**Higher Applications of Mathematics**

**Finance Unit: VAT and AER**

**Section 1: VAT (Take VAT as 20% unless otherwise stated)**

**1.** The cost to repair a car is as follows.

£22.30 per hour for 3 hours labour.

 £275 for the parts needed.

 VAT will be added on.

 What is the total cost of the car repair?

2. Mary hopes that he can get her bathroom fixed for under £200

 The bill is as follows.

 4.5 hours of labour at £13 an hour.

 5 parts costing £10.50 each.

 VAT will then be added on.

 What is the total cost of the bathroom getting fixed?

**Section 2: AER**

1. Given these annual nominal rates, calculate

 i) The monthly rate ii) The AER

 a) 8%

 b) 12.4%

 c) 32%

2. Kirsty puts £8200 into a bank account for 15 months.

 The nominal rate is 4% p.a.

 Interest is paid every 3 months

 a) Calculate the 3 monthly interest rate

 b) How much will Kirsty have in 15 months?

3. Henry puts £7000 into a bank account.

 The nominal rate is 9.2% p.a.

 Interest is paid every 4 months.

 a) Calculate the 4 monthly interest rate

 b) How much will Henry have in 20 months?

4. Carly puts £5000 into a bank account

 The nominal rate is 7.6% p.a.

 Interest is paid bi-monthly (every other month)

 a) Calculate the bi-monthly interest rate.

 b) How much will Carly have in her account in 30 months?

5. Ryan puts £3200 into a bank account that pays interest weekly.

 The nominal rate is 6.7% p.a.

 a) Calculate the weekly interest rate

 b) How much will they have in 39 weeks?

**5.** Suppose you invest £2000 into a bank account with a fixed rate of 3% p.a.

a) Create a formula to show how much money you would have in your bank account after n years.

b) Sub in values of n to find out how long it would take for your money to double.

**6.** Martin is looking at two different bank accounts.

 Bank 1: Annual nominal rate of 9% p.a. but interest is paid monthly.

 Bank 2: Monthly rate of 0.64%

 Calculate the AER of each one.