2017 Senior External Examination

Mathematics A

Paper One — Resource book

Thursday 26 October 2017

9 am to 12:10 pm

Directions

You may write in this book during perusal time.

Contents

- Formulas

After the examination session

Take this book when you leave.

Queensland Government | Queensland Curriculum & Assessment Authority

For all Queensland schools

Area

Circumference of a circle

$C = \pi D$

D = diameter

Area of a circle

$A = \pi r^2$

r = radius of the circle

Area of a triangle

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

b = base length

h = perpendicular height

Area of a parallelogram

$A = bh$

b = base length

h = perpendicular height

Area of a trapezium

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

a and b are parallel sides

h = perpendicular height

Area of a sector

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

θ = number of degrees in the central angle

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

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

Sphere

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

Cylinder

$V = \pi r^2 h$

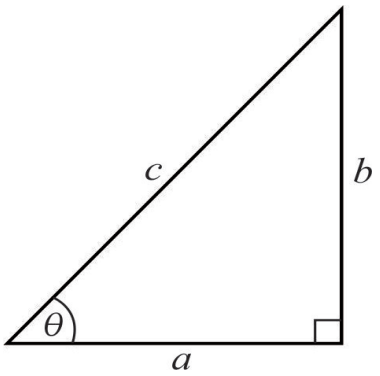
Pyramid

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

Prism

$V = Ah$

Trigonometry



$\sin\theta = \frac{b}{c}$, $\cos\theta = \frac{a}{c}$ 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 the asset

r = percentage interest rate per period expressed as a decimal

n = number of periods

Percentage dividend

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

Percentage yield

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

Earth geometry

Great circle distance

Angle difference $\times$ *111.2 km*

Angle difference $\times$ *60 nautical miles*

Time

1° longitude difference = 4 minutes time difference

Navigation

1 nautical mile = 1.852 km

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