Cumulative # 1 Review

1. In how many ways can the letters of MISSISSAUGA be arranged?

2. In how many ways can a recycling committee be formed with 2 teachers and 4 students if 5 teachers and 11 students are available to serve?

3. How many 5 letter "words" can be made from the letters of LINDSAY if:
   (a) there are no restrictions
   (b) D may no be used
   (c) D must be used

4. How many five-digit odd numbers can be formed from the digits 5 390 462 with no digit repeated?

5. FTPT a randomly selected arrangement of the letters of the word BILLION would begin with the letter L?

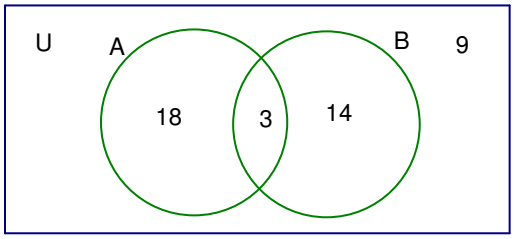
6. A student must answer 7 of 10 questions on an exam. How many choices do they have if
   (a) there are no restrictions?
   (b) 4 of the first 5 questions must be answered?

7. Find n if (a) C(n,2) = 15n (b) (n+1)! ÷ (n-1)! = 132

8. U = {0, 1, 2, 3, 4, 5, 6, 7} A = {0, 2, 4, 6} B = {1, 2, 3, 4}
Find
(a) $(A \cap B)'$ (b) $n(A' \cup B)$ (c) the number of subsets of A

9. How many positive integers less than 500 can be formed using digits 1, 2, 3, 4, 5, 6 if repetitions are allowed?

10. Find (a) $n(A \cup B)$ (b) $n(A' \cap B')$



11. A committee of 5 is to be selected from 6 men and 5 women. FTPT there will be
   (a) exactly 3 women
   (b) at least 1 man

12. Two dice are tossed. FTPT (a) you get a sum of 5
   (b) exactly one 5 appears

13. Two dice are rolled.
   (a) If the total is even, FTPT the numbers are the same.
   (b) If the numbers are the same, FTPT the total is even.

14. P(E) = 0.4 , P(F) = 0.6 , P(E and F) = 0.25 Find:
(a) P(E or F) (b) P(not E) (c) P(E, given F) (d) the odds in favour of F

15. If an arrangement of the letters of **combine** is selected randomly, FTPT the vowels occupy the second, fifth, and seventh positions.

16. You toss two dice. FTPT the sum is 7 (a) and exactly one die is a 4
(b) or exactly one die is a 4

17. Two cards are drawn from a deck. FTPT both cards are:
(a) clubs (b) balck (c) kings (d) black kings (e) kings or black

18. At a local high school, there are 100 Grade 12 students. Of these,
70 take Data 36 take Calculus 35 take Algebra
23 take Data & Calculus 26 take Data & Algebra 28 take Calculus & Algebra
20 take all three
Use a Venn Diagram to determine how many Grade 12's do not take any math.

19. Simplify $\dfrac{(x-1)!}{(x+1)!}$

20. A pizza can be ordered with any number of 8 different toppings or with no toppings.
(a) Find the number of 3 topping orders possible.
(b) Find the total number of possible orders.

21. Five coins are dropped on a desk. Find the probability of
(a) three heads and two tails
(b) at least three heads

22. A Royal Commission is to be made up of 8 people. Of the 14 nominated, 12 are competent and 2 are twits.
(a) FTPT 1 twit is selected.
(b) FTPT at least one twit is selected.
(c) FTPT both twits are selected given that at least one twit is chosen.

23. How many arrangements of the letters in NUMBERS are possible if:
(a) there are no restrictions?
(b) The S must be last?
(c) The vowels must be together?

24. Find the number odd divisors of 810 (including 1 and 810).

25. Find the odds in favour of a head appearing only once if a coin is tossed 4 times.

26. In the binomial expansion of $\left(a^3 + \dfrac{1}{a^2}\right)^8$ determine the fifth term.

27. Find the middle term of $\left(z^2 + \dfrac{1}{z}\right)^8$

28. Expand $(2x^2 - 1)^4$

29. Evaluate $\sum_{k=1}^{5} (k-1)k!$