**FORMULAE SHEET**

**Area of an annulus**

*A* = *π*(*R*2 – *r*2)

*R* = radius of outer circle

*r* = radius of inner circle

**Area of an ellipse**

*A* = *πab*

*a* = length of semi-major axis

*b* = length of semi-minor axis

**Area of a sector**

A = *πr*2

*θ* = number of degrees in central angle

**Arc length in a circle**

*l* =  2*πr*

*θ* = number of degrees in central angle

**Simpson’s rule for area approximation**

*A* = (*df* + 4*dm* + *dl*)

*h* = distance between successive measurements

*df* = first measurement

*dm* = middle measurement

*dl* = last measurement

**Surface area**

Sphere *A* = 4*πr*2

Closed cylinder 

r = radius

h = perpendicular height

**Volume**

Cone *V* = *πr*2*h*

Cylinder *V* = *πr*2*h*

Pyramid *V* = *Ah*

Sphere *V* = *πr*3

R = radius

*h* = perpendicular height

*A* = area of base

**Sine rule**



**Area of a triangle**

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**Cosine rule**

*c*2 = *a*2 + *b*2 – 2*ab*cos *C*

or

cos *C* = 

**Simple Interest**

*I* = *Prn*

*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

*n* = number of compounding periods

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

**Future value of an annuity**

*A* = *M*{}

*M* = contribution per period, paid at the end of the period

**Present value of an annuity**

*N* = *M*{}

or

*N* = 

**Straight-line formula for depreciation**

*S* = *V*o – *Dn*

*S* = salvage value of asset after *n* periods

*V*o = purchase price of the asset

*D* = amount of depreciation apportioned per period

*n* = number of periods

**Declining balance formula for depreciation**

*S* = *V*o(1 – *r*)*n*

*S* = salvage value of the asset after *n* periods

*r* = percentage interest rate per period, expressed as a decimal

**Mean of a sample**





= mean

*x* = individual score

*n* = number of scores

*f* = frequency

**Formula for *z*-scores**

*z* = 

*s* = standard deviation

**Gradient of a straight line**

*m* = 

**Gradient-intercept form of a straight line**

*y* = *mx* + *b*

*m* = gradient

*b* = *y*-intercept

**Probability of an event**

The probability of an event where outcomes are equally likely is given by

P(event) = 