



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:**

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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)

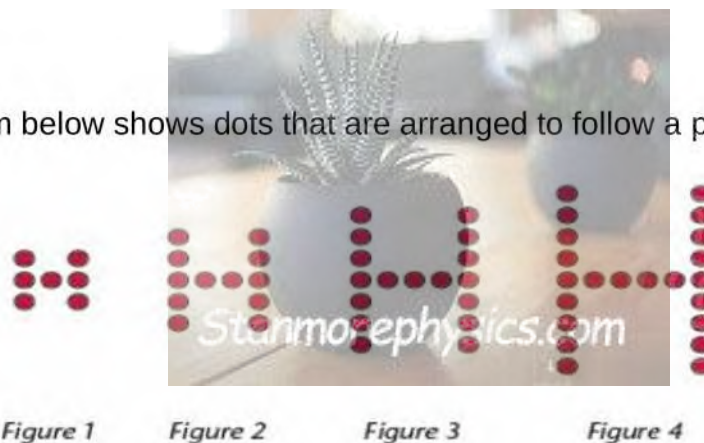
**1.3.** Calculate :

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

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

(1)

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



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>B</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.

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

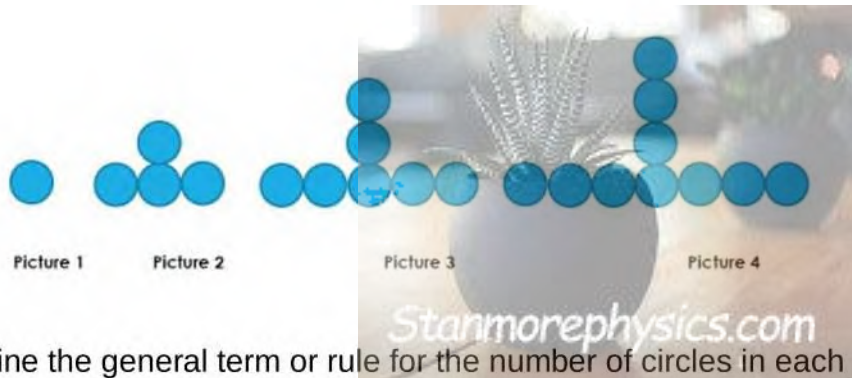
4.3		(5)

[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:

<b>x</b>	1	2	3	4	9	<b>b</b>
<b>y</b>	2	-2	-6	-10	<b>a</b>	-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