

1. Goals



By the end of this unit, students:

- understand the concepts and techniques in combinatorics, geometry and vectors
- apply reasoning skills and solve problems in combinatorics, geometry and vectors
- communicate their arguments and strategies when solving problems
- construct proofs in a variety of contexts including algebraic and geometric
- interpret mathematical information and ascertain the reasonableness of their solutions to problems.

This week's focus:

- Factorials and Permutations

2. Theoretical Components

STEP 1:

Readings:

Factorial notations:

- <https://goo.gl/KzSb2d>
- <http://goo.gl/fyTFW5>

Permutations:

- <http://goo.gl/mttVve>
- Focus on Permutations with/without repetition - <https://goo.gl/6jAIZA>
- More examples: <http://goo.gl/Ro2b17>

Watch the following videos:

- <https://goo.gl/IOXIHY>
- <https://goo.gl/rE6amy>
- <https://goo.gl/R2D0Ji>

3. Practical Components

STEP 2:

- Attempt all questions on 'Evaluate Factorial Expressions' : <https://goo.gl/nfN1aD>
- Intro to Permutations Exercises: <https://goo.gl/x8bVvi>
- More on Permutations: <https://goo.gl/9zadi7>
- Complete the mathspace activity: SM1 WK10 (login to www.mathspace.co)

4. Investigation

STEP 3:

A: Assume that car number plates are sequenced as follows: DLV334 → DLV335 → ... DLV339 → DLV340 → ... DLV999 → DLW000 and so on. Using this sequence, how many number plates are there between DLV334 and DNU211 inclusive?

B: Show that $P(n+1, 3) = n^3 - n$

20 marks

5.QFO

Quiz/Forum/Other

Permutations and Combinations: <http://goo.gl/5Bhn>

Something to think about: A circular r -permutation of n people is a seating of r of these n people around a circular table, where seatings are considered to be the same if they can be obtained from each other by rotating the table. Find a formula using nPr to count circular r -permutation of n people.