

COMPOUND INTEREST & DEPRECIATION

Recall for Compound Interest:

$$\text{Final amount} = P \left(1 + \frac{r}{100}\right)^n$$

$$\text{Interest earned} = \text{Final amount} - \text{principal}$$

Task 1 – Calculate the final amount in the account, given no money is withdrawn and a deposit of:

- 1) £600 at 5% per year for 3 years
- 2) £1,000 at 4% per year for 2 years
- 3) £2,500 at 6% per year for 4 years
- 4) £800 at 3.5% per year for 5 years
- 5) £3,200 at 2% per year for 3 years

Task 2 – Calculate the interest earned on an investment of:

- 6) £1,200 at 3% per year for 4 years
- 7) £900 at 4.5% per year for 2 years
- 8) £4,000 at 5% per year for 3 years
- 9) £2,700 at 6.5% per year for 5 years
- 10) £1,500 at 7% per year for 1 year

Task 3

- 11) Liam invests £1,500 in a bank account paying 5% compound interest per year. What is Liam's total balance after 3 years?
- 12) A business deposits £10,000 into a fixed account at 4% compound interest per year for 5 years. What is the total amount in the account after 5 years?
- 13) Maria invests £2,000 at 3% compound interest for 6 years. How much interest will she earn in total?
- 14) A company sets aside £5,500 in a reserve account earning 6% compound interest per year. After 2 years, they withdraw half the total balance. How much is withdrawn?
- 15) A student places £750 in an account that earns 4.5% compound interest per year for

the first 2 years and 6% compound interest for the third year. How much money is in the account at the end of 3 years?

- 16) £3,000 is invested in a bank at 3.5% compound interest per year. If no money is withdrawn, how many years until the account has a balance of at least £3950?

- 17) A charity invests £15,000 at $r\%$ compound interest per year. After 3 years, they have a total amount of £17,117.49 in the account. Work out the interest rate earned to 1 decimal place.

- 18) Jack is deciding between two offers at different banks.

Bank A: Open a savings, deposit £3000 and earn 7% interest for the first 4 years.

Bank B: Open a savings, deposit £3000 and earn 6% simple interest for the first 4 years. An additional payout of £250 will be given at the end of the 4 years.

Which offer should Jack choose? You must show all your working.

- 19) £2,200 is saved in an account that pays 6% compound interest per year, compounded monthly. How much interest is earned after 4 months?

Recall for Depreciation:

$$\text{Value after depreciation} = P \left(1 - \frac{r}{100}\right)^n$$

Task 4

- 20) A car is bought for £18,000. It depreciates at 12% per year. What is its value after 3 years?
- 21) A laptop costs £1,200 and loses value at 20% per year. How much will it be worth after 4 years?
- 22) A motorbike costs £6,500 and depreciates at 8% per year. Find its value after 5 years.
- 23) A machine costs £25,000 and depreciates at 15% per year. Calculate its value after 2 years.
- 24) A delivery van is bought for £28,000. After 5 years, it is worth £12,335. Find the annual depreciation rate to 1 decimal place.
- 25) A camera is bought for £2,000 and depreciates at a rate of 14% per year. How many years will it take for its value to fall below £1,000?