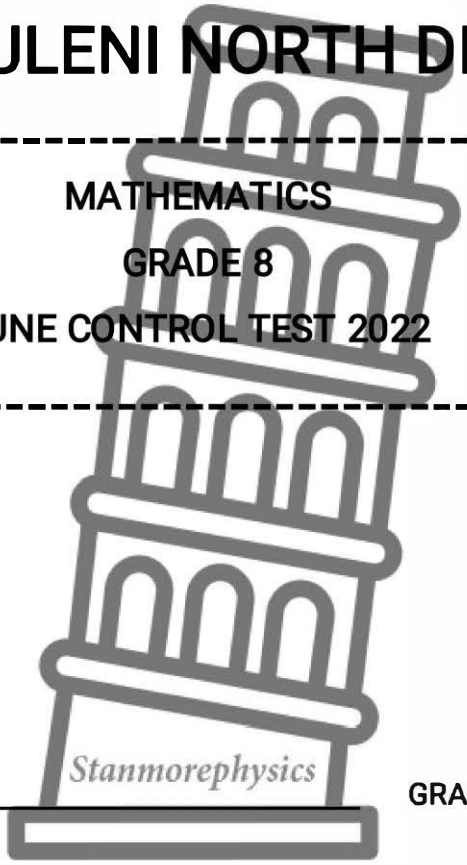
GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

EKURHULENI NORTH DISTRICT

MATHEMATICS
GRADE 8
JUNE CONTROL TEST 2022



DATE: 6 JUNE 2022

TIME: $1\frac{1}{2}$ HOURS

TOTAL: 60

NAME OF LEARNER: _____ GRADE 8: ___

Question number	1	2	3	4	5	6	7	8	Total
Total marks	5	7	7	8	9	8	4	12	60
Learner marks									
Moderated marks									

INSTRUCTIONS:

1. This question paper consists of **10** pages and **8** questions.
2. Section A consists of 5 multiple choice questions, answer the questions on the answer sheet provided.
3. Section B and C questions must be answered in the space provided on this paper.
4. Clearly show all calculations.
5. Calculators are allowed.
6. If necessary, round answers off to 2 decimal places, unless stated otherwise.
7. Diagrams are not necessarily drawn to scale.
8. It is in your best interest to write neatly and legibly.

SECTION A: MULTIPLE CHOICE QUESTIONS

QUESTION 1

Choose the correct answer. Circle the letter of the correct answer on the **ANSWER SHEET** provided on **page 4**. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1. The lowest common multiple and the highest common factor of 27 and 36 are.....

A) 27 and 36

B) 9 and 108

C) 108 and 9

D) 36 and 27 (1)

1.2. A factory makes 5 000 cell phones per week. How many cell phones would they make if they increased production by 50%?

A) 10 000

B) 5500

C) 2500

D) 7500 (1)

1.3. Calculate :

$$-18 + 6 - 10$$

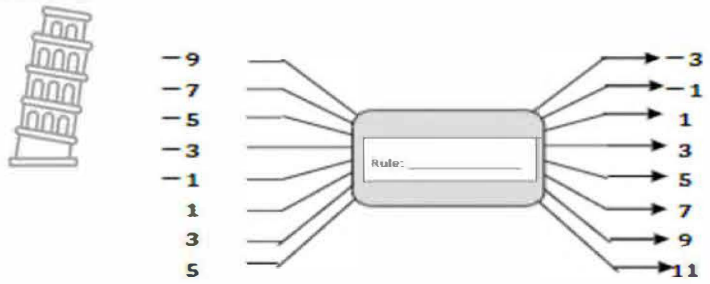
A) 34

B) 2

C) -22

(1)

1.4. The rule for the input and output values that are represented in the flow diagram below is...



A) output = input - 6

B) output = input + 6

C) input = output - 6

D) input = output - 6

(1)

1.5. The following verbal expression is given:

Subtract a number from the product of 3 and that same number.

The correct algebraic expression is ...

A) y - 3y

B) 3 - y

C) y - 3

D) 3y - y (1)

[TOTAL: 5]

ANSWER SHEET

CIRCLE YOUR ANSWERS FROM SECTION A IN THE GRID BELOW AS SHOWN IN THE EXAMPLE:

Example:	**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

Subtotal Question 1= [5×1]

SECTION B: NUMBERS, OPERATIONS AND RELATIONSHIPS

QUESTION 2 : WHOLE NUMBERS

2.1 State whether each of the following statements is true or false.

$0 \div 86 = 86 \div 0$	(1)
$10 + (5 + 12) = (10 + 5) + 12$	(1)

2.2 Simplify the following. Show all your calculations.

$(15+ 20) \div 7 - 2$

2.2		(2)

2.3 Thabo ,Silas and Jacob are paid a total of R1500 for the work that they did. They decide to share the amount in the ratio 6:5:4 respectively.

How much of money will Silas receive?

2.3		(3)

[TOTAL: 7]

QUESTION 3: INTEGERS

3.1 State whether each of the following statements is true or false.

$-5(2 + 1) = (-5 \times 2) + (-5 \times 1)$	(1)
$x \times (-1) = (-1) \times x$	(1)

3.2 Simplify the following. Show all your calculations.

$$(-14+5) \times -8$$

3.2		(2)

3.3 The sum of two numbers is −2. Their product is −24. What are the two numbers?

3.3		(3)

[TOTAL:7]

QUESTION 4: COMMON AND DECIMAL FRACTIONS

4.1 Simplify the following. Show all your calculations.

4.1.1 $\frac{9}{15} + \frac{2}{3} - 2\frac{5}{5}$

4.1.1		(3)

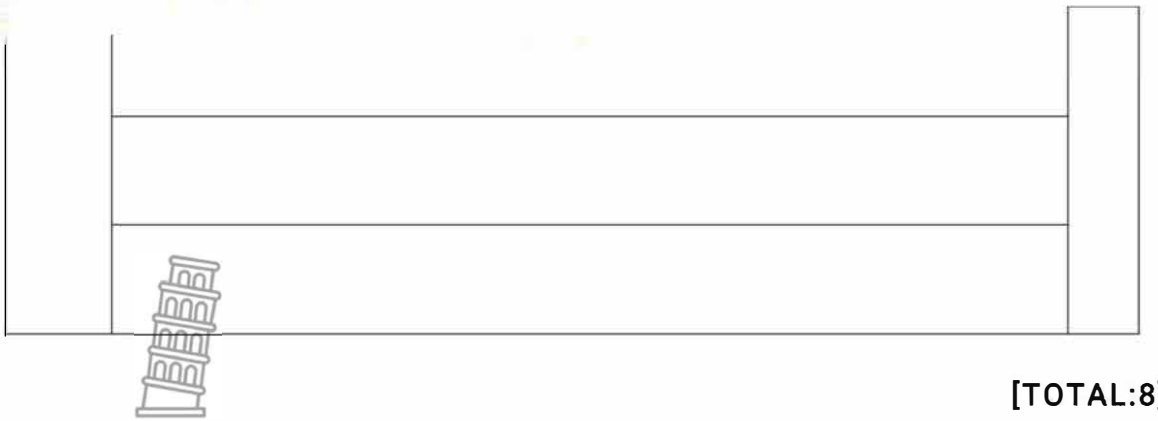
4.1.2 7,86 + 3,7 – 4,999

4.1.2		(2)

4.2 Elvis spends $\frac{21}{200}$ of his pocket money on chewing gum, 0,546 of his pocket money on a pair of shoes and 28% of his pocket money on a present for his mom.

If Elvis gets R300 for pocket money, what percentage of his pocket money does he have left?

4.2		(3)



[TOTAL:8]

QUESTION 5: EXPONENTS

5.1 Match column A to column B. Write your answer in the answer column provided.

	Column A	Answer	Column B
5.1.1	6^2	5.1.1	$(2^2) \times (2^2) \times (2^2)$
5.1.2	2^6	5.1.2	$(2 \times 3) \times (2 \times 3)$

(2)

5.2 Simplify the following. Show all your calculations.

$$\sqrt[3]{127-2} \times (-5)^2$$

5.2	Solution	
		(3)

5.3 Jolene remembers her teacher saying:

"When you divide powers, you subtract the exponents".

Jolene simplified $\frac{m^4}{n^6}$ as follows:

$$\frac{m^4}{n^6} = \frac{m^{4-6}}{n} = \frac{m^{-2}}{n}$$

5.3.1		(2)

5.3.2 Provide the correct answer for $\frac{m^4}{n^6}$

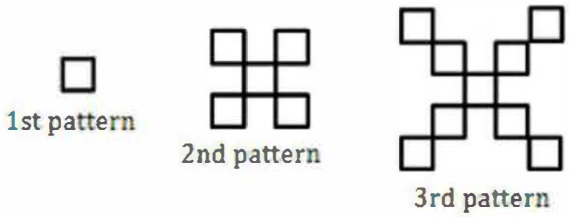
5.3.2		(2)

[TOTAL: 9]

SECTION C: PATTERNS, FUNCTIONS AND ALGEBRA

QUESTION 6: NUMERIC AND GEOMETRIC PATTERNS

6.1 The pattern below is made using squares. Study the pattern and then answer the questions that follow.



6.1.1 Write down an algebraic rule that describes the number pattern.

6.1.1		(2)

6.1.2 Using your answer from question 6.1.1, determine the number of squares that will make up pattern number 6?

6.1.2		(3)

6.1.3 Which pattern number will be made up of 1025 squares?

6.1.3		(3)

[TOTAL: 8]

$$y = -x^2 + 2$$

Input number (x)	1	2	3	b
Output number (y)	a	- 2	- 7	- 34

Complete the table by writing down the values for a and b.

7.1	a =	
	b =	(4)

[TOTAL: 4]

QUESTION 8 : ALGEBRAIC EXPRESSIONS

8.1 Answer the questions related to the following expression:

$$2a - 4a^2 - 8a$$

8.1.1 Are the terms **2a** and **-8a** like or unlike terms? Provide a reason for your answer.

8.1.1		
		(2)

8.1.2 Write an equivalent expression for $2a - 4a^2 - 8a$

8.1.2		
		(2)

8.1.3 Determine the value of the expression if : a = -1

8.1.3		(3)

8.2 Simplify the following expressions fully.

8.2.1 $(-x)^2 + b - x^2 - \sqrt{b^2}$

8.2.1		(2)

8.2.2 $-6(3a - 2b) + 6a - b$

8.2.2		(3)

[TOTAL:12]

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MEMORANDUM

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TOTAL: 60

SECTION A

QUESTION 1:

1.1. C ✔

1.2. D ✔

1.3. C ✔

1.4. B ✔

1.5. D ✔

[5]

SECTION B

QUESTION 2:

QUESTION	ANSWER	ALLOCATION OF MARKS	MARKS
2.1	False True	✔A ✔A	(2)
2.2	$(15+20) \div 7-2$ $= 35 \div 7-2$ $= 5-2$ $= 3$	✔M $35 \div 7-2$ ✔A (3)	(2)
2.3	Total number of parts is 6 + 5 + 4 = 15 $\frac{R1500}{15} = R100$ Silas will receive 5 ×R100 = R500	✔ M $\frac{R1500}{15}$ ✔ M 5 ×R100 ✔ CA R500	(3)

[7]

QUESTION 3:

3.1	True True	✔*A* ✔*A*	(2)
3.2	$(-14+5) \times -8$ $= -9 \times -8$ $= 72$	✔ M -9×-8 ✔A 72	(2)
3.3	-6 and 4 $-6 \times 4 = -24$ and $-6 + 4 = -2$	✔✔A -6 and 4 ✔M $-6 \times 4 = -24$ and $-6 + 4 = -2$	(3)

[7]

QUESTION 4:

4.1.1.	$\frac{9}{15} + 2\frac{5}{5}$ $= \frac{9}{15} + \frac{2}{3} - \frac{15}{5}$ $= \frac{9}{15} + \frac{2\times5}{3\times5} - \frac{15\times3}{5\times3}$ $= \frac{9}{15} + \frac{10}{15} - \frac{45}{15}$ $= \frac{9+10-45}{15}$ $= \frac{9+10-45}{15}$ $= \frac{-26}{15}$ $= -1\frac{11}{15}$	✔✔*M* $\frac{9}{15} + \frac{2\times5}{3\times5} - \frac{15\times3}{5\times3}$ ✔*CA* $-1\frac{11}{15}$ *Accept* $\frac{-26}{15}$ *as Q does not specify mixed number as answer*	(3)
4.1.2.	7,86 + 3,7 – 4,999 = 6,561 = 6,56	✔*A* 6,561 ✔*A* 6,56 *rounding as per QP original instructions*	(2)
4.2	$\frac{21}{200}$ of R300 = R31,50 0,546 of R300 = R163,80 28% of R300 = R84,00 Total used = R31,50 + R163,80 + R84,00 = R 279,30 Total left = R300- R 279,30 = R20,70 % left = $\frac{R20,70}{R300} \times 100 = 6,9\%$	✔*M* Total used = R31,50 + R163,80 + R84,00 ✔*M* Total left = R300- R R 279,30 = R20,70 ✔*CA* = 6,9%	(3)

	OR $\frac{21}{200} \times 100 = 10,5\%$ $\frac{546}{1000} \times 100 = 54,6\%$ 28% Given ∴ Left = 100 - 10,5 - 54,6 - 28 = 6,9%	✔ 10,5% ✔ 54,6 % CA ✔ 6,9%	

[8]

QUESTION 5:

5.1.1	$(2 \times 3) \times (2 \times 3)$	✔ ***A***	(1)
5.1.2.	$(2^2) \times (2^2) \times (2^2)$	✔ ***A***	(1)
5.2	$\sqrt[3]{127-2} \times (-5)^2$ $= \sqrt[3]{125} \times 25$ $= 5 \times 25$ $= 125$	✔✔***M*** 5×25 ✔***CA*** 125	(3)
5.3.1	The exponent rule states that if you are dividing exponents of the same base then the powers can be subtracted. Here the bases are not the same so the powers cannot be subtracted.	✔✔explanation	(2)
5.3.2	$\frac{m^4}{n^6}$	✔✔**A**	(2)

[9]

QUESTION 6:

6.1.1	$T_n = 4n - 3$	✔4n ✔-3	(2)
6.1.2	$T_n = 4n - 3$ $T_6 = 4(6) - 3$ $= 24 - 3$ $= 21$	✔CA formula ✔**substitution** ✔CA = 21	(3)

6.1.3	$Tn = 4n-3$ $1025 = 4n-3$ $\frac{1025+3}{4} = n$ $n = 257$	✔CA formula ✔substitution ✔CA = 257	(3)

[8]

QUESTION 7:

7.1	$a = -(1)^2 + 2$ $= -1 + 2$ $= 1$ $-x^2 + 2 = -34$ $-34-2 = -x^2$ $-36 = -x^2$ $36 = x^2$ $\therefore x = b = 6$ or -6	✔substitution ✔A 1 ✔substitution ✔A 6 or -6	(4)

[4]

QUESTION 8:

8.1.1	Like terms. The variables and exponents are the same for both terms.	✔ **like** terms ✔ **explanation**	(2)
8.1.2	$2a - 4a^2 - 8a$ $= -6a - 4a^2$	✔ ✔ **A**	(2)
8.1.3	$-6a - 4a^2$ $= -6(-1) - 4(-1)^2$ $= 6 - 4$ $= 2$	✔ substitution ✔ **M** ✔ CA 2	(3)
8.2.1	$(-x)^2 + b - x^2 - \sqrt{b^2}$ $=x^2 + b - x^2 - b$ $= 0$	✔✔ **M** $=x^2 + b - x^2 - b$ ✔ CA 0	(2)
8.2.2	$-6(3a - 2b) + 6a - b$ $= -18a + 12b + 6a - b$ $= -12a + 11b$	✔✔ **M** $= -18a + 12b + 6a - b$ ✔CA $= -12a + 11b$	(3)

[12]