



education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING

GRADE 9

MATHEMATICS

MARCH TEST 2025

CIRCUIT COMMON ASSESSMENT

MARKS: 50

TIME: 1½ hours

This question paper consists of 5 pages including cover page.

INSTRUCTIONS AND INFORMATION**Read the following instructions before answering the questions**

1. This question paper consists of 5 questions. Answer ALL the questions.
2. Clearly show all calculations that you have used in determining your answers.
3. Non-programmable calculators may be used.
4. If necessary, answers should be rounded off to two decimal places.
5. Number your answers EXACTLY as the numbering system indicated on this question paper.
6. The diagrams are NOT necessarily drawn to scale.
7. Work neatly and legibly.



QUESTION 1

1. Circle the letter of the correct answer in the answer book provided.

1.1 Which of the following is a natural number? (1)



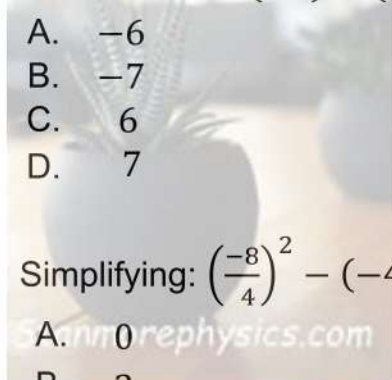
A. $\sqrt{\frac{9}{3}}$

B. 25

C. π

D. 0

1.2 Calculate: $2 + (-3) + (-5)$ (1)



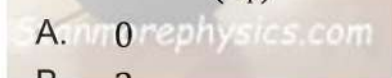
A. -6

B. -7

C. 6

D. 7

1.3 Simplifying: $\left(\frac{-8}{4}\right)^2 - (-4) - \sqrt{64}$ (1)



A. 0

B. 2

C. 4

D. -10

1.4 Which number is equal to a^0 ? (1)



A. a

B. 0

C. 1

D. -1

1.5 The general term of the sequence 1; 4; 7 is (1)

A. $T_n = 3n + 2$

B. $T_n = -3n + 2$

C. $T_n = -3n - 2$

D. $T_n = 3n - 2$

[5]

QUESTION 2

2.1 Find the LCM of 36 and 63 (3)

2.2 International call tariffs of a certain company are given in the following table:

Number of minutes	1	4	9	y
Total Cost	R1,50	R6	x	R30

2.2.1 Is the proportionality direct or indirect? Why? (2)

2.2.2 Calculate the value of x and y . (2)

2.3 A car is travelling at 100km/h . How long will it take to travel 300km ? (2)

2.4 Carol invests R18 000 for 6 *years* at rate of 15% p. a compounded annually. What will be the total value of Carol's investment after 6 *years*? (3)

[11]

QUESTION 3

3. Simplify the following

3.1 $2a(-3a) - (-5a)$ (2)

3.2 $\frac{-20d^5}{4d^2}$ (2)

3.3 $\frac{2a(4b^2)+3b(-2ab)}{2ab^2}$ (3)

3.4 $-3x^2(-2y)^3$ (2)

3.5 $-\sqrt[3]{64} - \sqrt{25}$ (2)

[11]

QUESTION 4

4.1 Simplify:

4.1.1 $3(2y^3)^2$ (2)

4.1.2 $\frac{6a^3b^5}{3a^2b}$ (2)

4.2 Calculate:

4.2.1 $(2 \times 3)^2$ (2)

4.2.2 $5^6 \div 5^3$ (2)

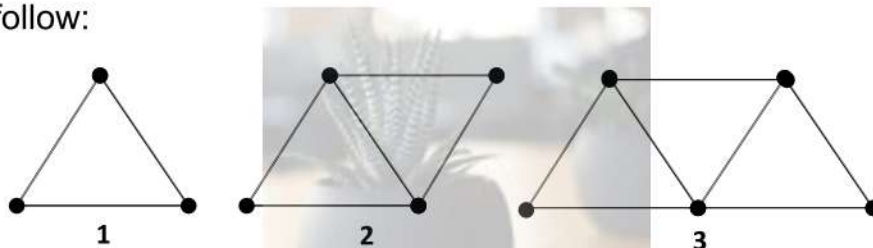
4.2.3 $2^3 + 2^{-3}$ (2)

4.2.4 $(2 + 3)^{-2}$ (2)

[12]

QUESTION 5

5.1 Study the pattern made of matchsticks and answer the questions that follow:



5.1.1 Draw pattern number 4. (1)

5.1.2 Describe the pattern in your own words. (1)

5.1.3 Write down the general term of the sequence in the form of $T_n =$ (2)

5.1.4 Without drawing the figures, determine the number of matchsticks needed to build the 17th pattern. (2)

5.2 The rule for finding the output and input values on the table below is : $T_n = -2n + 2$. Complete the table and write down the missing values (5)

n	-2	0	4	d	8
T_n	a	b	c	0	e

[11]

Total Marks 50



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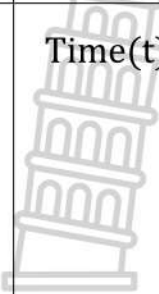
MAKING GUIDELINES

MARKS: 50

This marking guideline consists of 5 pages.

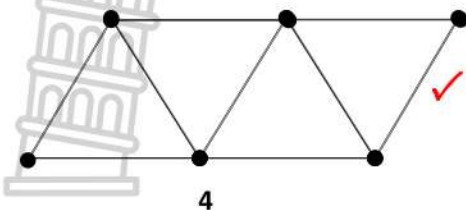
QUESTION 1			
NO.	SOLUTION	EXPLANATION	MARKS
1.1	B ✓	1-mark correct answer	(1)
1.2	A ✓	1-mark correct answer	(1)
1.3	C ✓	1-mark correct answer	(1)
1.4	C ✓	1-mark correct answer	(1)
1.5	D ✓	1-mark correct answer	(1)
			[5]

NO.	SOLUTION	EXPLANATION	MARKS																				
Q2																							
2.1	LCM of 36 and 63 <table border="1"> <tr> <td>2</td><td>36</td><td>3</td><td>63</td></tr> <tr> <td>2</td><td>18</td><td>3</td><td>21</td></tr> <tr> <td>3</td><td>9</td><td>7</td><td>7</td></tr> <tr> <td>3</td><td>3</td><td></td><td></td></tr> <tr> <td></td><td>1</td><td></td><td>1</td></tr> </table> $36 = 2^2 \times 3^2$ ✓ $63 = 3^2 \times 7$ ✓ LCM OF 36 and 63 $= 2^2 \times 3^2 \times 7$ $= 252$ ✓ Stanmorephysics.com OR M36 = {36; 72; 108; 144; 180; 216; 252; --} ✓ M63 = {63; 126; 189; 252; 315; --} ✓ LCM OF 36 and 63 = 252 ✓	2	36	3	63	2	18	3	21	3	9	7	7	3	3				1		1	2 Marks for a method 1 mark correct answer	1 1 1 (3)
2	36	3	63																				
2	18	3	21																				
3	9	7	7																				
3	3																						
	1		1																				
2.2.1	Direct proportion. ✓ There is an increase on both number of minutes and the total costs ✓	1 Mark for correct choice 1 mark for reasoning	1 1 (2)																				
2.2.2	Total Costs(x) = $\frac{R1,5 \times 9}{1} = \frac{R13.50}{1}$ $x = R13,50$ ✓ Number of minutes(y) = $\frac{R30}{R1,5}$ $y = R20$ ✓	1 mark for each correct answer	1 1 (2)																				

NO.	SOLUTION	EXPLANATION	MARKS	
2.3	 $\text{Time}(t) = \frac{\text{Distance}}{\text{Speed}} \checkmark$ $= \frac{300\text{km}}{100 \text{ km/h}}$ $= 3\text{hrs} \checkmark$	1 mark for total ratio 1 mark method 1 mark for answer	1 1 1	(3)
2.4	$A = P(1 + i)^n$ $= R18000(1 + 0.15)^6$ $= R41\,635,09$	1 mark correct formulae 1 mark substitution 1 mark for answer	1 1 1	(3)
				[14]

NO.	SOLUTION	EXPLANATION	MARKS	
Q3				
3.1	$2a(-3a) - (-5a)$ $= -6a^2 + 5a \checkmark \checkmark$	1 mark for $= -6a^2$ 1 mark for $+5a$	1 1	(2)
3.2	$\frac{-20d^5}{4d^2}$ $= -5d^{5-2} \checkmark$ $= -5d^3 \checkmark$	1 mark simplifying 1 mark for answer	1 1	(2)
3.3	$\frac{2a(4b^2)+3b(-2ab)}{2ab^2}$ $= \frac{8ab^2-6ab^2}{2ab^2} \checkmark$ $= \frac{2ab^2}{2ab^2} \checkmark$ $= 1 \checkmark$	2 marks simplifying 1 mark for answer	1 1 1	(3)
3.4	$-3x^2(-2y)^3$ $= -3x^2(-8y^3) \checkmark$ $= 24x^2y^3 \checkmark$	1 mark simplifying 1 mark for answer	1 1	(2)
3.5	$-\sqrt[3]{64} - \sqrt{25}$ $= -4 - 5 \checkmark$ $= -9 \checkmark$	1 mark simplifying 1 mark for answer	1 1	(2)
				[11]

NO.	SOLUTION	EXPLANATION	MARKS	
Q4				
4.1.1	$3(2y^3)^2$ $= 3(4y^6) \checkmark$ $= 12y^6 \checkmark$	1 mark simplifying 1 mark for answer	1 1	(2)
4.1.2	$\frac{6a^3b^5}{3a^2b}$ $= 2a^{3-2}b^{5-1} \checkmark$ $= 2ab^4 \checkmark$	1 mark applying laws 1 mark for answer	1 1	(2)
4.2.1	$(2 \times 3)^2$ $= (6)^2 \checkmark$ $= 36 \checkmark$	1 mark simplifying 1 mark for answer	1 1	(2)
4.2.2	$5^6 \div 5^3$ $= 5^{6-3} \checkmark$ $= 5^3$ $= 125 \checkmark$	1 mark applying laws 1 mark for answer	1 1	(2)
4.2.3	$2^3 + 2^{-3}$ $= 8 + \frac{1}{2^3} \checkmark$ $= 8 + \frac{1}{8}$ $= 8\frac{1}{8} \checkmark$	1 mark applying laws 1 mark for answer	1 1	(2)
4.2.4	$(2 + 3)^{-2}$ $= (5)^{-2} \checkmark$ $= \frac{1}{5^2}$ $= \frac{1}{25} \checkmark$	1 mark applying laws 1 mark for answer	1 1	(2)
				[12]

NO.	SOLUTION	EXPLANATION	MARKS		
Q5					
5.1.1		1 for correct drawn pattern	1	(1)	
5.1.2	Add two matchsticks to the previous pattern. ✓	1 mark correct description	1	(1)	
5.1.3	$T_n = 2n✓ + 1✓$	1 mark for $2n$ 1 mark for $+1$	1 1	(2)	
5.1.4	$T_n = 2(17) + 1✓$ $= 35✓$	1 mark correct substitute 1 mark correct answer	1 1	(2)	
5.2	$T_n = -2n + 2.$ $a = -2(-2) + 2.$ $a = 6.✓$ $T_n = -2n + 2.$ $b = -2(0) + 2$ $b = 2✓$ $T_n = -2n + 2.$ $4 = -2c + 2$ $c = -1✓$ $T_n = -2n + 2.$ $0 = -2d + 2$ $d = 1✓$ $T_n = -2n + 2.$ $e = -2(8) + 2$ $e = -14✓$		1 mark each correct answer	1 1 1 1 1	(5)
				[11]	
TOTAL MARKS 50					