PICTON HIGH SCHOOL

Creating Opportunities Achieving Success

Year 12 Mathematics Extension 1
Assessment Task 1 Notification

Due Date: Friday, December 13	**Assessment Name: In class test**
Mark: 30	**Weighting:** 30%

TASK DESCRIPTION:

You will complete a 50-minute open book test during class time. A formula sheet will be provided. This exam covers the topics of:

1. Vectors

SYLLABUS OUTCOMES TO BE ASSESSED:

ME12-1 **applies** techniques involving proof ~~or calculus~~ to model and solve problems.
ME12-2 **applies** concepts and techniques involving vectors ~~and projectiles~~ to solve problems.
ME12-7 **evaluates** and **justifies** conclusions, **communicating** a position clearly in appropriate mathematical forms.

DIRECTIVES TO BE ASSESSED:

Apply: To use relevant information and skills for a given situation.
Communicate: To choose the correct way to give a mathematical answer.
Evaluate: To make a judgement based on criteria; determine the value of.
Justify: To provide evidence to support your solution.
Solve: To manipulate something for a particular purpose to find the answer for mathematical problems.

ASSESSMENT CRITERIA AND STUDENT CHECKLIST

Have you:
- Purchased a calculator?
- Ensured you have completed all class work?
- Written all content in your exercise book?
- Contacted your teacher for additional explanation and/or to answer questions as needed?

Link to syllabus

https://www.educationstandards.nsw.edu.au/wps/portal/nesa/11-12/stage-6-learning-areas/stage-6-mathematics/mathematics-extension-1-2017

V1.1: Introduction to vectors

Students:

- define a vector as a quantity having both magnitude and direction, and examine examples of vectors, including displacement and velocity (ACMSM010)
  - explain the distinction between a position vector and a displacement (relative) vector
- define and use a variety of notations and representations for vectors in two dimensions (ACMSM014)
  - use standard notations for vectors, for example: , and
  - represent vectors graphically in two dimensions as directed line segments
  - define unit vectors as vectors of magnitude 1, and the standard two-dimensional perpendicular unit vectors and
  - express and use vectors in two dimensions in a variety of forms, including component form, ordered pairs and column vector notation
- perform addition and subtraction of vectors and multiplication of a vector by a scalar algebraically and geometrically, and interpret these operations in geometric terms
  - graphically represent a scalar multiple of a vector
  - use the triangle law and the parallelogram law to find the sum and difference of two vectors
  - define and use addition and subtraction of vectors in component form
  - define and use multiplication by a scalar of a vector in component form

V1.2: Further operations with vectors

Students:

- define, calculate and use the magnitude of a vector in two dimensions and use the notation for the magnitude of a vector
  - prove that the magnitude of a vector, , can be found using:
  - identify the magnitude of a displacement vector as being the distance between the points and
  - convert a non-zero vector into a unit vector by dividing by its length:
- define and use the direction of a vector in two dimensions
- define, calculate and use the scalar (dot) product of two vectors and
  - apply the scalar product, , to vectors expressed in component form, where
  - use the expression for the scalar (dot) product, where is the angle between vectors and to solve problems
  - demonstrate the equivalence, and use this relationship to solve problems
  - establish and use the formula
  - calculate the angle between two vectors using the scalar (dot) product of two vectors in two dimensions
- examine properties of parallel and perpendicular vectors and determine if two vectors are parallel or perpendicular
- define and use the projection of one vector onto another