SMARTWIZ

GRADE11 MATHEMATICS LITERACY EXAM

MARKS: 100

MARKS	

TIME: 2 HOURS

SCHOOL _____

CLASS (eg. 4A) _____

SURNAME _____

NAME _____

Instructions for Learners:

- Read all instructions carefully before you begin the exam.
- Write your full name and student number clearly on the answer sheet/book.
- Answer all questions unless otherwise instructed.
- Show all your work/calculations where necessary.
- Write neatly and clearly.
- Use only a blue or black pen. Do not use correction fluid or tape.
- Electronic devices (calculators, cell phones, etc.) are not allowed unless explicitly permitted.
- Raise your hand if you have any questions.
- Do not talk to other learners during the exam.
- Any form of cheating will result in immediate disqualification from the exam.

This exam consists of six pages, including the cover page.

QUESTION 1: NUMBERS AND FINANCIAL MATHEMATICS (25 marks)

1a. A car costs R150,000. It depreciates in value by 15% per year. Calculate its value after 3 years.

1b. You borrow R8,000 from a bank at an interest rate of 12% per annum simple interest. Calculate how much interest you will pay after 4 years.

1c. You deposit R5,000 into a savings account that earns 8% compound interest per annum, compounded yearly. Calculate the amount in the account after 2 years.

QUESTION 2: MEASUREMENT AND GEOMETRY (20 marks)

2a. The floor of a rectangular room measures 6 m by 4 m. Calculate the area of the floor in square meters.

2b. The room has a wall height of 3 m. Calculate the volume of the room in cubic meters.

2c. A cylindrical water tank has a radius of 2 m and a height of 5 m. Calculate the volume of the tank. Use $\pi = 3.14$\pi = 3.14$\pi=3.14.

QUESTION 3: DATA HANDLING AND STATISTICS (20 marks)

3a. The following table shows the number of hours Grade 11 learners spent studying last week:

Hours	**0-2**	**3-5**	**6-8**	**9-11**	**12-14**
Number of learners	4	7	10	5	4

Calculate the:
i. Total number of learners

ii. Estimate the mean number of hours studied. Use mid-interval values for your calculation.

QUESTION 4: MAPS, PLANS AND SCALE DRAWINGS (15 marks)

4a. A map has a scale of 1:50,000. Calculate the real distance in kilometers between two towns if the distance on the map is 8 cm.

4b. On a plan, a rectangle measures 12 cm by 8 cm. The scale is 1:200. Calculate the real length and width in meters.

QUESTION 5: PATTERNS, ALGEBRA AND FUNCTIONS (20 marks)

5a. The cost CCC (in rands) to buy nnn notebooks is given by the formula:

C=15n+25C = 15n + 25C=15n+25

Calculate:
i. The cost when buying 10 notebooks.

ii. How many notebooks can you buy with R190?

5b. A taxi company charges R5 for booking plus R10 per kilometer. Write down the formula for the total cost TTT of a trip of ddd kilometers.

Calculate the cost of a 12 km trip.

QUESTION 6: SPATIAL MEASUREMENT AND SURFACE AREA (Bonus - 10 marks)

6a. Calculate the surface area of a cube with edge length 4 cm.

6b. Calculate the total surface area of a cylinder with radius 3 cm and height 7 cm. Use $\pi = 3.14$\pi = 3.14$\pi=3.14$.

END OF EXAM

TOTAL : 100

MEMO

QUESTION 1: NUMBERS AND FINANCIAL MATHEMATICS

1a. Depreciation:
Value after 3 years = 150,000×(1−0.15)3=150,000×(0.85)3150,000 \times (1 - 0.15)^3 = 150,000 \times (0.85)^3150,000×(1−0.15)3=150,000×(0.85)3

=150,000×0.614125=R92,118.75= 150,000 \times 0.614125 = R92,118.75=150,000×0.614125=R92,118.75

1b. Simple Interest:

I=P×r×t=8,000×0.12×4=R3,840I = P \times r \times t = 8,000 \times 0.12 \times 4 = R3,840I=P×r×t=8,000×0.12×4=R3,840

1c. Compound Interest:

A=P(1+r)t=5,000×(1+0.08)2=5,000×1.1664=R5,832A = P(1 + r)^t = 5,000 \times (1 + 0.08)^2 = 5,000 \times 1.1664 = R5,832A=P(1+r)t=5,000×(1+0.08)2=5,000×1.1664=R5,832

QUESTION 2: MEASUREMENT AND GEOMETRY

2a. Area of floor:

6×4=24 m26 \times 4 = 24 \text{ m}^26×4=24 m2

2b. Volume of room:

Area×height=24×3=72 m3\text{Area} \times \text{height} = 24 \times 3 = 72 \text{ m}^3Area×height=24×3=72 m3

2c. Volume of cylinder:

V=πr2h=3.14×22×5=3.14×4×5=62.8 m3V = \pi r^2 h = 3.14 \times 2^2 \times 5 = 3.14 \times 4 \times 5 = 62.8 \text{ m}^3V=πr2h=3.14×22×5=3.14×4×5=62.8 m3

QUESTION 3: DATA HANDLING AND STATISTICS

3a.i. Total learners:

4+7+10+5+4=304 + 7 + 10 + 5 + 4 = 304+7+10+5+4=30

3a.ii. Mean hours:

Mid-interval values:

- 0-2 → 1
- 3-5 → 4
- 6-8 → 7
- 9-11 → 10
- 12-14 → 13

Calculate weighted sum:

(1×4)+(4×7)+(7×10)+(10×5)+(13×4)=4+28+70+50+52=204(1 \times 4) + (4 \times 7) + (7 \times 10) + (10 \times 5) + (13 \times 4) = 4 + 28 + 70 + 50 + 52 = 204(1×4)+(4×7)+(7×10)+(10×5)+(13×4)=4+28+70+50+52=204

Mean:

20430=6.8 hours\frac{204}{30} = 6.8 \text{ hours}30204=6.8 hours

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QUESTION 4: MAPS, PLANS AND SCALE DRAWINGS

4a. Real distance:

8 cm×50,000=400,000 cm=4,000 m=4 km8 \text{ cm} \times 50,000 = 400,000 \text{ cm} = 4,000 \text{ m} = 4 \text{ km}8 cm×50,000=400,000 cm=4,000 m=4 km

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4b. Real dimensions:

Length:

12 cm×200=2400 cm=24 m12 \text{ cm} \times 200 = 2400 \text{ cm} = 24 \text{ m}12 cm×200=2400 cm=24 m

Width:

8 cm×200=1600 cm=16 m8 \text{ cm} \times 200 = 1600 \text{ cm} = 16 \text{ m}8 cm×200=1600 cm=16 m

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QUESTION 5: PATTERNS, ALGEBRA AND FUNCTIONS

5a.i. Cost for 10 notebooks:

C=15×10+25=150+25=R175C = 15 \times 10 + 25 = 150 + 25 = R175C=15×10+25=150+25=R175

5a.ii. Number of notebooks for R190:

190=15n+25 ⟹ 15n=165 ⟹ n=16515=11190 = 15n + 25 \implies 15n = 165 \implies n = \frac{165}{15} = 11190=15n+25⟹15n=165⟹n=15165=11

5b. Formula for taxi cost:

T=5+10dT = 5 + 10dT=5+10d

Cost for 12 km trip:

T=5+10×12=5+120=R125T = 5 + 10 \times 12 = 5 + 120 = R125T=5+10×12=5+120=R125

QUESTION 6: SPATIAL MEASUREMENT AND SURFACE AREA

6a. Surface area of cube:

6×(4)2=6×16=96 cm26 \times (4)^2 = 6 \times 16 = 96 \text{ cm}^26×(4)2=6×16=96 cm2

6b. Surface area of cylinder:

2πr2+2πrh=2×3.14×32+2×3.14×3×72\pi r^2 + 2 \pi r h = 2 \times 3.14 \times 3^2 + 2 \times 3.14 \times 3 \times 72πr2+2πrh=2×3.14×32+2×3.14×3×7

Calculate:

2×3.14×9+2×3.14×21=56.52+131.88=188.4 cm22 \times 3.14 \times 9 + 2 \times 3.14 \times 21 = 56.52 + 131.88 = 188.4 \text{ cm}^22×3.14×9+2×3.14×21=56.52+131.88=188.4 cm2

END OF MEMO

TOTAL : 100