



O.R.TAMBO INLAND DISTRICT

SENIOR PHASE

GRADE 9

NOVEMBER 2023

MATHEMATICS PAPER 1

MARKS: 75

TIME : 2 hours

This question paper consists of 10 pages including annexure

INSTRUCTIONS AND INFORMATION TO THE LEARNER

1. You will be given 15 minutes reading time before you begin answering the paper.
2. Read the instructions for each question carefully.
3. Answer all the questions.
4. Number your work exactly as questions are numbered.
5. Clearly show **ALL** the calculations, diagrams and graphs you have used in determining your answers
6. You may use an approved scientific calculator (non-programmable and non-graphical).
7. Diagrams are **NOT** necessarily drawn to scale.

QUESTION 1

1. In this question, 4 possible answers are given. Write only the correct letter for the correct answer next to the corresponding number.

EXAMPLE: If the correct answer for 1.1 is A, write only answer as 1.1 A.

- 1.1 Which of the numbers below is a rational number? (1)

- A. π
- B. $2, \dot{3}$
- C. $\sqrt{-16}$
- D. $\sqrt[3]{53}$

- 1.2 Sipho is a car salesperson. He earns a commission of 3% on the sale of a car that values R220 000. The commission he earned is (1)

- A. R660 000
- B. R733 333
- C. R6 600
- D. 154 000

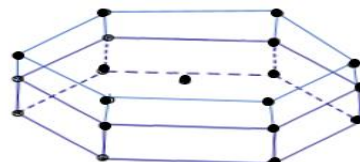
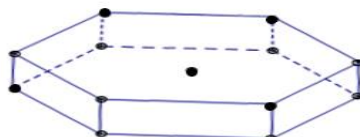
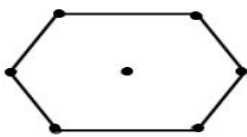
- 1.3 $(2^3)^2 \times (2^3)^{-2}$ when simplified is (1)

- A. 2^{10}
- B. 2^{-1}
- C. 1
- D. 2

- 1.4 The general rule (T_n) for $-5; -1; 3; 7$ is (1)

- A. $T_n = -4n - 9$
- B. $T_n = -4n - 9$
- C. $T_n = -4n + 9$
- D. $T_n = 4n - 9$

- 1.5 (1)



The number of dots in the next hexagonal prism will be

- A. 19
- B. 24
- C. 25
- D. 28

1.6
$$\frac{16x^2y - 12xy}{4xy} =$$
 (1)

- A. $4x^2y - 3$
- B. $4x^2y - 3xy$
- C. $4x^3y^2 - 3x^2y^2$
- D. $4x - 3$

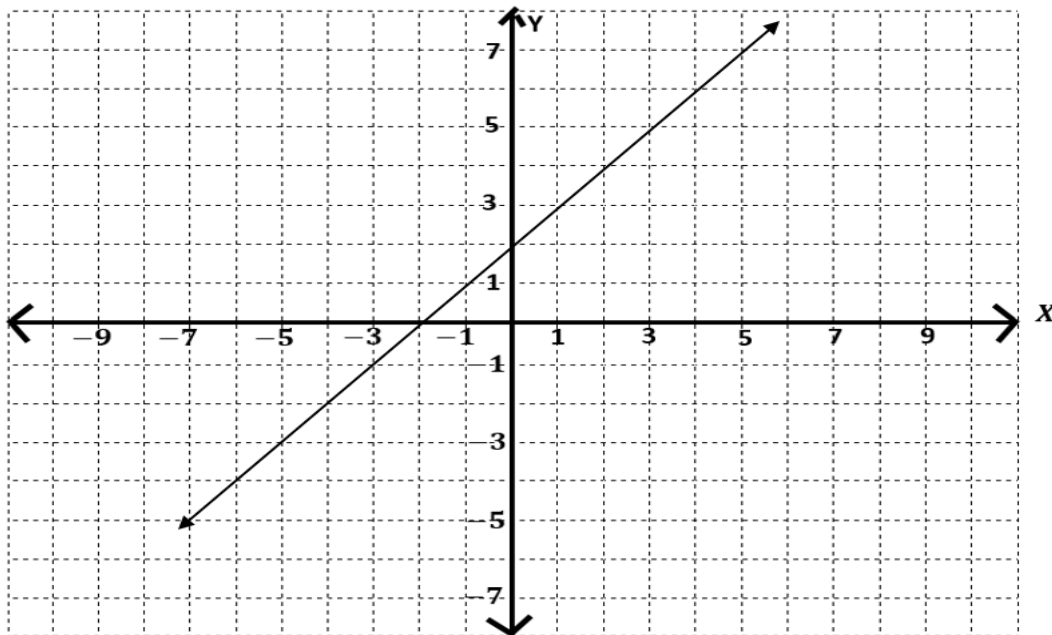
1.7 If $p = 4$; $q = 6$ and $r = 5$, then the value of $2p + qr =$ (1)

- A. 17
- B. 19
- C. 38
- D. 46

1.8 When $(x - 1)(x + 2) = 0$, then $x =$ (1)

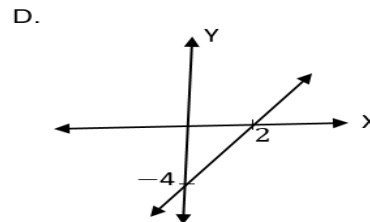
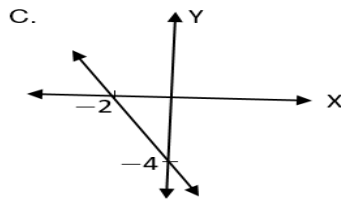
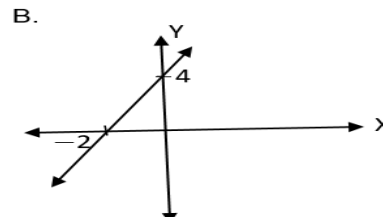
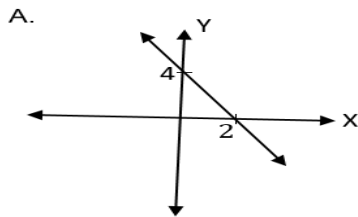
- A. -1 or 0
- B. 1 or -2
- C. 1
- D. -2

1.9 The gradient for the graph drawn below is (1)



- A. -2
- B. 2
- C. -1
- D. 1

1.10 The graph of a straight line defined by $y = 2x + 4$ is (1)



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QUESTION 2

2.1

2.1.1 Use prime factorization to find the HCF of 360 and 780. (2)

2.1.2 Study the table below which shows the relationship between the period of time in minutes at which Zelha and Nalo collect apples in the orchard. (1)
Then answer the question that follow.

Period of time in minutes	1	2	3	8	10
Zelha	12	24	36	96	120
Nalo	15	30	45	120	150

Is the relationship shown in the table a direct or indirect proportion? Give a reason for your answer.

2.1.3 Phiko takes a bus to school. The school is 9 km from his home. If the bus travels at an average speed of 40km/h, how many minutes does he take to get to school? (3)

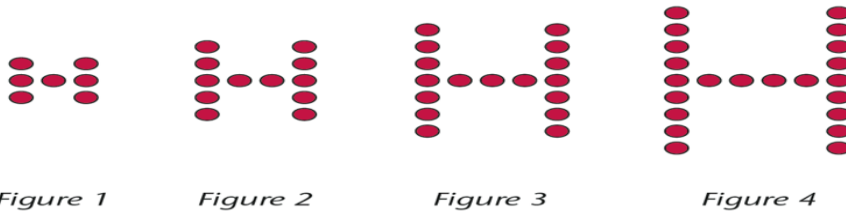
2.1.4 Liya invests R15 000 in his savings account at 16% per annum compound interest. Calculate how much interest there will be in his savings account after 3 years. (3)

2.2 In the pattern, 2 ; 5 ; 10 ; 17

2.2.1 Explain how can you extend the pattern in words? (1)

2.2.2 Hence, determine the 10^{th} term (2)

2.3 Read the geometric pattern below to answer the questions that follow



2.3.1 Draw figure 5 (1)

2.3.2 Find the general rule in the form $T_n =$ (2)

2.3.3 In the table below,

Figure number	1	2	3	4	5	q
Number of dots	7	12	17	22	p	62

(i) How many dots represented by letter p in the table? (1)

(ii) Use the general rule: T_n to find the figure number that has 62 dots. (2)

2.4 Determine the value of $216 \div 27$ in an exponential form. (2)

2.5 Simplify

2.5.1 $\frac{(2d^2e)^2}{(4d^{-3}e^{-2})^{-1}}$ (3)

2.5.2 $\frac{15^x \times 3^{x+1} \times 25^x}{9^{x+1} \times 125^x}$ (3)

2.5.3 $\sqrt[3]{(20x - 15x)^3}$ (2)

2.5.4 $-2(x + 1)(x + 2) + 2(x + 2)^2$ (4)

2.5.5 $\frac{y^2-1}{y^2-y-2} \times (2y - 4)$ (3)

2.6 Factorize fully

2.6.1 $x^2 + 5x + 6$ (2)

2.6.2 $3x^2 - 9$ (3)

2.7 Mrs G has 12 children. Each child needs 36 crayons. How many crayons must she buy? (2)

2.8 If $y = 2x^2 + 4x + 3$, determine the value of y when $x = -2$. (3)

2.9 Solve for x

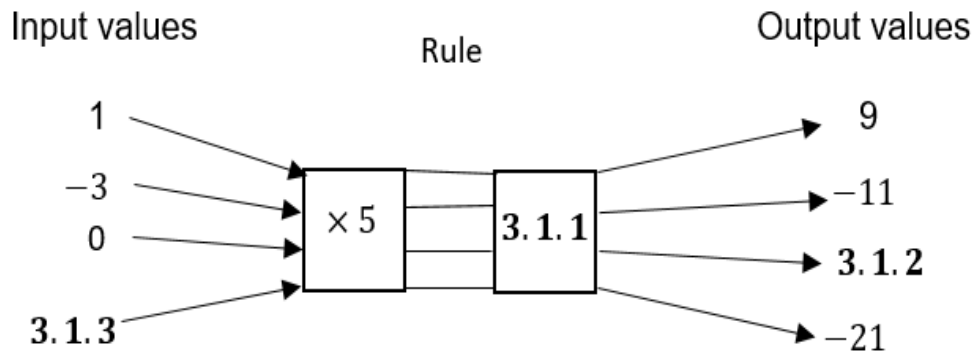
2.9.1 $2^{2x-2} = \frac{1}{64}$ (3)

2.9.2 $\frac{2x}{5} + 1 = \frac{13}{5}$ (4)

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QUESTION 3

3.1 Read the flow diagram below and answer the questions that follow

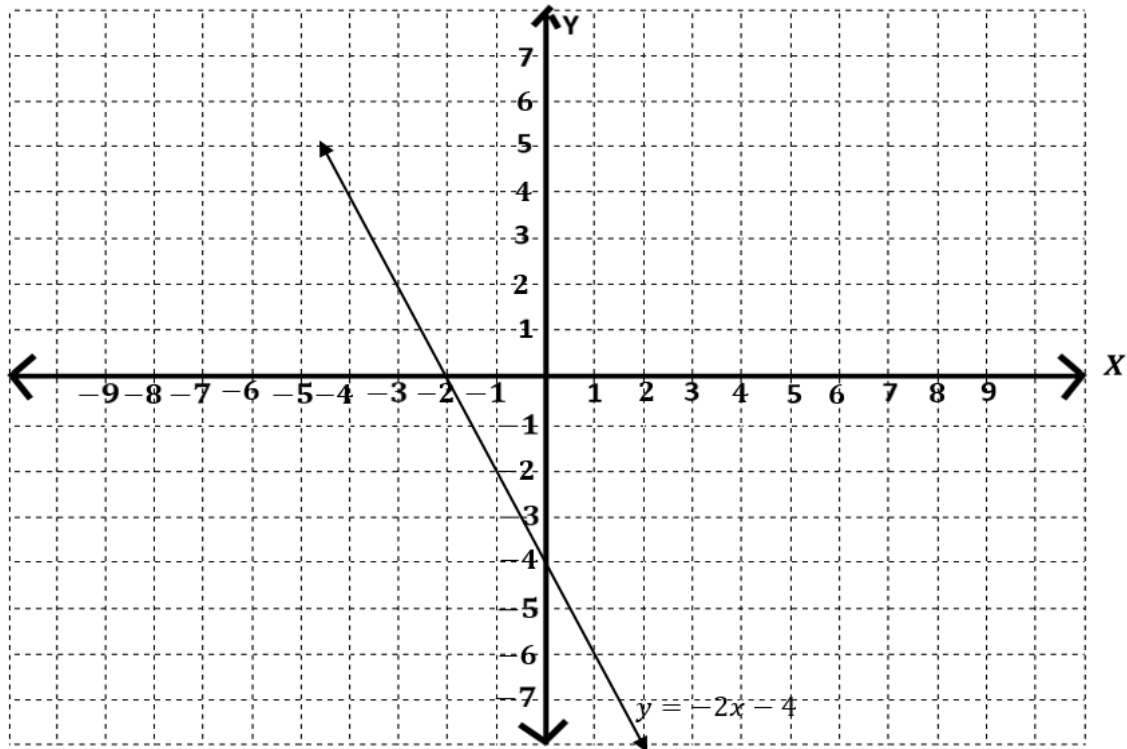


3.1.1 Complete the rule in 3.1.1 (1)

3.1.2 What an output value represented by 3.1.2? (2)

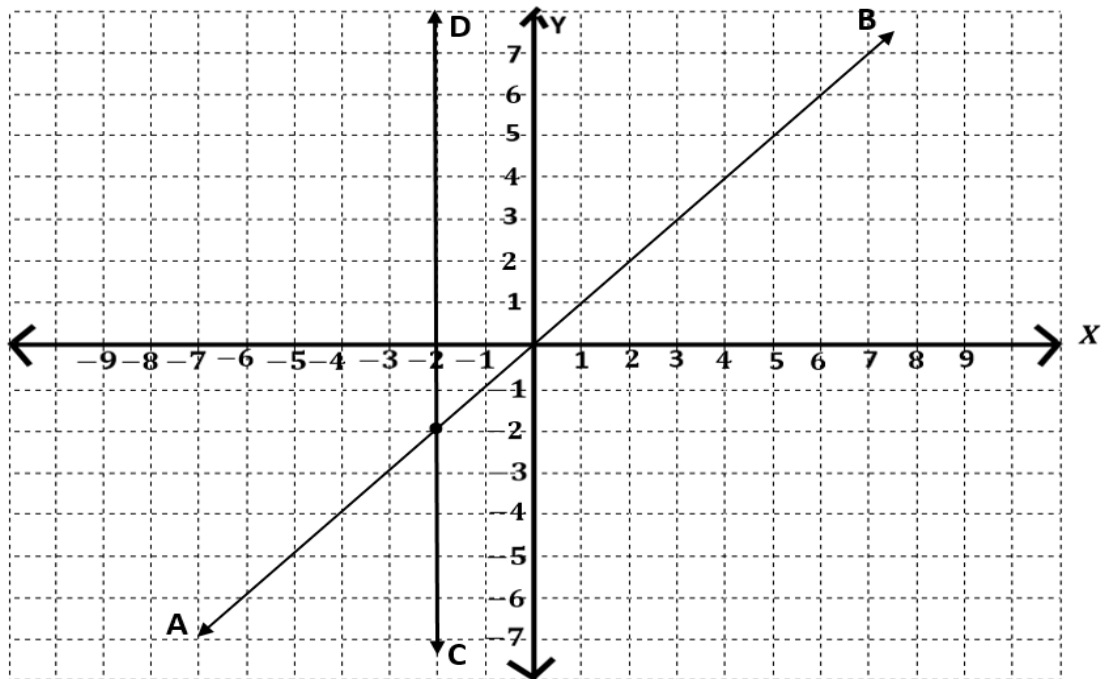
3.1.3 What is an input value represented by 3.1.3? (2)

- 3.2 Read the graph of $y = -2x - 4$ drawn below and answer the questions that follow.



- 3.2.1 On the same Cartesian plane above which is attached at the end of the question paper. Take it off, attach it on your answer sheet and then draw the graph of $y = -2x + 4$. Indicate the graph drawn. (2)
- 3.2.2 What are the intercepts of the graph you have drawn? (2)
- 3.2.3 How are the gradients of the two graphs? Give a reason for your answer. (2)

3.3 Study the straight line graphs drawn below and answer the questions that follow.



3.3.1 Write down the equation of graph AB. (1)

3.3.2 Write down the equation of graph CD. (1)

[13]

END

GOOD LUCK - ENJOY THE FESTIVE SEASON.

NAME: _____

QUESTION 3.2**ANNEXURE**