U8

Permutations and Combinations

LESSON 1 Assignment

1. A soccer team has the following kit:

 Jerseys: blue or white

 Shorts: white, blue, or black

 Socks: blue or black

 If the team plays in a different uniform each week, for how many weeks can they play before they have to repeat a uniform?

2. The score at the end of the second period of a hockey game was

 Oilers 4, Flames 2

 How many different possibilities are there for the score at the end of the first period?

3. Find the number of four letter “words” that can be formed from the letters of the word **RECORD**, if:

 a) each letter can only be used once.

 b) each letter can only be used once and “word”must:

 i) contain only consonants?

 ii) begin and end with a consonant?

 ii) begin with a vowel?

 iii) begin with a **D** and end with a vowel?

4. In a class of 35 students, how many ways are there of awarding;

 a) a first prize($100), a second prize($50), and a third prize($25) in mathematics?

 b) a Mathematics prize, a Chemistry prize, and a Physics prize? (anyone can win any of the prizes).

5. A vehicle license plate consists of 3 letters followed by 3 digits. How many different license plates are possible if:

 a) There are no restrictions?

 b) No digits may be repeated?

 c) The first digit cannot be zero and no digits can be repeated?

6. How many possible 3-digit numbers exist?

7. How many possible 3-digit numbers exist if no digits can be repeated?

8. How many different 3-digit numbers can be formed using the digits 1,3,5,7 and 9?

9. How many different 3-digit odd numbers exist?

10. Mr. And Mrs. Jones want a family picture taken with their children, Shae, Joel, and Kristin. In how many ways can all 5 line up in a straight line for the picture if;

 a) there are no restrictions?

 b) the parents must be at either end of the line?

 c) Joel must be in the middle?

 d) the children alternate with the adults?

11. Determine the number of **four** letter arrangements that can be formed from the word **MAILBOX** given the following:

 a) no restrictions

 b) the “word” must begin with LB

 c) the “word” has 2 vowels in the middle