

Math 17C  
Kouba  
Discussion Sheet 8

- 1.) It's time for Krispy Kreme doughnuts. If you go to the store and buy 6 doughnuts, how many ways can you select them if you get to choose from only chocolate and caramel doughnuts ?
- 2.) It's time for Krispy Kreme doughnuts again. If you go to the store and buy 12 doughnuts, how many ways can you select them if you get to choose from chocolate, caramel, maple (my favorite), and coconut doughnuts ?
- 3.) Consider the elegant word, ECLECTIC.
  - a.) How many distinct permutations are there of all 8 letters ?
  - b.) How many distinct 7-letter permutations are there ?
- 4.) A bag holds 5 green, 4 blue, and 3 black softballs. In how many ways can you select
  - a.) 6 balls ?
  - b.) 6 balls, if none can be green ?
  - c.) 6 balls, if there must be exactly 2 blue balls ?
  - d.) 6 balls, if there must be 2 green, 1 black, and 3 blue balls ?
  - e.) 6 balls, if there must be at least 1 blue ball ?
  - f.) 6 balls, if there must be at most 1 green ball ?
- 5.) A bag holds 20 yellow and 15 pink tennis balls. In how many ways can you select 10 balls if there must be at least 1 of each color ?
- 6.) Consider 365 possible birthdays in a year.
  - a.) How many different birthday possibilities are there for a group of 10 people ?
  - b.) How many different birthday possibilities are there for a group of 10 people, if no two people have the same birthday ?
  - c.) How many different birthday possibilities are there for a group of 10 people, if at least 2 people have the same birthday ?
- 7.) Consider a standard deck of 52 playing cards consisting of 13 face values (A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K) and 4 suits (hearts, diamonds, spades, and clubs). If you are dealt a poker hand (5 cards), in how many ways can you have
  - a.) a club straight (all clubs, 5 consecutive cards (including 10,J,Q,K,A)) ?
  - b.) a heart flush (all hearts, but not consecutive) ?
  - c.) a flush of any suit (all same suit, but not consecutive) ?
  - d.) three of a kind (3 cards of one face value and two other cards of different face values) ?
  - e.) 1 pair only (2 cards of the same face value and 3 other cards all of different face values) ?

f.) 2 pairs (2 pairs of different face values and the 5th card of a third face value) ?

8.) A wildlife biologist releases 500 smallmouth bass, 50 of which are tagged, into a small reservoir. Several months later 15 smallmouth bass are caught. How many ways can 15 bass be caught if

- a.) exactly 4 are tagged ?
- b.) none are tagged ?
- c.) at least 1 is tagged ?

9.) How many distinct factors does each integer have ?

- a.) 5
- b.) 20
- c.) 200
- d.) 3960

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"All those who believe in psychokinesis raise my hand." – comedian, Steven Wright