Mathematics A

Information about the 2019 examination

The examination will be based on the *Mathematics A Senior External Syllabus 2006*. It will consist of two papers.

Candidates must sit both Paper One and Paper Two. No alternative arrangements will be made if a candidate fails to attend a scheduled examination for any reason. There are no opportunities to resit examinations. No level of achievement can be awarded unless the candidate sits all examinations.

Paper	Perusal/planning time	Working time
One	10 minutes	3 hours
Two	10 minutes	3 hours

Each paper will contain four extended response questions.

The following syllabus topics will be assessed.

Paper One

- Managing money 1
- Elements of applied geometry
- Exploring and understanding data
- Maps and compasses — Navigation

Paper Two

- Managing money 2
- Introduction to data and its presentation
- Linking two and three dimensions
- Operations research — Networks and queuing

Other information

- A resource book containing formulas will be provided with each paper. These formulas are attached.
- Candidates may improve their *Knowledge and procedures* grade (and their final result) by showing working in responses to *Modelling and problem solving* questions.
- Candidates should prepare for all topics and subject matter listed in the syllabus.

For all Queensland schools

Level of achievement

Candidate responses to questions in each paper will be judged against the three syllabus exit criteria:

- *Knowledge and procedures (KP)*

- *Modelling and problem solving (MP)*

- *Communication and justification (CJ).*

Each candidate's level of achievement will be determined by applying the syllabus standards to an overall assessment of responses across both Paper One and Paper Two.

Enquiries

Telephone (07) 3120 6180 or email externalexams@qcaa.qld.edu.au.

Formulas

Area

Circle

$A = \pi r^2$

r = radius of the circle

Triangle

$A = \dfrac{1}{2}bh$

b = base length

h = perpendicular height

Parallelogram

$A = bh$

b = base length

h = perpendicular height

Trapezium

$A = \dfrac{1}{2}h(a+b)$

a and b are parallel sides

h = perpendicular height

Sector

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

θ = number of degrees in the central angle

Circumference of a circle

$C = \pi D$

D = diameter

Sphere

$A = 4\pi r^2$

Closed cylinder

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

Volume

r = radius of base

h = perpendicular height

A = base area

Cone

$V = \dfrac{1}{3}\pi r^2 h$

Sphere

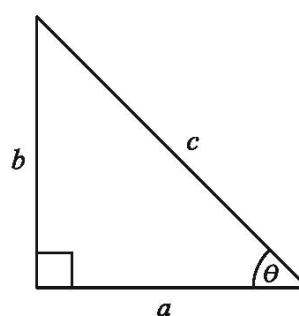$V = \dfrac{4}{3}\pi r^3$

Cylinder

$V = \pi r^2 h$

Pyramid

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

Prism

$V = Ah$

Trigonometry

$$\sin\theta = \frac{b}{c}, \quad \cos\theta = \frac{a}{c} \text{ and } \tan\theta = \frac{b}{a}$$

Pythagoras' theorem: $c^2 = a^2 + b^2$

Financial formulas

Simple interest

$I = P\,r\,n$

$P =$ initial quantity

$r =$ percentage interest rate per period expressed as a decimal

$n =$ number of periods

Compound interest

$A = P(1 + r)^n$

$A =$ final balance

$P =$ initial quantity

$r =$ percentage interest rate per compounding period expressed as a decimal

$n =$ number of compounding periods

Diminishing value formula

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

$S =$ salvage value of an asset after n periods

$V_0 =$ initial value of asset

$r =$ percentage interest rate per period expressed as a decimal

$n =$ number of periods

Percentage dividend

$$\frac{\text{Dividend per share}}{\text{Face value of share}} \times 100$$

Percentage yield

$$\frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$$

Earth geometry

Great circle distance

Angle difference × 111.2 km

Angle difference × 60 nautical miles

Time

$1°$ longitude difference = 4 minutes time difference

Navigation

1 nautical mile = 1.852 km