**MATHEMATICS METHODS**

**Unit 1 and Unit 2**

**Formula Sheet**

(*For use with Year 11 examinations and response tasks*)

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Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

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This document is valid for teaching and examining from 1 January 2024.

**Measurement**

Circle: *C* = 2*πr* = *π D*, where *C* is the circumference,

*r* is the radius and *D* is the diameter

*A* = *πr2*, where *A* is the area

Triangle: *A* = *bh*, where *b* is the base and *h* is the perpendicular height

Parallelogram: *A* = *bh*

Trapezium: *A* = (*a* + *b*)*h*, where *a* and *b* are the lengths of the parallel sides

Prism: *V* = *Ah*, where *V* is the volume and *A* is the area of the base

Pyramid: *V* = *Ah*

Cylinder: *S* = 2 *πrh* + 2 *πr2*, where *S* is the total surface area

*V* = *πr2h*

Cone: *S* = *πrs* + *πr2*, where *s* is the slant height

*V* = *πr2h*

Sphere: *S* = 4*πr2*

*V =*  *πr3*

**Functions and graphs**

Lines and Linear relationships

For points and

Gradient of the line through *P* and *Q*:

Equation of the line through *P* with slope *m*:

Parallel lines:

Perpendicular lines:

General equation of a line: or

Quadratic relationships

For the general quadratic equation

Completing the square:

Discriminant:

Quadratic formula:

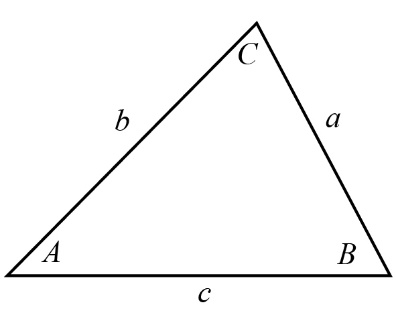
Graphs and Relations

Equation of a circle:

where, is the centre and is the radius

**Trigonometric functions**

Cosine and sine rules

For any triangle *ABC* with corresponding length of sides *a,b,c*

Cosine rule:

Sine rule:

Area of :

Circular measure and radian measure

In a circle of radius , for an arc subtending angle  (radians) at the centre

Length of arc: Length of chord: 

Area of sector: Area of segments:

Trigonometric functions: (fundamentals)

Angle sum and difference identites

**Counting and probability**

Combinations

Number of combinations:

(of objects taken from a set of distinct objects)

Binomial expansion:

Binomial coefficients:

Probability

Fundamentals of probability:

Conditional probability:

**Exponential functions**

Index laws:

For *a, b* >0 and *m,n* real,

For *a* > 0, *m* an integer and *n* a positive integer,

**Arithmetic and geometric sequences and series**

Arithmetic sequences

For initial term *a* and common difference *d*:

Geometric sequences

For initial term *a* and common ratio *r*:

**Introduction to differential calculus**

Rates of change

Difference quotient:

Derivative (concept):

Computation of derivatives:

Anti-derivatives: If then

Note: Any additional formulas identified by the examination writers as necessary will be included in the body of the particular question.