

GRADE 9 | 2024

Financial Mathematics: Interest and Exchange

Mathematics

CAPS ALIGNED

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1. Simple Interest

FORMULA: $SI = P \times r \times t$ (where r is a decimal: $8\% = 0.08$)**Total Amount $A = P(1 + rt)$** **EXAMPLE: Simple interest**

R5000 invested at 7.5% per year for 4 years.

 $SI = 5000 \times 0.075 \times 4 = R1500$ $A = R5000 + R1500 = R6500$

2. Compound Interest

FORMULA: $A = P(1 + r)^n$ **Where r = rate as decimal per period, n = number of periods****EXAMPLE: Compound interest**

R5000 at 7.5% per year, compounded annually for 4 years.

 $A = 5000(1.075)^4 = 5000 \times 1.3355 = R6677.50$ $\text{Interest} = R6677.50 - R5000 = R1677.50$ **KEY POINT: Compound interest grows FASTER than simple interest over time because interest is earned on previous interest.**

3. Hire Purchase

Hire purchase (HP) lets you buy goods and pay over time. You pay a deposit, then monthly instalments. HP always uses SIMPLE interest.

FORMULA: $\text{Deposit} = \% \times \text{cash price}$ **Balance = Cash price - Deposit****Total HP cost = Balance + (Balance $\times r \times t$)****Monthly instalment = Total HP cost / number of months****EXAMPLE: Hire purchase**

TV costs R8000. HP: 10% deposit, 18 months at 15% per year.

Deposit = R800, Balance = R7200

 $\text{Interest} = 7200 \times 0.15 \times 1.5 = R1620$ Total = R8820, Monthly = $R8820/18 = R490$

4. Foreign Exchange

Exchange rates change daily. Always check if you are buying or selling foreign currency.