# INTERESTS

# A DEFINITIONS

### A.1 FINDING THE INTEREST

**Ex 1:** Louis lends Hugo 100 dollars. After one year, Hugo repays Louis 110 dollars. Find the interest paid.

dollars

**Ex 2:** Maria borrows 200 dollars from John. After one year, Maria repays John 230 dollars. Find the interest paid.

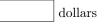


**Ex 3:** Jack lends Sarah 500 dollars. After one year, Sarah repays Jack 525 dollars.

Find the interest paid.



**Ex 4:** A bank lends 1 000 dollars to a customer. After one year, the customer repays the bank 1 080 dollars. Find the interest paid.



### A.2 FINDING THE TOTAL AMOUNT

**Ex 5:** A customer borrows 2 500 dollars from a bank, with 150 dollars of interest.

Find the total amount the customer needs to repay the bank.



**Ex 6:** Maria borrows 300 dollars from John with 30 dollars of interest.

Find the amount Maria needs to repay.



**Ex 7:** Jack lends Sarah 500 dollars with 50 dollars of interest. Find the total amount Sarah needs to repay Jack.



**Ex 8:** A bank lends 1 000 dollars to a customer with 80 dollars of interest.

Find the total amount the customer needs to repay the bank.



#### A.3 FINDING THE PRINCIPAL

**Ex 9:** Emma repaid 330 dollars in total, including 30 dollars of interest. Find the original amount (principal) that Emma borrowed.



 $\mathbf{Ex}$  10: Lucas repaid 550 dollars in total, including 50 dollars of interest. Find the original amount (principal) that Lucas borrowed.



**Ex 11:** Sophia repaid 1,080 dollars in total, including 80 dollars of interest.Find the original amount (principal) that Sophia borrowed.



**Ex 12:** Mia repaid 750 dollars in total, including 150 dollars of interest. Find the original amount (principal) that Mia borrowed.



**B** SIMPLE INTEREST

#### **B.1 FINDING THE INTEREST**

**Ex 13:** Find the simple interest on a principal of \$500 at a rate of 3% per year over 5 years (you can use a calculator).



**Ex 14:** Find the simple interest on a principal of \$1000 at a rate of 4% per year over 3 years (you can use a calculator).



**Ex 15:** Find the simple interest on a principal of \$750 at a rate of 5% per year over 2 years (you can use a calculator).



**Ex 16:** Find the simple interest on a principal of \$1 200 at a rate of 6% per year over 4 years (you can use a calculator).

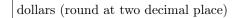


**B.2 FINDING THE INTEREST OVER MIXED TIME PERIODS** 

**Ex 17:** Find the simple interest on a principal of \$600 at a rate of 4% per year over 18 months (you can use a calculator).

dollars

**Ex 18:** Find the simple interest on a principal of \$700 at a rate of 5% per year over 180 days (you can use a calculator).



**Ex 19:** Find the simple interest on a principal of \$800 at a rate of 4% per year over 9 months (you can use a calculator).



**Ex 20:** Find the simple interest on a principal of \$1200 at a rate of 4% per year over 2 years and 6 months (you can use a calculator).

dollars

#### **B.3 FINDING THE TOTAL AMOUNT**

**Ex 21:** Jack lends Sarah 500 dollars with simple interest over 3 years at a rate of 3% per year.

Find the total amount Sarah needs to repay Jack (you can use a calculator).



**Ex 22:** Emma borrows 600 dollars from a bank with simple interest over 4 years at a rate of 2.5% per year.

Find the total amount Emma needs to repay the bank (you can use a calculator).



**Ex 23:** Michael lends 800 dollars to a friend with simple interest over 2 years at a rate of 4% per year.

Find the total amount the friend needs to repay Michael (you can use a calculator).



**Ex 24:** Sophia borrows 1 200 dollars with simple interest over 5 years at a rate of 2.5% per year.

Find the total amount Sophia needs to repay (you can use a calculator).



# C COMPOUND INTEREST

#### C.1 FINDING THE TOTAL AMOUNT USING A TABLE

**Ex 25:** \$1000 is placed in an account that earns 10% interest per annum (p.a.), and the interest is allowed to compound over three years. This means the account is earning 10% p.a. in compound interest.

Fill the compound interest table (you can use a calculator).

Year		Amount		Cor	npound inte	rest
0		\$1000		10%	of $1000 =$	\$100
1	\$1000	0 + \$100 = \$1	100	10%	of $1100 =$	\$110
2	\$					
3	\$					

Find the amount at 3 years.

dollars

**Ex 26:**  $\$3\,000$  is placed in an account that earns 20% interest per annum (p.a.), and the interest is allowed to compound over three years. This means the account is earning 20% p.a. in compound interest.

Fill the compound interest table (you can use a calculator).

Year		Amount		Cor	npound inte	rest
0		\$3000		20%	of $3000 =$	\$600
1	\$3,000	0 + \$600 = \$3	600	20%	of $3600 =$	\$720
2	\$					
3	\$					

Find the amount at 3 years.



**Ex 27:**  $\$3\,000$  is placed in an account that earns 20% interest per annum (p.a.), and the interest is allowed to compound over three years. This means the account is earning 20% p.a. in compound interest.

Fill the compound interest table (you can use a calculator).

Year	Amount	Cor	npound inte	rest
0	\$3 000			
1	\$			
2	\$			

Find the amount after 2 years.



#### C.2 FINDING THE TOTAL AMOUNT

**Ex 28:** Find the final amount on a principal of \$10 000 at a rate of 10% per year over 3 years compounded yearly (you can use a calculator).



**Ex 29:** Find the final amount on a principal of  $200\,000$  at a rate of 5% per year over 3 years compounded yearly (you can use a calculator).



**Ex 30:** Find the final amount on a principal of  $$5\,000$  at a rate of 8% per year over 2 years compounded yearly (you can use a calculator).



**Ex 31:** Find the final amount on a principal of 5000 at a rate of 8% per year over 20 years compounded yearly (round at 2 decimal places).

dollars
---------



#### C.3 FINDING THE BEST OPTION OF INVESTMENT

**Ex 32:** You have \$8000 to invest for 5 years and there are 2 possible options you have been offered:

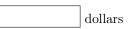
- Option 1: Invest at 9% p.a. simple interest.
- Option 2: Invest at 8% p.a. compound interest.

You can use a calculator.

• Calculate the amount accumulated at the end of the 3 years for option 1 (round to the neareast integer)



• Calculate the amount accumulated at the end of the 3 years for option 2 (round to the neareast integer)



Decide which option to take.
□ Option 1
□ Option 2

**Ex 33:** You have \$20,000 to invest for 5 years and there are 2 possible options you have been offered:

- Option 1: Invest at 7% p.a. simple interest.
- Option 2: Invest at 6% p.a. compound interest.

You can use a calculator.

• Calculate the amount accumulated at the end of 5 years for option 1 (round to the nearest integer):



• Calculate the amount accumulated at the end of 5 years for option 2 (round to the nearest integer):

dollars

Decide which option to take.
 Option 2

 $\Box$  Option 1

**Ex 34:** You have \$50,000 to invest for 30 years and there are 2 possible options you have been offered:

- Option 1: Invest at 10% p.a. simple interest.
- Option 2: Invest at 9% p.a. compound interest.

You can use a calculator.

• Calculate the amount accumulated at the end of the 30 years for option 1 (round to the nearest integer):



• Calculate the amount accumulated at the end of the 30 years for option 2 (round to the nearest integer):

dollars

Decide which option to take.
□ Option 1
□ Option 2

(°<u>+</u>°)