



KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**GENERAL EDUCATION AND
TRAINING (GET)**

GRADE 8

MATHEMATICS
AMAJUBA DISTRICT CONTROLLED TEST: 2023
TERM 2

NAME OF SCHOOL: _____

LEARNER NAME: _____

MARKS OBTAINED _____ %

DURATION: 2 HOURS

MARKS: 100

Instructions to candidates

1. This paper consists of **TWO** sections, A and B.
2. Section A items are multiple choice type (MCQ). In order to respond to items in this section, you have to circle the letter corresponding to the correct answer.
3. Section B items are open ended and free response question types.
Use the spaces provided to respond to items in this section.
4. NB. This question paper consists of 8 **pages including the cover page.**

SECTION A

QUESTION 1

[20]

- 1.1 Which of the following statements **is true** for the properties of integers? (2)
- The set of integers is commutative **over all the four** operations.
 - The set of integers is commutative **over division and subtraction**.
 - The set of integers is commutative **over addition and multiplication**.
 - The set of integers is commutative **over addition and subtraction**.
- 1.2 Which of the following statements **is true** for integers? (2)
- The set of integers is **larger than** the set of whole numbers.
 - The set of integers is **smaller than** the set of whole numbers.
 - Zero is the **smallest integer**.
 - If x and y are negative integers, then xy is **always negative**.
- 1.3 Which of the following statements **is true**? (2)
- The multiples of an odd number are **always odd**.
 - The multiples of an even number **are always even**.
 - The general formula for even numbers is: $Tn = 2n - 1$.
 - The sum of an odd and an even number **is always even**.
- 1.4 Complete this pattern: ____; 22 ; 29; 37. (2)
- 14
 - 15
 - 16
 - 17
- 1.5 $x + x + x =$ (2)
- $3x$
 - $3x^0$
 - $3x^3$
 - x^3
- 1.6 What is the value of x if $\frac{2}{7} = \frac{x}{28}$ (2)
- 8
 - 14
 - 21
 - 28

1.7 If p is any negative integer and q is any odd and positive integer, then (2)

- A. p^q is positive.
- B. p^q is negative.
- C. $p^q = 0$
- D. $p^q \geq 0$

1.8 Which of the following statements is true? (2)

- A. $(7 - 4)^3 = 7^3 - 4^3$
- B. $\sqrt{16 + 9} = \sqrt{16} + \sqrt{9}$
- C. $\sqrt[3]{\left(\frac{a}{b}\right)^3} = \left(\frac{a}{b}\right)^3$
- D. $\sqrt{\left(\frac{a}{b}\right)^2} = \sqrt[3]{\left(\frac{a}{b}\right)^3}$

1.9 Which statement is true for the matchstick pattern below? (2)



Figure 1



Figure 2



Figure 3

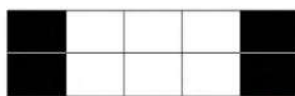
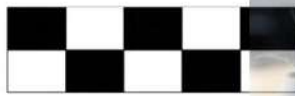
- A. If the pattern is continued, there will be 40 matchsticks in Figure 20.
- B. If the pattern is continued, there will be 39 matchsticks in Figure 20.
- C. If n represents the number of matchsticks, the rule for the pattern is $2n - 1$.
- D. If n represents the number of matchsticks, the rule for the pattern is $2n + 1$.

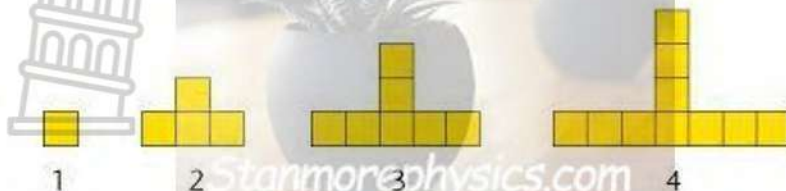
1.10 The rule 2^{2n-1} is **not equivalent** to: (2)

- A. $4^n \div 2$
- B. $2^{2n} \times 2^{-1}$
- C. $4^n \times 2^{-1}$
- D. $2^{2n} - 1$

QUESTION 2		[14]
2.1	Write 100 and 150 as a product of their prime factors in exponential form.	(6)
2.2	Use the result in 2.1 to calculate the LCM of 100 and 150.	(3)
2.3	The sum of digits of a two-digit prime number between 10 and 25 is 5. What is this number? [Show all your steps]	(3)
2.4	A whole number between 20 and 25 has 8 factors.	
2.4.1	What is the number?	(1)
2.4.2	How many of the factors of the number stated above are primes?	(1)
QUESTION 3		[6]
3.1	Place either + or – into each box so that this expression has the largest possible total. $-5 \square -6 \square 3 \square -9$	(3)
3.2	If a submarine is dives to a depth of 100 metres from sea level, and then ascends 40 meters, what is the new depth of the submarine?	(3)

QUESTION 4			[11]									
4.1	Write each of the following expressions in a simplified exponential form.											
4.1.1	$36 \times 6 \times 6$ [Leave your answer in simplified powers of 6.]		(2)									
4.1.2	$\frac{64 \times 243}{27} \times \frac{9}{32}$ [Leave your answer in simplified powers of 2 and 3.]		(5)									
4.2	$\frac{3ab^2 \times 8a^4}{(2a^2b)^2}$		(4)									
QUESTION 5			[22]									
5.1	Complete the table by writing numbers represented by letters a, b and c. [Answers must be in simplest form where applicable.]		(3)									
	<table><tr><th>COMMON FRACTIONS</th><th>DECIMAL FRACTIONS</th><th>PERCENTAGES</th></tr><tr><td>a.</td><td>0,125</td><td>b.</td></tr><tr><td>$\frac{2}{5}$</td><td>c.</td><td>40%</td></tr></table>		COMMON FRACTIONS	DECIMAL FRACTIONS	PERCENTAGES	a.	0,125	b.	$\frac{2}{5}$	c.	40%	
COMMON FRACTIONS	DECIMAL FRACTIONS	PERCENTAGES										
a.	0,125	b.										
$\frac{2}{5}$	c.	40%										
5.2	Simplify											
5.2.1	$(2\frac{1}{2} - 1\frac{2}{3})^2$		(3)									
5.2.2	$5\frac{3}{4} + 4 \times 0,75 - 3\frac{3}{4}$		(5)									

5.3	Two thirds of people at a restaurant are adults. If there are 50 children in this restaurant how many adults are there?	(5)
		
5.4	A.  B.  C.  D.  Which picture shows that $\frac{2}{5}$ is equivalent to $\frac{4}{10}$? Picture:	(2)
5.5	A runner ran 3 000 metres in exactly 8 minutes. What was his average speed in metres per second?	(4)

QUESTION 6						[10]										
6.1	Look at the pattern of squares below and answer the questions which follow.															
	 1 2 3 4															
6.1.1	Complete the table.					(3)										
	<table border="1"><tr><td>Diagram Number</td><td>4</td><td>10</td><td>30</td><td></td></tr><tr><td>Number of squares</td><td></td><td>28</td><td></td><td>118</td></tr></table>					Diagram Number	4	10	30		Number of squares		28		118	
Diagram Number	4	10	30													
Number of squares		28		118												
	The number of squares for Diagram Number 1 can be expressed as: $0 + 1$ The number of squares for Diagram Number 2 can be expressed as: $1 + 3$ The number of squares for Diagram Number 3 can be expressed as: $2 + 5$ The number of squares for Diagram Number 4 can be expressed as: $3 + 7$															
6.1.2	Complete: (a) The number of squares for Diagram Number 7 can be expressed as: _____ (b) The number of squares for Diagram Number 15 can be expressed as: _____ (c) The number of squares for Diagram Number N can be expressed as: _____					(3)										
6.1.3	Which diagram will have will have 58 squares?					(4)										

QUESTION 7		[17]														
7.1	Use the table below to answer questions that follow.															
	<table><tr><td>x</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>a</td><td>26</td></tr><tr><td>y</td><td>1</td><td>$1\frac{1}{2}$</td><td>2</td><td>$1\frac{1}{2}$</td><td>11</td><td>b</td></tr></table>	x	-1	0	1	2	a	26	y	1	$1\frac{1}{2}$	2	$1\frac{1}{2}$	11	b	
x	-1	0	1	2	a	26										
y	1	$1\frac{1}{2}$	2	$1\frac{1}{2}$	11	b										
7.1.1	Which variable stands for the input values?	(1)														
7.1.2	Which variable stands for the output values?	(1)														
7.1.3	What is the rule for this relationship?	(1)														
7.1.4	Determine the values of a and b . $a =$ _____ $b =$ _____	(2)														
7.2	The cost, C , of printing greeting cards consists of a fixed charge of 100 cents and a charge of 75 cents for each card printed.															
7.2.1	Determine the equation that can be used to calculate the cost of printing n cards.	(3)														
7.2.2	Calculate the cost of printing 30 cards in Rands.	(4)														
7.3	Consider an expression: $3ax^2 + bx^4 + x^3$															
7.3.1	Write this expression in ascending powers of x .	(1)														
7.3.2	What is the coefficient of x^2 ?	(1)														
7.3.3	What is the value of the constant term?	(1)														
7.4	Simplify: $(-5n + 3) - (5 - 7n)$	(2)														