INTERESTS

A DEFINITIONS

A.1 FINDING THE INTEREST

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

____ \$

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

____ \$

Ex 3: Jack lends Sarah \$500. After one year, Sarah repays Jack \$525.
Find the interest paid.

____ \$

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

____ \$

A.2 FINDING THE TOTAL AMOUNT

Ex 5: A customer borrows \$2 500 from a bank, with \$150 of interest.
Find the total amount the customer needs to repay the bank.

____ \$

Ex 6: Maria borrows \$300 from John with \$30 of interest.
Find the amount Maria needs to repay.

____ \$

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

____ \$

Ex 8: A bank lends \$1 000 to a customer with \$80 of interest.
Find the total amount the customer needs to repay the bank.

____ \$

A.3 FINDING THE PRINCIPAL

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

____ \$

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

____ \$

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

____ \$

Ex 12: Mia repaid \$750 in total, including \$150 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.

____ \$

Ex 14: Find the simple interest on a principal of \$1 000 at a rate of 4% per year over 3 years.

____ \$

Ex 15: Find the simple interest on a principal of \$750 at a rate of 5% per year over 2 years.

____ \$

Ex 16: Find the simple interest on a principal of \$1 200 at a rate of 6% per year over 4 years.

____ \$

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.

\$

Ex 18: Find the simple interest on a principal of \$700 at a rate of 5% per year over 180 days.

\$ (round at two decimal places)

Ex 19: Find the simple interest on a principal of \$800 at a rate of 4% per year over 9 months.

\$

Ex 20: Find the simple interest on a principal of \$1 200 at a rate of 4% per year over 2 years and 6 months.

\$

B.3 FINDING THE TOTAL AMOUNT

Ex 21: Jack lends Sarah \$500 with simple interest over 3 years at a rate of 3% per year.
Find the total amount Sarah needs to repay Jack.

\$

Ex 22: Emma borrows \$600 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.

\$

Ex 23: Michael lends \$800 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.

\$

Ex 24: Sophia borrows \$1 200 with simple interest over 5 years at a rate of 2.5% per year.
Find the total amount Sophia needs to repay.

\$

C COMPOUND INTEREST

C.1 FINDING THE TOTAL AMOUNT USING A TABLE

Ex 25: \$1 000 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 in the compound interest table:

Year	Amount	Compound interest
0	\$1 000	10% of \$1 000 = \$100
1	\$1 000 + \$100 = \$1 100	10% of \$1 100 = \$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 in the compound interest table:

Year	Amount	Compound interest
0	\$3 000	20% of \$3 000 = \$600
1	\$3 000 + \$600 = \$3 600	20% of \$3 600 = \$720
2	\$	
3	\$	

Find the amount at 3 years.

dollars

Ex 27: \$1 000 is placed in an account that earns 5% interest per annum (p.a.), and the interest is allowed to compound over two years.
Fill in the compound interest table:

Year	Amount	Compound interest
0	\$1 000	
1	\$	
2	\$	—

Find the amount after 2 years.

dollars

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.

dollars

Ex 29: Find the final amount on a principal of \$200 000 at a rate of 5% per year over 3 years compounded yearly.

☐ dollars

Ex 30: Find the final amount on a principal of \$5 000 at a rate of 8% per year over 2 years compounded yearly.

☐ dollars

Ex 31: Find the final amount on a principal of \$5 000 at a rate of 8% per year over 20 years compounded yearly (round to the nearest integer).

☐ dollars

C.3 FINDING THE BEST OPTION OF INVESTMENT

Ex 32: You have \$8 000 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.
- Calculate the amount accumulated at the end of the 5 years for option 1 (round to the nearest integer):

☐ dollars

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

☐ dollars

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

☐ dollars

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

☐ dollars

- Decide which option to take.
  ☐ Option 2
  ☐ 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.
- Calculate the amount accumulated at the end of the 30 years for option 1 (round to the nearest integer):

☐ dollars

- 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