

## Money Matters.

You should be able to do the following:

- Calculate Simple Interest.
- Calculate a Wage Rise
- Calculate Commission earned.
- Calculate Double Time & Time and a Half OT
- Calculate Profit and Loss
- Calculate an Insurance Premium
- Calculate different currencies using various rates of exchange.
- Calculate a Hire Purchase Plan
- Calculate VAT.

### Example 1: - Calculating Simple Interest.

I borrow £800 from the bank for 1 year. The bank charges 9% interest p.a. (per annum). How much must I pay back altogether?

The diagram shows the calculation of simple interest on a loan. It starts with a yellow box containing the calculation: 9% of £800, which is  $\frac{9}{100} \times 800$ , then  $0.09 \times 800$ , resulting in £72. Two arrows point from this box to a green box and a red box. The green box explains that this £72 is the interest added to the money owed at the end of the year. The red box shows the total amount to be paid back: £800 + £72 = £872.

9% of £800  
 $= \frac{9}{100} \times 800$   
 $= 0.09 \times 800$   
 $= £72$

This is the amount of interest that will be added on to the money I owe at the end of the year. I must now add this on to the amount I borrowed.

£800 + £72  
**= £872**

### Example 2: - Calculating Simple Interest.

I leave £2000 in the bank where the interest rate is 6.5% p.a. How much will I receive for my investment after:

- a) 1 Year.                      b) 1 Month                      c) 7 Months.

The diagram shows three separate calculations for interest on a £2000 investment at 6.5% p.a. for different periods. Each calculation is in a yellow box. Arrows from all three boxes point to a green box that explains the calculations. Part a) calculates interest for 1 year:  $\frac{6.5}{100} \times 2000 = 0.065 \times 2000 = £130$ . Part b) calculates interest for 1 month:  $£130 \div 12 = £10.83$ . Part c) calculates interest for 7 months:  $£10.83 \times 7 = £75.83$ . The green box explains that in part a, interest for 1 year was calculated; in part b, interest for 1 month was found by dividing the 1-year interest by 12; and in part c, the 1-month interest was multiplied by 7 to find the interest for 7 months.

a) 6.5% of £2000  
 $= \frac{6.5}{100} \times 2000$   
 $= 0.065 \times 2000$   
 $= £130$

b)  $£130 \div 12$   
 $= £10.83$

c)  $£10.83 \times 7$   
 $= £75.83$

In part a, I calculated the amount of interest added to my account in 1 year. In part b, I calculated the amount of interest gained in 1 month by dividing by 12, since there are 12 months in a year. And in part c, I multiplied this answer by 7 to get the amount of interest gained for 7 months.

### Example 3: - Calculating a Wage Rise:

Last year, Tanya's salary was £16,500. This year she received a 3% pay rise.

- Calculate the actual pay rise due to Tanya.
- Now calculate Tanya's new annual salary.

$$\begin{aligned} &\text{a) } 3\% \text{ of } \pounds 16,500 \\ &= \frac{3}{100} \times 16500 \\ &= 0.03 \times 16500 \\ &= \pounds 495 \end{aligned}$$

Here we find Tanya's pay rise by first finding out what 3% of her previous salary was since this is what is going to be added on.

$$\begin{aligned} &\text{b) } \pounds 495 + \pounds 16,500 \\ &= \pounds 16995 \end{aligned}$$

Now we use our previous answer which was the pay rise and add it on to the old salary to find Tanya's new salary.

**£16,995**

### Example 4: - Commission:

Sam sells cars for a living. He receives 2% commission on any car that he sells. He sold a new car worth £12,600. How much commission did he take?

$$\begin{aligned} &2\% \text{ of } \pounds 12,600 \\ &= \frac{2}{100} \times 12600 \\ &= 0.02 \times 12600 \\ &= \pounds 252 \end{aligned}$$

Commission is a guaranteed amount of money given to a person as an incentive to sell a product. In this example, Sam receives 2% of the amount he sells. This would of course be in addition to his basic wage.

**£252**

### Example 5: - Overtime – Double Time.

Cedric works in a florist shop. His boss pays him a basic rate of £5.40 per hour. Last week Cedric worked his normal 34 hours plus 8 hours at an overtime rate of Double Time. How much did he get paid altogether last week?

$$\begin{aligned} &34 \times \pounds 5.40 \\ &= \pounds 183.60 \end{aligned}$$

This is Cedric's standard weekly wage without any overtime.

$$\begin{aligned} &\text{Double Time Rate:} \\ &\pounds 5.40 \times 2 \\ &= \pounds 10.80 \end{aligned}$$

If you are being paid at a rate of Double Time, you must double what you earn per hour.

$$\begin{aligned} &8 \times \pounds 10.80 \\ &= \pounds 86.40 \end{aligned}$$

Now multiply the new "Double Time" rate by the amount of hours worked at that Rate.

$$\begin{aligned} &\text{Total Wages:} \\ &= \pounds 183.60 + \pounds 86.40 \end{aligned}$$

Now add the two monies together to get the total wages.

**£270**

### Example 6: - Overtime – Time and a half.

Mary works in another florist shop. Her boss pays her the same basic rate of £5.40 per hour as Cedric. Last week Mary worked her normal 34 hours plus 8 hours at an overtime rate of Time and a half. How much did she get paid altogether last week?

$$34 \times \text{£}5.40 \\ = \text{£}183.60$$

This is Mary's standard weekly wage without any overtime.

$$\text{Time and a half Rate:} \\ \text{£}5.40 \times 1.5 \\ = \text{£}8.10$$

If you are being paid at a rate of Time and a Half, you must multiply the normal rate by 1.5.

$$8 \times \text{£}8.10 \\ = \text{£}64.80$$

Now multiply the new "Time and a Half" rate by the amount of hours worked at that rate.

$$\text{Total Wages:} \\ = \text{£}183.60 + \text{£}64.80$$

Now add the two monies together to get the total wages.

**£248.40**

### Example 7: - Profit and Loss.

Mr Scott bought a treadmill for £350, and a rowing machine for £195. One year later he sold the treadmill for £298.50 and the rowing machine for £125.75. How much of a loss did he make altogether?

$$\text{Treadmill:} \\ 350 - 298.50 \\ = \text{£}51.50$$

A loss is made if you sell the product for less than you bought it.

$$\text{Rowing Machine:} \\ 195 - 125.75 \\ = \text{£}69.25$$

$$\text{Total Loss:} \\ 51.5 + 69.25 \\ = \text{£}120.75$$

**£120.75**

### Example 8:- Profit and Loss.

I bought a watch for £200 and sold it for £345. Did I make a profit or loss? If so how much did I make?

$$345 - 200 \\ = \text{£}145$$

A profit has been made, since I sold the watch for more than I bought it for.

**£145**

### Example 9: - Insurance Premium.

A house is valued at £60,000. Bob searches the internet for the cheapest house insurance. A website quoted him £2 per £1000. How much did the insurance cost Bob?

$$60,000 \div 1000 \\ = 60$$

This shows us there are 60 thousands in £60,000.

$$2 \times 60 \\ = \underline{\underline{\pounds 120}}$$

If there are 60 thousands in £60,000 and we are quoted £2 for every thousand, then we must be charged £120.

**£120**

### Example 10: - Exchange Rates.

The Lawson family flew to Italy for a two week holiday. They exchanged £1500 to Euros at a rate of £1 = 1.54€ How many Euros did they get to spend?

$$1500 \times 1.54 \\ = 2300\pounds$$

To change from a British currency to foreign currency all you do is just multiply by the exchange rate. In this case its 1.54€

**2300€**

### Example 11: - Calculating Hire Purchase.

I bought a new suite from a shop. It normally costs £3700 if paying upfront. I entered into the Hire Purchase scheme by paying a deposit for £475 and following it with 24 monthly payments of £140.50. How much did I pay altogether?

#### Find Monthly Payments

$$24 \times 140.50 \\ = \pounds 3372$$

First start by multiplying the amount of monthly payments by the amount you are to pay back per month.

#### Add the Deposit.

$$3372 + 475 \\ = \pounds 3847$$

Now add the deposit to the monthly payment amount. Hire Purchase will always work out more expensive that paying up front, but it is a more convenient short term method of buying expensive items.

**£3847**

**Example 12: - Calculating VAT.**

A microwave is advertised as selling at £500 without VAT. In order to buy it, VAT at a rate of 17.5% has to be added on. How much will I buy the microwave for?

$$\begin{aligned} &17.5\% \text{ of } \pounds 500 \\ &= \frac{17.5}{100} \times 500 \\ &= 0.175 \times 500 \\ &= \pounds 87.50 \end{aligned}$$

This is the amount of VAT to be added onto the Microwave. The calculation is not finished yet since we are still to add it on.

$$\begin{aligned} &\pounds 87.50 + \pounds 500 \\ &= \pounds \mathbf{587.50} \end{aligned}$$

This is the selling amount of the microwave.

**£587.50**