



Province of the
EASTERN CAPE
EDUCATION



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

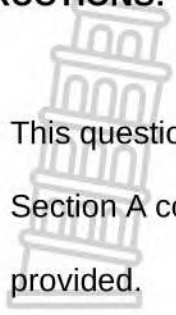
TOTAL: 75

NAME OF LEARNER: _____

GRADE 9: _____

Question number	1	2	3	4	5	6	7	Total
Total marks	5	13	10	9	13	18	7	75
Learner marks								
Moderated marks								

INSTRUCTIONS:

- 
1. This question paper consists of **11** pages and **7** 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. Complete : $\frac{1}{5}$ is ...

- A) an irrational number
- B) an integer
- C) a rational number
- D) a natural number

(1)

1.2. The list of numbers that is arranged in descending order , is ...

- A) -23 ; -19 ; - 6 ; 9 ; 17
- B) -23 ; -19 ; 17 ; 9 ; - 6
- C) - 6 ; 9 ; 17 ; -19 ; - 23
- D) 17 ; 9 ; - 6 ; -19 ; -23

(1)

1.3. Calculate :

$$\frac{\sqrt{81} \times \sqrt[3]{27}}{3}$$

- A) 4
- B) 27
- C) 9
- D) 7

(1)

1.4. The diagram below shows dots that are arranged to follow a pattern:



Figure 1

Figure 2

Figure 3

Figure 4

Which of the following is the general rule (formula) for the pattern?

- A) $T_n = 2n + 5$
- B) $T_n = 5n + 2$

C) $T_n = n + 5$

D) $T_n = n + 7$

(1)

1.5. Simplify:

$$-8x^2 - (-x)^2$$

A) $-7x^2$

B) $9x^2$

C) $-9x^2$

D) $7x^2$

(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
1.1.	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.

$7 \times (11 + 9) = 7 \times 11 + 7 \times 9$	(2)
$100 \div (25 \div 5) = (100 \div 25) \div 5$	(2)

2.2 Simplify the following. Show all your calculations.

$$(7 \times 5) + 24 \div 2 - 10 \times 10$$

2.2		(3)

2.3 Use prime factors to determine the LCM and HCF of 60 and 54.

2.3		(4)

2.4. It takes 12 hours for one person to clean a house. How many people would be needed to clean the same house if the job was to be done in 2 hours?

2.4		(2)

[TOTAL: 13]

QUESTION 3: INTEGERS

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

$10 < -12$	(1)
$7^2 > -(7)^2$	(1)
$6 + (-4) = (-4) + 6$	(2)

3.2 Simplify the following. Show all your calculations.

3.2.1 $-7 + (-9) - 2$

3.2.1		(3)

3.2.2 $(23 - (-4)) \div 9 - 6$

3.2.2		(3)

[TOTAL:10]

QUESTION 4: EXPONENTS

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

	Column A	Answer	Column B
4.1.1	$(-2)^2$	3.1.1	4
4.1.2	-2^2	3.1.2	-4

(2)

4.2 State whether the following statement is true or false.

$\frac{3^{-3} \cdot 3^3}{3^3} = 3^3$	(2)
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4.3 Simplify the following. Show all your calculations.

$$\sqrt{\frac{15-6}{9} + \frac{2^2 \cdot 2^2}{2^4}}$$

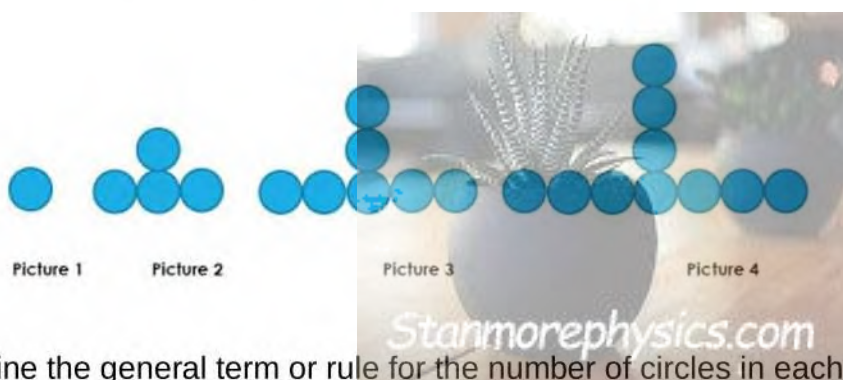
4.3		(5)

[TOTAL: 9]

SECTION C: PATTERNS, FUNCTIONS AND ALGEBRA

QUESTION 5: NUMERIC AND GEOMETRIC PATTERNS

- 5.1 The pattern below is made using circles. Study the pattern and then answer the questions that follow.



- 5.1.1 Determine the general term or rule for the number of circles in each picture.

5.1.1		(2)

- 5.1.2 How many circles will be in picture 10?

5.1.2		(2)

- 5.1.3 Which picture will be made up of 448 circles?

5.1.3		(3)
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5.2 Study the table below:

x	1	2	3	4	9	b
y	2	-2	-6	-10	a	-158

5.2.1 Write the general formula for the pattern in the form of $y = \dots$

5.2.1	$y =$	(2)

5.2.2 Determine the values of a and b .

5.2.2	$a =$	(4)
	$b =$	

[TOTAL: 13]



QUESTION 6 : ALGEBRAIC EXPRESSIONS

6.1 The following verbal expression is provided :

The sum of the square of a number and negative 5 is divided by 4 and then increased by 12.

Represent the verbal expression as an algebraic expression.

6.1		(2)

6.2 Simplify the following expressions:

6.2.1 $-2(a + b) + 4a(\frac{1}{2})$

6.2.1		(3)

6.2.2
$$\frac{6x^4 + 38x^4 - 12x^4}{2x}$$

6.2.2		(3)

6.3 Factorize the following expressions:

6.3.1 $4x^2 + 12x$

6.3.1		(2)

6.3.2 $x(x + 2) - 5(x + 2)$

6.3.2		(2)

6.3.3 $4x^2 + 4x - 24$

6.3.3		(3)

6.4 Determine the value of $x^2 - 2xy - 4$ if $x = 1$ and $y = -2$

6.4		(3)

[TOTAL:18]

QUESTION 7: ALGEBRAIC EQUATIONS

7.1 Solve for the given variable:

7.1.1 $x^2 - x - 6 = 0$

7.1.1		(2)

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7.1.2 $\frac{2x}{3} = \frac{x}{6} - 9$

7.1.2		(3)

7.1.3 $2^{-2x+2} = 64$

7.1.3		(2)

[TOTAL:7]

GRAND TOTAL: 75