MATH1550, Winter 2023 **Names:**
Seminar 1

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1. How many different words can be made using only the letters in each of the following.
   (a) MATH
   (b) ALGEBRA
   (c) ANALYSIS
   (d) PROBABILITY
   (e) COMBINATORICS
   (f) GEOMETRY
   (g) STATISTICS
   (h) TOPOLOGY
   (i) DIFFERENTIAL EQUATIONS

2. A multiple choice test consists of 12 questions. How many different ways can a student complete the test if:
   (a) There are 3 possible answers to each questions?
   (b) Half of the problems have 3 possible answers and the other half have 4 possible answers?

3. At "The Smoothie Shack" you can choose to have either 1, 2, 3 or 4 different fruits to blend into your smoothie. The fruits you can choose from are: banana, kiwi, mango and pineapple. How many different flavour combinations are possible?

4. Every day a certain mathematics professor drinks either 1,2 or 3 shots of espresso. Draw a tree diagram that you can use to count the number of ways this person can drink exactly 10 shots of espresso from Monday to Thursday *(Friday he drinks tea)*.

5. A flag with 4 vertical bars is to be constructed as shown below. There are 8 different colors to choose for each bar.

   (a) How many flags can be made?
   (b) How many flags can be made if no two bars can have the same color?
   (c) How many flags can be made if only the middle two bars may be the same color?
   (d) How many flags can be made if no two adjacent bars are the same color?

6. Eight students are registering for math courses. There is room for 1 student in algebra, 3 students in biology and 4 student in chemistry. How many different ways could these students register?