IN CLASS PROBLEM SET

JANUARAY 8, 2003

The first six questions concern the outcome of throwing three colored dice (one red, one green and one blue)

(1) How many outcomes are there such that exactly one of the three dice is showing a 3?
(2) How many outcomes are there so that at least one of the three dice is showing a 3?
(3) How many outcomes are there so that there are exactly two 3s?
(4) How many outcomes are there so that all dice are showing numbers less than three?
(5) How many outcomes are there so that exactly one 1, one 2 and one 3 are showing?
(6) How many outcomes are there such that the highest number showing is twice the smallest number that appears?

The next five questions concern the outcome of picking a sequence of five cards and lying them face up in a row.
(7) How many sequences are possible?
(8) How many of these sequences begin with a King or an Ace?
(9) How many of these sequences begin and end with a King, Queen, or a Jack?
(10) How many sequences have four cards of the same kind?
(11) How many sequences have three 2s and two 3s?

(12) How many sequences are there of n digits (0 through 9) in which no two consecutive digits are the same?
(13) How many sequences are there of n digits where the last digit is the largest number that appears in the sequence?

(14) How many integers are there between 0 and 50 (inclusive)?
(15) How many of these integers are divisible by 2?
(16) How many unordered pairs of these integers whose difference is 5?
(17) How many ordered pairs of these integers whose difference is at least 5?

(18) How many different numbers can be formed by various arrangements of the six digits 1, 1, 1, 1, 2, 3?
(19) How many four letter 'words' (strings of letters) are there with no repeated letters?