PRINT Your Name:____________________________________

Quiz for February 21, 2006

How many strings of three decimal digits

(a) do not contain the same digit three times?

(b) begin with an odd digit?

(c) have exactly two digits that are 4's?

ANSWER:

(a) There are 10^3 strings of 3 decimal digits; exactly 10 of these contain the same digit three times. So, there are exactly $\boxed{10^3 - 10 = 990}$ strings of 3 decimal digits that do not contain the same digit three times.

(b) There are 5 ways to pick an odd digit, ten ways to pick the second digit, and ten ways to pick the third digit; so there are $\boxed{5 \cdot 10 \cdot 10}$ strings of three decimal digits that begin with an odd digit.

(c) If the digit which isn't 4 comes first, then there are 9 choices for the first digit, the other two digits are 4. If the digit which isn't 4 comes second, then there are 9 choices for the second digit, the other two digits are 4. If the digit which isn't 4 comes third, then there are 9 choices for the third digit, the other two digits are 4. So, there are $9 + 9 + 9 = \boxed{27}$ strings of three decimal digits that have exactly two digits that are 4's.