

Math 103 Tuesday 5/19

- (1) List the first seven Fibonacci numbers. How many unique sets are that can be made using four of these numbers? (Be careful with two of the elements.)
- (2) Give C_4^{10} using Pascal's triangle and factorials.
- (3) Give the set of ratios $S = \left\{ \frac{F_n}{F_{n-1}} \mid n = 2, 3, 4, \dots, 8 \right\}$ where F_n is the n^{th} Fibonacci number.

Use your calculator on this problem. Do you notice anything about the ratios?

- (4) Give C_{427}^{1000} as a ratio of factorials. Simplify this ratio.
- (5) A pizza restaurant has 8 different toppings. How many different 3 topping pizzas does this restaurant offer? How many total different pizzas does this restaurant offer?
- (6) A boy has 3 red flags, 4 green flags and 2 yellow flags. How many different 9 flag signals can the boy make? How many different 6 flag signals can this boy make?
- (7) An ice cream store offers 32 flavors of ice cream. How many different 3 scoop bowls of ice cream can you have? How many different 3 scoop cones of ice cream can you have?
- (8) There are 12 people in a room how many different ways can you put them in a line? If each person shakes the hand of another person then how many different handshakes are there?
- (9) You flip a quarter 8 times. How many different outcomes are possible? How many outcomes have exactly four heads?
- (10) You have a normal deck of 52 playing cards. How many different five card hands are there? How many five card hands have four of a kind? What is the ratio of this hand to the five card hand?