**GRADE 12 APPLIED
PROBABILTY REVIEW PROBLEMS**

Name: _____
Date: _____

1. **Sample Space**. Two teachers are selected at random from 5 seventh-grade teachers to chaperone a group of students at the museum. Using the notation T2, T5, for example to represent Teacher #2 and Teacher #5 as the element in the sample Space 'S' list the set of 10 possible elements of the sample space of chosen teachers. (Sets are always listed inside braces { })

2. **Sample Space**. Suppose that a family is leaving on a summer vacation in their camper and that M is the event they will experience a mechanical problem, T is the event that they will receive a ticket for a traffic violation, and V is for arriving at a campsite with no vacancies. Describe the set of all the possible events and combinations of events that could happen.

3. **Fundamental Counting**. A certain mukluk comes in 5 different styles with each style available in 4 different colours. If a store wishes to display pairs of these mukluks showing all of its various styles and colours, determine the number of different pairs the store have on display?

4. **Fundamental Counting**. Suppose that a television network offers three soap operas, two talk shows, and three game shows each weekday afternoon. On a Monday afternoon, how many different ways can a person watch one soap opera, one talk show, and one game show?

5. **Fundamental Counting**. A drug for the relief of asthma can be purchased from five different manufacturers in liquid, tablet, or capsule form, all of which are available in regular or extra strength. Determine how many ways can the doctor prescribe the drug for a patient suffering from asthma?

6. **Fundamental Counting**. In a fuel economy study each of three models of cars are tested using five different brands of gasoline at seven different test sites throughout the country. If two drivers are used in the study, and test runs are made three times under each set of conditions, determine many test runs are needed?

7. **Fundamental Counting**. A witness to a hit and run accident told the police that the license plate had the characters RLH followed by three digits, and the first digit was a five. The witness cannot recall the last two digits but is certain that all three digits were different. Find the maximum number of automobile registrations that the police might have to check

8. **Permutations**. Find the number of ways that four judges can decide how to award first, second, and third place in a colouring contest from among ten finalists.

9. **Fundamental Counting**. Determine many four-digit numbers can be formed from the digits 1,2,4,6,7 and 9 if:

   a. each digit can only be used once?

   b. if each digit can be used repeatedly?

10. **Probability.** A 'loaded' die is constructed so that a 1 or a 2 occurs twice as often as a 5, which occurs three times as often as 3,

4 or 6. If the die is tossed once, find the probability that:

    a. the number is even;
    b. the number is a perfect square;
    c. the number is greater than 4

!! Need a uniform sample space!!

11. **Probability**. If the loaded die from the question above is tossed twice, find the probability that:

    a. two even numbers occur
    b. a perfect square and an odd number occur;
    c. the sum of the numbers is less than 5;
    d. the second toss results in a perfect square, given that the first toss comes up even.

12. **Probability**. A single card is drawn from a standard deck of 52 playing cards. Five separate trials are done as below. Determine the probability of drawing:

    a. a red card **or** a spade;

    b. a king **or** a queen;
    c. a red card or a heart;
    d. an ace or a black card;
    e. a jack or a club.

13. **Fundamental Counting , Probability**. From the integers 1 to 40 inclusive; one integer is chosen at random. Find the probability that it is:

    a.   an odd number;
    b.   a multiple of 4
    c.   divisible by either 3 or 5

14. **Probability**. A box contains 3 red, 2 green, and 5 blue crayons. Two crayons are randomly selected from the box without replacement in four separate trials below. Calculate the probability that:

    a. the crayons are alike in colour;
    b. the crayons are different in colour
    c. neither crayon selected is red;
    d. at least one red crayon is selected.

15. **Probability**. If A and B are mutually exclusive events, and P(A) = 0.4 and P(B) = 0.5, determine the following:

   a. P(A OR B) ie:
   b. P(A AND Not B)
   c. P(Not A OR Not B)

16. **Probability**.   If A, B, and C are mutually exclusive events, and P(A) = 0.2, P(B) = 0.1, and P(C) = 0.4, find the following: