deviation $\sqrt{V(X)}$ is usually easier to interpret

- The variance is always nonnegative
- We can find $V(X)$ by calculating the mean of $Z = (X - E[X])^2$ via the expected value rule
- When computing the variance often we use a different (equivalent) form of the variance equation:

$$V(X) = E[X^2] - E[X]^2$$

exercise 2

Prove this

expected value and variance

exercise 3

Toss a coin 3 times. Define the random variable: $X =$ the number of heads

What is the expected value and variance of X?

X	$f(x) = P(X = x)$
0	1/8
1	3/8
2	3/8
3	1/8