Name

Throughout this quiz, show all work and leave answers as meaningful expressions.

Use the following scenario for problems 1 - 2.

Stephanie Agnail decides to save \$3,000 every year in an account with 2% interest each year. At the end of each year she first receives 2% interest on all money in the account, then she deposits another \$3,000. See the diagram on the board for an illustration of this scenario.

1) Write down the recurrence relation for the amount of money in the account after *n* years.

2) If the starting value in the account is \$2,000, find the value of the account after 2 more years.

3) How many 9-bit strings start with 0011?

4) A restaurant has 7 appetizers, 14 main dishes, and 6 desserts. How many ways can you order 2 different appetizers, 1 main dish, and 2 desserts? You wouldn't mind getting the same dessert twice.

5) How many numbers between 1 and 600 are divisible by 2 or 3?

6) You roll a two dice. One is white, the other is red. How many different outcomes are there?

Consider the recurrence relation below for questions 7 – 9. $a_n = 9a_{n-1} - 14a_{n-2}$ $a_0 = 1; a_1 = 17$

7) Find a solution to the recurrence relation.

8) Find the general solution to the recurrence relation.

9) Find the particular solution to the recurrence relation with the given initial conditions.

10) A book publishing company is shipping out the latest best-seller today. They are going to ship 1,000 copies divided in some manner between 7 retailers. How many ways can they divide the books between the retailers?

11) Karl is giving out jelly beans. Every jelly bean is a different flavor, and Karl managed to get 33 different flavors! How many ways can he give 10 to you, 10 to Dr. Beyerl, and keep 13 for himself?

12) Calculate $\binom{4}{3}$. (Do the arithmetic until you get a single number as your answer)