

# PICTON HIGH SCHOOL

Creating Opportunities Achieving Success



## Year 11 Standard Mathematics Preliminary Examination

<b>Date:</b> Monday 14 <sup>th</sup> September, 2020 9:20 – 11:30	<b>Assessment Name:</b> Preliminary Examination
<b>Marks:</b> 80	<b>Weighting:</b> 40%

### SYLLABUS OUTCOMES TO BE ASSESSED:

- MS11-1 A student **uses** algebraic and graphical techniques to **compare** alternative solutions to contextual problems.
- MS11-2 A student **represents** information in symbolic, graphical and tabular form.
- MS11-3 A student **solves** problems involving quantity measurement, including accuracy and the choice of relevant units.
- MS11-4 A student **performs** calculations in relation to two-dimensional figures.
- MS11-5 A student **models** relevant financial situations using appropriate tools.
- MS11-6 A student makes **predictions** about everyday situations based on simple mathematical models.
- MS11-7 A student **develops** and carries out simple statistical processes to answer questions posed.
- MS11-8 A student **solves** probability problems involving multistage events.
- MS11-10 A student **justifies** a response to a given problem using appropriate mathematical terminology and/or calculations.

### DIRECTIVES TO BE ASSESSED:

- **Solves:** Determine mathematically.
- **Compare:** Show how things are similar or different.
- **Develop:** Create.
- **Justify:** Show or prove to be right or reasonable.
- **Model:** Devise a mathematical representation of a phenomenon or system.
- **Performs:** carry out, accomplish, or fulfil
- **Represent:** To show or describe something.
- **Prediction:** make a judgement on possible outcomes.
- **Uses:** make use of.

### TASK DESCRIPTION:

You will complete a 2 hour examination, covering the Mathematics Standard (Preliminary) topics listed below.

This is EVERYTHING you have done this year in the Preliminary course.

The paper will involve multiple choice and extended response questions of a format and style similar to that of the HSC Examination.

The NESA HSC Reference sheet (on reverse side) will be provided with your examination paper.

**Section 1 – 10 multiple choice questions worth 10 marks total**

**Section 2 – 25 extended response questions worth 70 marks total**

#### **Recommended equipment:**

NESA-approved scientific calculator

Pens, ruler, pencils

**This task will be completed under examination conditions. You will have 10 minutes reading time.**

### ASSESSMENT CRITERIA – STUDENT CHECKLIST:

You will be assessed on the (Year 11 New Century Mathematics Standard) topics of:

- Financial Mathematics (MS.F1) – Chapters 3 & 8
- Algebra (MS.A1, MS.A2) – Chapters 2 & 7
- Statistical Analysis (MS.S1, MS.S2) – Chapters 1, 4 & 10
- Measurement (MS.M1, MS.M2) – Chapters 5 & 11

**You are encouraged to complete the above Chapter Reviews, Review Tests, Review Sets and Examination Questions, Cumulative Reviews, as well as other study activities which should include:**

- past HSC papers (found online from NESA website)
- create your own topic summaries
- other textbook / summary book questions (eg Excel)
- [www.mathspace.co](http://www.mathspace.co) and [edrolo.com.au](http://edrolo.com.au)
- resources on Google classroom (**rdwihtr**) – including textbook chapters and “Minimum Expected Classwork” document
- catch up work you may have missed or not completed
- ask for help with problems at the Mathematics Staffroom

**Check your assessment booklet for the PHS Assessment Policy**

Mathematics Standard 1  
Mathematics Standard 2

REFERENCE SHEET

### Measurement

#### Precision

Absolute error =  $\frac{1}{2} \times$  precision

Upper bound = measurement + absolute error

Lower bound = measurement – absolute error

#### Length, area, surface area and volume

$$l = \frac{\theta}{360} \times 2\pi r$$

$$A = \frac{\theta}{360} \times \pi r^2$$

$$A = \frac{h}{2}(x + y)$$

$$A \approx \frac{h}{2}(d_f + d_l)$$

$$A = 2\pi r^2 + 2\pi rh$$

$$A = 4\pi r^2$$

$$V = \frac{1}{3}Ah$$

$$V = \frac{4}{3}\pi r^3$$

#### Trigonometry

$$A = \frac{1}{2}ab \sin C$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

### Financial Mathematics

$$FV = PV(1 + r)^n$$

#### Straight-line method of depreciation

$$S = V_0 - Dn$$

#### Declining-balance method of depreciation

$$S = V_0(1 - r)^n$$

### Statistical Analysis

$$z = \frac{x - \bar{x}}{s}$$

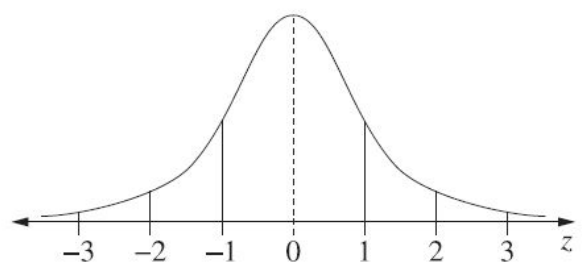
An outlier is a score

less than  $Q_1 - 1.5 \times IQR$

or

more than  $Q_3 + 1.5 \times IQR$

#### Normal distribution



- approximately 68% of scores have z-scores between  $-1$  and  $1$
- approximately 95% of scores have z-scores between  $-2$  and  $2$
- approximately 99.7% of scores have z-scores between  $-3$  and  $3$