Pre-class preparation

Please watch the following video OR read the following textbook sections from Blitzstein and Hwang's *Introduction to Probability* (second edition):

- Video: Variance
- Textbook: Section 4.6 (up to Example 4.6.5)

Objectives

By the end of the day's class, students should be able to do the following:

- State the definition of variance, and explain what it means intuitively.
- List properties of variance.
- Compute the variance of a discrete random variable.

Reflection Questions

Please submit your answers to the following questions to the corresponding Canvas assignment by 7:45AM:

1. Suppose $X \sim \text{DiscreteUnif}(\{-1, 1\})$. Find $\text{SD}(X)$, and explain why it "makes sense" in the context of the distribution and what standard deviation represents.
2. Suppose that X is a random variable for which $\mathbb{E}[X] = \mu$ and $\text{Var}(X) = \sigma^2$. Show that
$$\mathbb{E}[X(X-1)] = \mu(\mu-1) + \sigma^2$$
3. (Optional) Is there anything from the pre-class preparation that you have questions about? What topics would you like would you like some more clarification on?