



# **Level 3 Certificate**

# **MATHEMATICAL STUDIES**

## **Formulae Sheet**

### **INFORMATION**

**This formulae sheet should be issued to all candidates for use with all Mathematical Studies examinations.**

**[Turn over]**

These formulae are not required to be learnt. A clean copy of this formulae sheet will be issued to you in the examination.

### VOLUME AND SURFACE AREA

Shape	Volume	Surface area
Cone	$V = \frac{1}{3}\pi r^2 h$	$A = \pi r l + \pi r^2$
Sphere	$V = \frac{4}{3}\pi r^3$	$A = 4\pi r^2$
Pyramid	$V = \frac{1}{3} \text{base} \times h$	

### FINANCIAL CALCULATION – AER

The annual equivalent interest rate (AER),  $r$ , is given by

$$r = \left(1 + \frac{i}{n}\right)^n - 1$$

where  $i$  is the nominal interest rate, and  $n$  the number of compounding periods per year.

**Note:** the values of  $i$  and  $r$  should be expressed as decimals.

**FINANCIAL CALCULATION – APR**

The annual percentage interest rate (APR) is given by

$$C = \sum_{k=1}^m \left( \frac{A_k}{(1+i)^{t_k}} \right)$$

where  $\pounds C$  is the amount of the loan,  $m$  is the number of repayments,  $i$  is the APR expressed as a decimal,  $\pounds A_k$  is the amount of the  $k$ th repayment,  $t_k$  is the interval in years between the start of the loan and the  $k$ th repayment.

It may be assumed that there are no arrangement or exit fees.

**END OF FORMULAE SHEET**

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