Question 1:
Five standard six-sided dice are rolled. What is the probability of getting the same number on all five dice? The probability of getting all different numbers on the five dice?

Question 2:
There are currently 193 member countries in the United Nations. Dr. Votmai Tinkinoff, professor of international internationalism at the University of Southern North Dakota at Hoople, assigns a project in his International Internationalism class. Students are randomly assigned two countries at random, and are asked to develop an idea for developing trade in goods or services between the two randomly chosen random countries.

In how many different ways can we randomly select two countries out of the 193 member nations of the U.N.?
Question 3:
All stocks traded in U.S. stock markets are identified by a “ticker symbol” – an abbreviation of one to four letters. For example, Ford is “F,” DuPont is “DD,” Microsoft is “MSFT,” and Harley-Davidson is “HOG.”
How many different stock ticker symbols are possible?

Question 4:
Dr. Rasp selects four students at random from the students in STAT 201. What is the probability that at least two of the students were born on the same day of the week?
Question 5:

*Oblivion* is a computer-based role-playing game. Players create an imaginary character then live out that character’s adventures as he/she goes about basically saving the world and other simple tasks.

A wide range of options is available in creating this fictional *alter ego*. You may choose the character’s gender (male or female, of course), race (ten different selections ranging from humans to elves to orcs to sentient catlike or lizardlike creatures), specialization (combat, magic, or stealth), principal attributes (select two from a list of eight – things like intelligence or strength or personality), major skills (primary abilities – select seven of twenty-one options, ranging from swordsmanship to alchemy to sneakiness), and birthsign (the Morrowind zodiac has thirteen signs).

How many different characters could be created?


Question 6:

Recall that, in baseball, a “.250 hitter” gets a hit 25% of the time. Suppose he has five at-bats in a game. What is the probability he gets no hits? Exactly one hit? Exactly two hits? Three? Four? Five?
Question 7:
The typing monkey has given up on *Hamlet* and will now settle for spelling Dr. Rasp's last name correctly. He sits down at his custom-built, 27-key word processor (26 letters plus a space bar) and begins to type. He hits four keys.

a) What is the probability that he types Dr. Rasp's last name correctly?
b) Suppose he repeats the process 531,441 times. What is the probability he gets it right at least once?

Question 8:
Recall that a deck of cards contains 52 cards – four suits (clubs, diamonds, hearts, spades) each containing thirteen cards (Ace, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3, 2). You shuffle the deck, and select three cards at random.

What is the probability that they are all the same suit? That you get at least one King?
Question 9:
In straight poker, each player is dealt five cards from the standard deck of 52. (Other forms of poker allow for drawing, discards, additional cards, wild cards, etc. We’ll ignore these complications for now, and play the game in its purest form.)

a) What is the probability you are dealt a flush (that is, all five cards of the same suit)?

b) What is the probability that you are dealt four of a kind – that is, all four cards of a given rank? (For example: all four Aces, or all four Sevens.)

c) What is the probability that you are dealt a full house – that is, three cards of one rank and two of another? (For example: three Queens and two Eights)

d) What is the probability that you are dealt two pair – that is, two cards of one rank and two of another? (For example: two Eights and two Twos)
Question 10:

Students in the Roland McGeorge Investment Program at Mad Hatter University aren’t perfect – but they do have a good track record in identifying good stocks for investing. Over the past five years, eighty percent of the stocks that they have recommended to “buy” have increased in value during the following year. They’re even better on the downside: ninety percent of the stocks that they recommend to “sell” have declined in value during the year. At present, your portfolio consists of twenty stocks with Roland McGeorge “buy” recommendations and ten with Roland McGeorge “sell” recommendations.

a) How many of your thirty stocks can you expect to increase in value in the coming year? Of these, what percentage will be ones with “buy” recommendations?
b) Are Roland McGeorge recommendation and actual stock performance independent or dependent events? Explain.