Finance: Growth & Decay (Grade 11)

MEMORANDUM

Name: ..... Class: .....

Date: .....

MARK ____ / 38

Answer all questions. Show all your working — marks are awarded for method as well as the final answer. **Teacher copy: accept any correct equivalent method.**

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1 R15 000 is invested at 8% p.a. compounded annually. Calculate the value after 5 years. (3)

> $15\,000(1{,}08)^5 = \mathbf{R22\,039{,}92}$ ✓✓✓ (3)

2 R15 000 is invested at 8% p.a. compounded monthly. Calculate the value after 5 years. (3)

> $15\,000\left(1 + \frac{0{,}08}{12}\right)^{60} = \mathbf{R22\,347{,}69}$ ✓✓✓ (3)

3 A fridge has a cash price of R9 200. On hire purchase a 20% deposit is paid and the balance is repaid over 2 years at 14% p.a. simple interest. Calculate the TOTAL amount paid. *(hire purchase revision)* (4)

> Deposit $= 0{,}20 \times 9\,200 =$ R1 840; loan = R7 360; $A = 7\,360(1 + 0{,}14 \times 2) = 7\,360 \times 1{,}28 =$ R9 420,80; total $= 1\,840 + 9\,420{,}80 =$ **R11 260,80** ✓✓✓✓ (4)

4 How much MORE than its cash price does that fridge cost on hire purchase? *(hire purchase revision)* (2)

> $11\,260{,}80 - 9\,200 =$ **R2 060,80** — which is exactly the interest, $7\,360 \times 0{,}28$ ✓✓ (2)

5 A car worth R240 000 depreciates at 15% p.a. on a straight line. Calculate its value after 4 years. (3)

> $240\,000(1 - 0{,}6) =$ **R96 000** ✓✓✓ (3)

6 A car worth R240 000 depreciates at 15% p.a. on a reducing balance. Calculate its value after 4 years. (3)

> $240\,000(0{,}85)^4 =$ **R125 281,50** ✓✓✓ (3)

7 Convert 8% p.a. compounded monthly to an effective annual rate. (3)

> $\left(1 + \frac{0{,}08}{12}\right)^{12} - 1 = \mathbf{8{,}30\%}$ ✓✓✓ (3)

8 A loaf of bread costs R18. If inflation is 6% p.a., what will it cost in 8 years? **(3)**

> $18(1{,}06)^8 = \mathbf{R28{,}69}$ ✓✓✓ (3)

9 R50 000 grows to R80 000 in 6 years at compound interest, compounded annually. Calculate the annual interest rate. **(4)**

> $80\,000 = 50\,000(1+i)^6 \rightarrow (1+i)^6 = 1{,}6$
> $1 + i = 1{,}6^{\frac{1}{6}} = 1{,}0815$
> $i = 0{,}0815 \rightarrow \mathbf{8{,}15\%\ p.a.}$ ✓✓✓✓ (4)

10 State the difference between a nominal and an effective interest rate. **(2)**

> The **nominal** rate is the advertised annual rate before compounding; the **effective** rate is the true annual rate once compounding within the year is included. ✓✓ (2)

11 The rate moves from R18,20 to R19,60 to the dollar. Has the rand strengthened or weakened, and what happens to the price of imported goods? **(2)**

> Weakened ✓ (more rands are needed per dollar); imported goods become more expensive ✓ (2)

12 A camera costs $340. Calculate its cost in rands at R18,75 to the dollar, and then at R20,10 to the dollar. **(3)**

> $340 \times 18{,}75 =$ R6 375 ✓; $340 \times 20{,}10 =$ R6 834 ✓; an increase of R459 ✓ (3)

13 Explain why the petrol price can rise in South Africa even when the international oil price has not changed. **(3)**

> Oil is priced in dollars ✓; if the rand weakens, more rands are needed to buy the same dollar amount of oil ✓, so the pump price rises without the oil price moving ✓ (3)

TOTAL: 38 marks

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