

CS/Math 240 Fall 2012

Homework 5

Due: Thursday Dec 6 (in lecture)

Problem 1: From the text, a die is made as a cube with a square painted on one side, a circle on two sides and a triangle on three sides. The die is rolled twice, what is the probability that the two shapes you see on top are the same?

How many times do you need to roll the die so that the probability of seeing a square at least twice is greater than $\frac{1}{2}$?

How many times do you need to roll the die so that the probability of seeing a circle at least twice is greater than $\frac{1}{2}$?

How many times do you need to roll the die so that the probability of seeing a triangle at least twice is greater than $\frac{1}{2}$?

Problem 2: Now you have 3 dice of the type described above. If you roll them all, what is the probability that a square, a circle and a triangle appear on top? Suppose you have 4 dice what is the probability that a square, a circle and a triangle appear on top (each at least once)? 5 dice?

Problem 3: Suppose you have an orange, 2 apples and 2 bananas in a bag. You draw out 3 pieces of fruit without replacement.

Draw a tree diagram that represents this process.

What is the probability of getting the orange on your last draw? Explain your answer using your tree diagram.

What is the probability that the first and last pieces of fruit that you draw are the same? Explain your answer using your tree diagram.