Instructions

• Please ensure that you have read this aid before the examination.

Information

• A formula sheet will be provided for foundation tier and for higher tier students.
• The format/structure of the assessments remains unchanged.
• This exam aid provides students with additional exam formulae which they may refer to in their examinations.
• Please note, a copy of this exam aid will be made available to all students on the day of the examination as an insert in the question paper.
• There are no restrictions on who can use this aid.
• Students and teachers can discuss this exam aid.
• This document has 2 pages.
Higher Tier Formulae Sheet

Perimeter, area and volume
Where \( a \) and \( b \) are the lengths of the parallel sides and \( h \) is their perpendicular separation:

Area of a trapezium = \( \frac{1}{2} (a + b) h \)
Volume of a prism = area of cross section \( \times \) length
Where \( r \) is the radius and \( d \) is the diameter:

Circumference of a circle = \( 2\pi r = \pi d \)
Area of a circle = \( \pi r^2 \)

Quadratic formula
The solution of \( ax^2 + bx + c = 0 \)
where \( a \neq 0 \)
\[
x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}
\]

Pythagoras’ Theorem and Trigonometry
In any right-angled triangle where \( a \), \( b \) and \( c \) are the length of the sides and \( c \) is the hypotenuse:
\[
a^2 + b^2 = c^2
\]
In any right-angled triangle \( ABC \) where \( a \), \( b \) and \( c \) are the length of the sides and \( c \) is the hypotenuse:
\[
\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}
\]
In any triangle \( ABC \) where \( a \), \( b \) and \( c \) are the length of the sides:

sine rule: \( \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \)

cosine rule: \( a^2 = b^2 + c^2 - 2bc \cos A \)
Area of triangle = \( \frac{1}{2} ab \sin C \)

Compound Interest
Where \( P \) is the principal amount, \( r \) is the interest rate over a given period and \( n \) is number of times that the interest is compounded:

Total accrued = \( P \left( 1 + \frac{r}{100} \right)^n \)

Probability
Where \( P(A) \) is the probability of outcome \( A \) and \( P(B) \) is the probability of outcome \( B \):

\[
P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)
\]
\[
P(A \text{ and } B) = P(A \text{ given } B) P(B)
\]

END OF EXAM AID