SIMPLE INTEREST

- Simple Interest is sometimes used by Banks and Building Societies. It is the interest paid on savings. It is paid each year (p.a. or per annum) and is the same every year.
- Simple Interest is also used by Finance Companies. It is the interest that you pay if you borrow money to buy something.

EXAMPLE

Anna has £3000 in a savings account. Simple Interest is paid at 1.5% p.a.
How much does she have in the account after

a) 1 year

b) 5 years

ANSWER

a) 1.5% of £3000 = £45

At the end of 1 year, she will have £3000 + £45 = £3045

b) The money will be in the account for 5 years, so the interest will be 5 × £45 = £225

At the end of 5 years, she will have £3225.

EXAMPLE

Kevin wants to buy a new car costing £12000. He has £4000 in cash so wants to borrow the rest. He is offered finance from the garage at 6% simple interest over 36 months.

a) How much will he have to borrow

b) How much will he have to pay back

c) What will the monthly payments be?

ANSWER

a) He will have to borrow £12000 − £4000 = £8000

b) 6% of £8000 = £480 ∴ Simple Interest will be £480 p.a.
The loan will last for 3 years, so total interest will be 3 × £480 = £1440

He will have to pay back £8000 + £1440 = £9440

c) Monthly payments will be £9440 ÷ 36 = £262.22222 = £262.22

[Don't forget to round answers sensibly]

EXERCISE

1. Anna has £4000 in a savings account. Simple Interest is paid at 2.0% p.a.
How much does she have in the account after

   a. 1 year

   b. 5 years?

2. Henry invests £3000 in a building society paying simple interest at 4% per annum. How much will he have in this account after 10 years?

3. Martin wants to buy a second hand car costing £5500. He is offered finance from the garage at 6% simple interest over 2 years.

   a. How much will he have to borrow

   b. How much will he have to pay back

   c. What will the monthly payments be?

4. Tammy wants to buy a new car costing £19000. She puts down a 30% deposit and borrows the rest. She borrows the rest from her bank. They give her the finance at 5% simple interest over 48 months.

   a. How much will she have to borrow

   b. How much will she have to pay back

   c. What will the monthly payments be?

5. Mr and Mrs Jones decide to upgrade their computer. The machine they want will cost £1098. They are offered finance on the full amount at 7% simple interest over 3 years.

   a. How much will they have to pay each month

   b. How much will they have paid for their computer after the final instalment?

COMPOUND INTEREST

- This type of interest is where the bank or building society pays interest on the interest earned as well as on the original amount.

EXAMPLE

Anna has £3000 in a savings account. Compound Interest is paid at 1.5% p.a. How much does she have in the account after

a) 1 year

b) 5 years

ANSWER

a) 1.5% of £3000 = £45

At the end of 1 year, she will have £3000 + £45 = £3045

b) This time the interest is added onto the savings.

Next year, interest is calculated on a larger amount.

Year		Interest	Savings
1	1.50% x £ 3,000.00 =	£45.00	**£ 3,045.00**
2	1.50% x **£ 3,045.00** =	£45.68	£ 3,090.68
3	1.50% x £ 3,090.68 =	£46.36	£ 3,137.04
4	1.50% x £ 3,137.04 =	£47.06	£ 3,184.09
5	1.50% x £ 3,184.09 =	£47.76	£ 3,231.85

This could also be worked out using the scale factor method:

1.5% increase = 100% + 1.5% = 101.5% = 1.015

The value of £3000 after 5 years would be $(1.015)^5 \times$ £3000 = £3231.85

[Notice that Anna will have more money in her account
if compound interest is used rather than simple interest.]

EXERCISE

1. Kevin has £3000 in a savings account. Compound Interest is paid at 1.5% p.a. How much does he have in the account after
   a. 1 year
   b. 5 years

2. Felicity has £10000 in a saving account. Compound Interest is paid at 2.5% p.a. How much does she have in the account after
   a. 1 year
   b. 5 years

3. Luke was given £5000 in January of this year. He invested it in an account which paid compound interest at 5.0%. How many years will it take for his savings to reach £7000?