# MATH230 Week 6 Worksheet - More Probability

Review of last week

**1**: Roll a standard 6 sided die 4 times and take the product of the 4 values. What's the probability that the product is divisible by 3?

**2:** A deck of 4 cards numbered 1-4 is randomly shuffled. What's the probability that all 3 pairs of adjacent cards are more than 1 apart in difference?

**3:** Four people randomly decide to each walk in one of the four cardinal directions: north, east, south, or west. What is the probability that each person walks in a different direction?

This week's material

**4:** Fifty raffle tickets are numbered 1 through 50, and one of them is drawn at random. What is the probability that the number is a multiple of 5 or 7?

**5:** In the numbers game, 4 numbers are drawn, each from 0-9 independently and with replacement, to generate a 4 digit code. If your ticket reads 2024, what's the probability that you match 2 consecutive digits of the code?

**6:** In 1959, a world record was set for the longest run on a fair roulette wheel at the El San Juan Hotel in Puerto Rico. The number 10 appeared six times in a row. What is the probability of some number appearing 6 times in a row in 6 given spins? Assume that there are 38 equally likely outcomes consisting of the numbers 1–36, 0, and 00.

If you have nothing better to do, try this one:

**7:** Choose a and b uniformly at random from the interval (0, 1). Find the probability that the integer closest to a/b is even and express the answer in the form p + qπ for rational p and q.