

LARSON—MATH 353—CLASSROOM WORKSHEET 26
Digital Dice

1. Log in to CoCalc.
 - (a) Start the Chrome browser.
 - (b) Go to <https://cocalc.com>
 - (c) Login (**your VCU email address** is probably your username).
 - (d) You should see an existing Project for our class. Click on that.
 - (e) Click “New”, then “Worksheets”, then call it **c26**.

Nahin’s Digital Dice

2. **The Clumsy Dishwasher.** There are 5 dishwashers. 5 dishes are broken one week—4 by the same dishwasher! Is the dishwasher clumsy or unlucky? What is the probability a dishwasher will break at least 4 dishes—under the assumption that the dishes are broken randomly (that is, with equal probability)?

Define a function `experiment_dishwasher()` that simulates this situation. What should your function output? Repeat this experiment lots of times. What is the answer to our question?

3. It wasn’t clear from our book how to *interpret* this problem. In class we answered the question: what is the probability one specific dishwasher is unlucky. We could also ask the question: what is the probability that *any* of the dishwashers is unlucky?
4. **The Curious Coin-Tossing Game.** There are three players each with a stack of coins. They each flip one. If they all get Heads or all get Tails they play again. Otherwise the “odd man out” (the one who got say Heads while the other two get Tails) get the other’s two coins (so her pile goes up two, while their piles of coins each go down one). If they start with k , l and m coins, how many iterations of this game does it take on average for one player to lose all of her coins?

5. **Up next: Optimal Stopping.** Read ahead. Read the Medina/Zeilberger article I sent.

6. Getting your classwork recorded

When you are done, before you leave class...

- (a) Click the “Make pdf” (Adobe symbol) icon and make a pdf of this worksheet. (If Cocalc hangs, click the printer icon, then “Open”, then print or make a pdf using your browser).
- (b) Send me an email with an informative header like “Math 353—c26 worksheet attached” (so that it will be properly recorded).
- (c) Remember to attach today’s classroom worksheet!