

# Math 262

## Section 1.6

Day 7

1. Suppose you flip two unfair coins: one lands heads with probability 0.4, the other lands heads with probability 0.6. What is the probability that both land heads?
  - (a) Working with your group, make a plan for using a simulation in R or Mathematica to estimate this probability. Sketch your plan on the wall or on paper.
  - (b) Implement your plan in R or Mathematica. Run your code to estimate the probability.
  - (c) How does your simulated result compare with the exact probability that the two coins land heads?
  
2. Suppose you roll three standard, fair dice. What is the probability that at least two sixes appear on the dice?
  - (a) Working with your group, make a plan for using a simulation in R or Mathematica to estimate this probability. Sketch your plan on the wall or on paper.
  - (b) Implement your plan in R or Mathematica. Run your code to estimate the probability.
  - (c) How does your simulated result compare with the exact probability that the two coins land heads?
  
3. Suppose there are 3000 students at St. Olaf college. Make a plan for estimating the probability that at least 18 students share the same birthday. Then implement your plan in code.