Wood Manufacturing & Finishing Simple Interest & Compound Interest

Phase 4

Lecturer Jennifer Byrne

Simple Interest

- When you deposit money into the bank and leave it there for a certain length of time you get payment for letting the banks have use of your money this is called "The Interest."
- The money you deposited is called "The Principle"
- The percentage paid by the banks for the use of your money is called "The Rate"
- The period that your money is left in the bank is called the "The Time"

Simple Interest

- When you deposit money into the bank and leave it there for a certain length of time you get payment for letting the banks have use of your money this is called "The Interest."
- The money you deposited is called "The Principle"
- The percentage paid by the banks for the use of your money is called "The Rate"
- The period that your money is left in the bank is called the "The Time"
- If you left €5000 in the bank for 4years at an interest rate of 3.6%, how much interest would your money earn.
- Interest = Principle x Rate X Time
- I= P x R x T
- I = €5000 x 3.6% x 4yrs = €720
- or
- 5000 x 3.6% = 180 180 x 4yrs = €720

Simple Interest

- E.g. If you left €5000 in the bank for 4 years at an interest rate of 3.6%, how much interest would your money earn.
- Interest = Principle x Rate X Time
- I= P x R x T
- I = €5000 x 3.6% x 4yrs = €720
- or
- 5000 x 3.6% = 180 180 x 4yrs = €720

Simple Interest

- Interest = Principle x Rate x Time
- I= P x R x T
- To find other parts you may need to re-arrange the formula
- $P = \frac{I}{R \times T}$ $R = \frac{I}{P \times T}$ $T = \frac{I}{P \times R}$

  In simple interest the rate is calculated on the amount first deposited. It is therefore the same amount added each year.

Principle amount	8000
Plus 5% interest	400
	8400 yr 1
Plus 5% interest	400
	8800 yr 2
Plus 5% interest	400
	9200 yr3

Compound Interest

- Using simple interest €8000 @5% earned €1200 for 3years.
- With compound interest the rate is calculated on the amount at the **beginning** of each year and **added** on to that amount.
- It is therefore **NOT** the same amount added each year.

Principle amount	8000
Plus 5% interest	400
	8400 yr 1
Plus 5% interest	420
	8820 yr 2
Plus 5% interest	441
	9261 yr3

Using compound interest €8000 earned €1261 for 3years.

Comparing The Two

Simple Interest	
Principle amount	8000
Plus 5% interest	400
Yr 1	8400
Plus 5% interest	400
Yr 2	8800
Plus 5% interest	400
Yr 3	€9200
Total earned €1200	

Compound Interest	
Principle amount	8000
Plus 5% interest	400
Yr 1	8400
Plus 5% interest	420
Yr 2	8820
Plus 5% interest	441
Yr 3	€9261
Total earned €1261	

Example Question 1

- **Q1.** A Cabinet- Maker looking to Invest €10,000 for 4 years has been given **two options** . Which Option should they choose in order to make the most money? **Show all Calculations.**

- Option A will give 4% Compound Interest for the first 2 years and then 7% Simple Interest for the following 2 years.
- **Or**

- Option B will give 7% Compound Interest for the first 2 years and then 4% Simple Interest for the following 2 years.

Example Question 1

- Option A : €10,000 @ 4% C.I. for 2yrs then 7% S.I. for 2yrs
- Invest 10000.00
  +4% C.I. 400.00
  Yr1 10400.00
- +4% C.I. 416.00
  Yr2 10816.00
- +7% S.I. 757.12
  Yr3 11573.12
- +7% S.I. 757.12
  Yr4 €12,330.24

- Option B : €10,000 @ 7% C.I. for 2yrs then 4% S.I. for 2yrs
- Invest 10000.00
  +7% C.I. 700.00
  Yr1 10700.00
- +7% C.I. 749.00
  Yr2 11449.00
- +4% S.I. 457.96
  Yr3 11906.96
- +4% S.I. 457.96
  Yr4 €12,364.92

- Answer is Option B

Example Question 2

- Q 2. A Person looking to Invest €5,000 for 4 years has been given two options.
- Which Option should they choose in order to make the most money? **Show all Calculations.**
- Option A will give 5% Compound Interest for the first 2 years and then 3% Simple Interest for the following 2 years.

Or

- Option B will give 2% Compound Interest for the first 2 years and then 7% Simple Interest for the following 2 years.

Example Question 2

- Option A : €5,000 @ 5% C.I. for 2yrs then 3% S.I. for 2yrs
- Invest 5000.00
  +5% C.I. 250.00
  Yr1 5250.00
- +5% C.I. 262.50
  Yr2 5512.50
- +3% S.I. 165.37
  Yr3 5677.87
- +3% S.I. 165.37
  Yr4 €5,843.24

- Option B : €5,000 @ 2% C.I. for 2yrs then 5% S.I. for 2yrs
- Invest 5000.00
  +2% C.I. 100.00
  Yr1 5100.00
- +2% C.I. 102.00
  Yr2 5202.00
- +7% S.I. 364.14
  Yr3 5566.14
- +7% S.I. 364.14
  Yr4 €5,930.28

- Answer is Option B

Example Question 3

- Q 3 €12,500 was invested at Compound Interest for 3 years. The first year rate was 4.5% The second year rate was 4% The third year rate was 3.5%. • Calculate the final amount and the interest earned.

	€
Invest	12500.00
+4.5% C.I.	562.50
Yr1	13062.50
+4% C.I.	522.50
Yr2	13585.00
+3.5% C.I.	475.47
Yr3	€14,060.47

€14,060.47 - €12500.00 = €1560.47
Interest = €1560.47
Final amount= €14,060.47

Question 4

- Q 4 €22,000 was invested at Compound Interest for 3 years. The first year rate was 5% The second year rate was 3% The third year rate was 3.5%. • Calculate the final amount and the interest earned.

		€
•	Invest	22000.00
•	+5% C.I.	1100.00
•	Yr1	23100.00
•	+3% C.I.	693.00
•	Yr2	23793.00
•	+3.5% C.I.	832.75
•	Yr3	€24,625.75

€24,625.75 - €22,000.00 = €2,625.75
Interest = €2,625.75
Final amount= €24,625.75

Question 5

- Q 5 €22,000 was invested for 4 years. The first two years was at Compound Interest rate of 3%. The third and fourth year was at a Simple Interest rate of 3%. • Calculate the final amount and the interest earned.

Invest		22000.00
+3%	C.I.	660.00
Yr1		22660.00
+3	C.I.	679.80
Yr2		23,339.80
+3%	S.I.	700.19
Yr3		24,039.99
+3%	S.I.	700.19
Yr4		€24,740.18

€24,740.18 - €22,000.00 = €2,740.18
Interest = €2,740.18
Final amount= €24,740.18

Question 6

- Q 6 €15,000 was invested for 4 years. The first two years was at Compound Interest rate of 3.5%. The third and fourth year was at a Simple Interest rate of 4.5%. • Calculate the final amount and the interest earned.

Invest		15000.00
+3.5%	C.I.	525.00
Yr1		15525.00
+3.5%	C.I.	543.37
Yr2		16068.37
+4.5%	S.I.	723.07
Yr3		16791.44
+4.5%	S.I.	723.07
Yr4		€17,514.51

€17,514.51 - €15,000.00 = €2,514.52
Interest = €2,514.52
Final amount= €17,514.51