∑ DANEMATHICS
FREE CAPS MATHS RESOURCES

GRADE 9 · WHOLE NUMBERS

Financial Maths: Interest, Hire Purchase & Exchange Rates

MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
34	55 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 34

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 R8 000 is invested at 9% p.a. SIMPLE interest for 4 years. The interest is ... (1)

A) R10 880 **B)** R720

C) R2 880 ✓ **D)** R11 292,65

Answer: C — $I = P \times i \times n = 8\,000 \times 0{,}09 \times 4$.

- **A** — that is the total VALUE, not the interest
- **B** — that is ONE year's interest
- **D** — that is the COMPOUND total

1.2 R8 000 at 9% p.a. COMPOUND interest for 4 years grows to ... (1)

A) R11 292,65 ✓ **B)** R10 880

C) R8 720 **D)** R2 880

Answer: A — $A = 8\,000(1{,}09)^4$.

- **B** — that is the SIMPLE interest total
- **C** — that is one year only
- **D** — that is the simple interest alone

1.3 Compound interest is larger than simple interest because ... (1)

A) it is calculated monthly
B) the rate is higher
C) **interest is earned ON the interest already added** ✓
D) the period is longer

> **Answer: C** — Each year's interest joins the balance and earns interest itself.
> - **A** — compounding can be yearly too
> - **B** — the rate is the same in both
> - **D** — the period is the same in both

1.4 A jacket marked R850 is sold at a 20% DISCOUNT. The price paid is ... (1)

A) R170
B) **R680** ✓
C) R830
D) R1 020

> **Answer: B** — 20% of R850 = R170, so the price paid is $850 - 170 = R680$.
> - **A** — that is the discount itself, not the price paid
> - **C** — took off R20 instead of 20%
> - **D** — ADDED the 20% instead of taking it off

1.5 A shop offers hire purchase: 10% deposit on R5 000 and 12 instalments of R420. The TOTAL paid is ... (1)

A) **R5 540** ✓
B) R5 040
C) R500
D) R5 000

> **Answer: A** — Deposit $R500 + 12 \times R420 = R5\,040$, so R5 540.
> - **B** — left the deposit out
> - **C** — that is the deposit alone
> - **D** — that is the cash price

1.6 The exchange rate is R18,50 to the US dollar. How many rand is 250 US dollars? (1)

A) R231,50
B) **R4 625** ✓
C) R268,50
D) R13,51

> **Answer: B** — Each dollar costs R18,50, so $250 \times R18{,}50 = R4\,625$.
> - **A** — subtracted instead of multiplying
> - **C** — added instead of multiplying
> - **D** — divided instead of multiplying

1.7 A salesperson earns 6% commission on sales of R45 000. The commission is ... (1)

A) R270
B) **R2 700** ✓
C) R7 500
D) R42 300

> **Answer: B** — $0{,}06 \times 45\,000 = 2\,700$.
> - **A** — used 0,6%
> - **C** — divided by 6 instead of multiplying
> - **D** — that is the sales less the commission

1.8 VAT at 15% on a price of R2 400 excluding VAT gives a total of ... (1)

A) R360 **B)** R2 415

C) R2 086,96 **D) R2 760 ✓**

> **Answer: D** — $2\,400 \times 1{,}15 = 2\,760$.
> - **A** — that is the VAT alone
> - **B** — added 15 rands instead of 15 per cent
> - **C** — REMOVED VAT instead of adding it

1.9 Which formula gives COMPOUND interest? (1)

A) $A = P(1 - in)$ **B)** $A = P(1 + in)$

C) $\mathbf{A = P(1 + i)^n}$ **✓** **D)** $A = P(1 - i)^n$

> **Answer: C** — The exponent n is what compounds the growth.
> - **A** — the minus makes the amount SHRINK each year, so this is not interest at all
> - **B** — that is SIMPLE interest — no exponent, so nothing compounds
> - **D** — the minus again: an amount that shrinks, and compounding it does not make it interest

1.10 A budget shows income R9 500 and expenses R10 200. The household should ... (1)

A) reduce expenses by at least R700 ✓ **B)** spend more

C) borrow R9 500 **D)** save R700

> **Answer: A** — Expenses exceed income by R700.
> - **B** — that makes the deficit worse
> - **C** — borrowing the whole income is not the shortfall
> - **D** — there is nothing spare to save

ANSWER GRID — MARKING GUIDELINE

1.1	A	B	**(C)**	D
1.2	**(A)**	B	C	D
1.3	A	B	**(C)**	D
1.4	A	**(B)**	C	D
1.5	**(A)**	B	C	D
1.6	A	**(B)**	C	D
1.7	A	**(B)**	C	D
1.8	A	B	C	**(D)**
1.9	A	B	**(C)**	D
1.10	**(A)**	B	C	D

QUESTION 2 [12 MARKS]

Answer the questions below. Round all money off to the nearest cent.

2.1 Calculate the simple interest on R4 000 invested at 9% per annum for 3 years. (3)

> $I = P \times i \times n = 4\,000 \times 0{,}09 \times 3$ *(2)* = **R1 080** *(1)*

2.2 Calculate the amount when R10 000 is invested at 5% per annum compound interest for 2 years, and state how much MORE it earns than simple interest at the same rate. **(5)**

> $A = 10\,000(1{,}05)^2 = R11\,025$ *(2)*
> Simple: $10\,000(1 + 0{,}05 \times 2) = R11\,000$ *(2)*
> Compound earns **R25 more** *(1)*

2.3 Carol invests R18 000 for 6 years at 15% per annum compounded annually. Calculate the value of her investment at the end. **(4)**

> $A = P(1 + i)^n$ *(1)*
> $= 18\,000(1{,}15)^6$ *(2)* $=$ **R41 635,09** *(1)*

QUESTION 3 [12 MARKS]

Answer the questions below.

3.1 A television costs R9 000 cash. On hire purchase a 15% deposit is paid. Calculate the deposit and the balance owing. **(3)**

> Deposit $= 0{,}15 \times 9\,000 =$ **R1 350** *(2)*
> Balance $=$ **R7 650** *(1)*

3.2 Brian wants to exchange rands for British pounds. R1 is worth 0,075199 pounds. Calculate how many pounds he receives for R2 100 BEFORE commission. **(3)**

> $2\,100 \times 0{,}075199$ *(2)* $=$ **£157,92** *(1)*

3.3 The agent charges 1,5% commission on the transaction. Calculate how many pounds Brian actually receives, correct to TWO decimal places. **(4)**

> He keeps 98,5% of the pounds *(1)*
> $157{,}92 \times 0{,}985$ *(2)* $=$ **£155,55** *(1)*

3.4 Explain why hire purchase costs more in total than paying cash. **(2)**

> Interest is charged on the outstanding balance *(1)*, so the instalments add up to more than the cash price *(1)*

TOTAL: 34 marks

This question paper consists of 3 questions.

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