Discrete random variables unit:

- Random variables, introduction (last week Friday)
- Random variables, representing distributions (Monday)
- Review (**Today**)
- Test (Friday)
- Expected value and variance
- Some common discrete distributions

Today:

- What we have covered so far
- What to expect on the test
- Solutions to previous exercises

| | Fair | Good | Very Good | Premium | Ideal | | |
|---|---|---|---|---|---|---|---|
| **D** | 0.0030219 | 0.0122729 | 0.0280497 | 0.0297182 | 0.0525399 | 0.1256026 | |
| **E** | 0.0041528 | 0.017297 | 0.0444939 | 0.0433259 | 0.0723582 | 0.1816278 | |
| **F** | 0.0057842 | 0.0168521 | 0.0401187 | 0.0432147 | 0.0709307 | 0.1769004 | |
| **G** | 0.0058213 | 0.0161476 | 0.0426214 | 0.0542084 | 0.0905451 | 0.2093438 | |
| **H** | 0.0056174 | 0.0130145 | 0.0338154 | 0.0437523 | 0.0577494 | 0.153949 | |
| **I** | 0.0032443 | 0.0096774 | 0.0223211 | 0.0264739 | 0.0388024 | 0.1005191 | |
| **J** | 0.0022062 | 0.0056915 | 0.0125695 | 0.0149796 | 0.016611 | 0.0520578 | |
| | 0.0298481 | 0.090953 | 0.2239897 | 0.255673 | 0.3995367 | | 1.0000005 |
| | | | | | | 1.0000005 | |

Adapted from `https://tinyheero.github.io/2016/03/20/basic-prob.html`

1. Consider an urn with 14 balls: 8 white, 4 black, and 2 orange. You draw two balls randomly without replacement. For each black ball, you win \$2, and for each white ball we lose \$1 (orange balls don't count either way). Let random variable $X$ denote your winnings. What are the possible values of $X$, and what are the probabilities of each value?
2. Consider rolling 3 fair, standard dice. How many *basic outcomes* are there? Let random variable $X$ denote the values that can be rolled. What are the possible values of $X$, and what are the probabilities of each value?