# Probability Homework – Sample Test: Probability*

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**Abstract**

This module provides a sample test related to probability.

**Exercise 1**

In the video game Stroller Race 2000™, you start by choosing which baby character you will play (Hotsy, Totsy, Potsy, or Mac) and what color stroller you will be racing (red, green, blue, or yellow).

**a.** Draw a tree diagram listing all the possible baby-stroller combinations you can play.
**b.** When the computer races against you, it chooses a baby-stroller combination at random. What is the chance that it will choose the same one you chose?
**c.** What is the chance that the computer will choose a baby whose name rhymes with "Dotsy"?
**d.** What is the chance that the computer will choose a baby whose name rhymes with "Dotsy" **and** a red stroller?
**e.** All four babies are racing in red strollers today. **One** possible outcome is that Hotsy will come in first, followed by Totsy, then Potsy, then Mac. How many total possible outcomes are there?

**Exercise 2**

The weatherman predicts a 20% chance of rain on Tuesday. **If** it rains, there is a 10% chance that your roof will leak. (If it doesn't rain, of course, your roof is safe.) What is the chance that you will have a leaky roof on Tuesday?

**Exercise 3**

A game of "Yahtzee!" begins by rolling five 6-sided dice.

**a.** What is the chance that all five dice will roll "6"?
**b.** What is the chance that all five dice will roll the same as each other?
**c.** What is the chance that all five dice will roll "5" or "6"?
**d.** What is the chance that **no** dice will roll "6"?
**e.** What is the chance that **at least one die** will roll "6"?

**Exercise 4**

How many three-letter combinations can be made from the 26 letters in the alphabet? We can ask this question three different ways, with three different answers.

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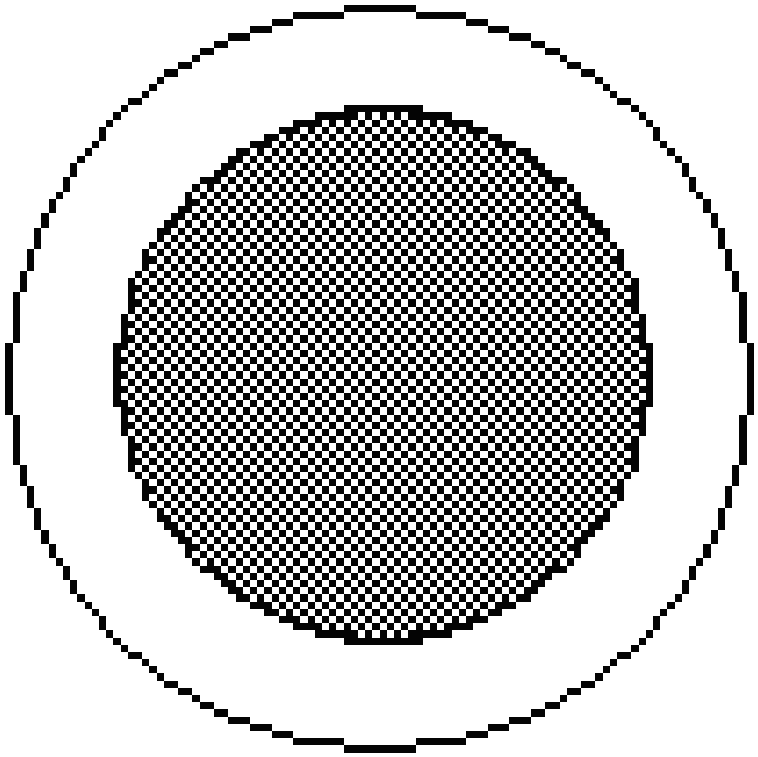
**a.** First, assume any three-letter combination is valid: NNN, for instance. (This gives you the actual number of possible three-letter words.)
**b.** Second, assume that you cannot use the same letter twice. (Here you can imagine that you have a bag of files, one for each letter, and you are drawing three of them out in order to make a word.)
**c.** Third, assume that you still cannot use the same letter twice, but order doesn't matter: CAT and ACT are the same. (Here you can imagine that as you pull the tiles, you are creating unscramble-the-word puzzles instead of words.)

**Exercise 5**

In a Sudoku puzzle, a 3-by-3 grid must be populated with each of the digits 1 through 9. Every digit must be used once, which means that no digit can be repeated. How many possible 3-by-3 grids can be made?



**Extra credit:**

How many different three-digit numbers can you make by rearranging the following digits?

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Table 1**