GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

NOVEMBER 2023

GRADE 9

MATHEMATICS

PAPER 1

TIME: 1½ hours

MARKS: 75

13 pages

NAME OF LEARNER: _____

GRADE/CLASS: _____

EXEMPLAR

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 8 questions.
2. Answer ALL the questions.
3. A non-programmable calculator may be used, unless otherwise stated.
4. Clearly show ALL calculations, diagrams, and graphs that you have used in determining your answers. Answers only will not necessarily be awarded full marks.
5. If necessary, round-off your answers to 2 decimal places, unless otherwise stated.
6. Diagrams are not necessarily drawn to scale.
7. Answer QUESTION 1 in Section A by circling the letter next to the correct answer.
8. Answer QUESTIONS 2 to 8 in Section B in the spaces provided on this question paper.
9. Write neatly and legibly.

EXEMPLAR

SECTION A

QUESTION 1

Answer the following questions by choosing the correct answer. Circle the letter next to the correct answer.

1.1 A car travels at an average speed of 762 km/h. Which formula represents the distance in kilometres, d, that the car travels in t hours?

A $d = 762 \times t$

B $d = 762 - t$

C $d = \frac{t}{762}$

D $d = \frac{762}{t}$ (1)

1.2 Which of the following is NOT a polynomial?

A 3

B $3x^2 + \sqrt{5x}$

C $x^2 + \frac{1}{x^2} - 4$

D $x^7 - 3x^2 + 4$ (1)

1.3 Simplify: $(-2p^5q)^2 =$

A $2p^{10}q^2$

B $-2p^{10}q^2$

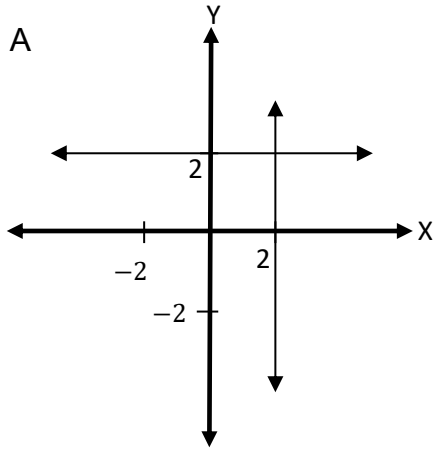
C $-4p^{10}q^2$

D $4p^{10}q^2$ (1)

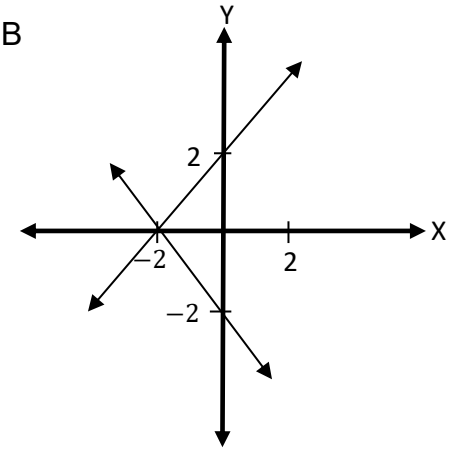
EXEMPLAR

1.4 Which of the following graphs represents the lines $y = -x + 2$ and $y = x - 2$?

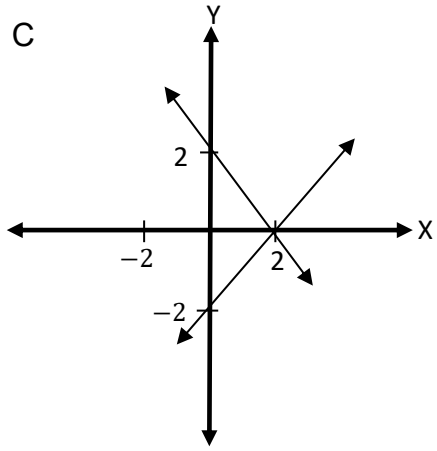
A



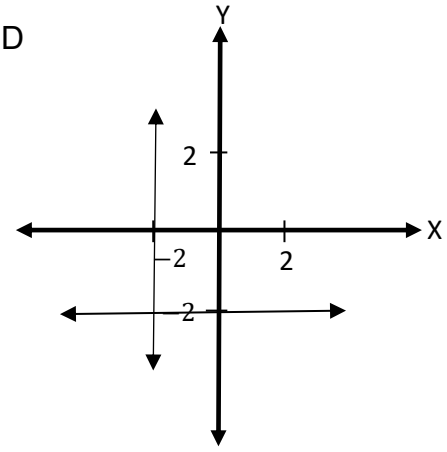
B



C

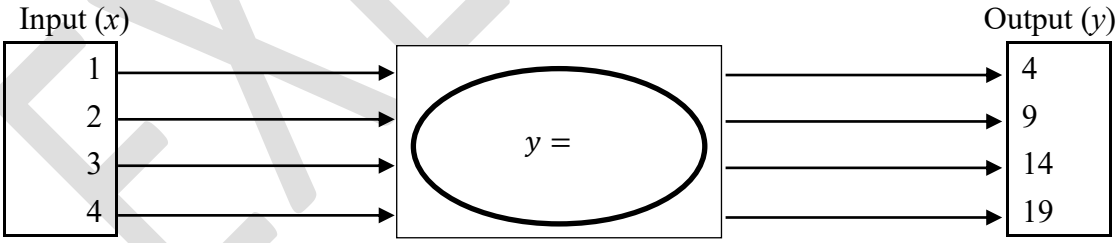


D



(1)

1.5 Determine the rule in the following diagram:



A $y = 5x + 1$
B $y = 5x - 1$
C $y = 4x + 1$
D $y = 4x - 1$

(1)
[5]

SECTION B

QUESTION 2

2.1 Given: $8m^2$, 16mn and 16n. Write down the:

2.1.1 HCF

_____ (1)

2.1.2 LCM

_____ (1)

2.2 Mary, Thando and John each had R3 000 to spend on a trip to Durban. They use different companies to book their accommodation.

Company A offers 20% discount. Company B offers to pay $\frac{3}{4}$ of the total price if you pay cash and Company C had no special offers. Complete the table below by filling in the amount after discount, in the last column.

Name	Amount before discount	Amount after discount
Company A	R3 000	After 20% discount: 2.2.1 _____ _____ (2)
Company B	R3 000	Pay $\frac{3}{4}$ of total price: 2.2.2 _____ _____ (2)
Company C	R3 000	R3 000

2.3 The current exchange rate of the Polish Zloty to the South African Rand is 1: 4,47.

Convert R18 356,26 to Polish Zloty. Show ALL your calculations.

_____

_____

_____ (2)

EXEMPLAR

2.4 Kgabo buys furniture worth R33 100,00. She pays 10% deposit and takes out a hire purchase loan to pay off the balance over a period of 36 months at a simple interest rate of 11% per annum.

2.4.1 How much will Kgabo pay in total?

(3)

2.4.2 How much interest will be paid?

(2)

2.5 You deposit R2 500 into a savings account which earns compound interest at a rate of 7,5% per annum. Determine how much money will be in your savings account after 5 years.

Use: $A = P\left(1 + \frac{r}{100}\right)^n$ or $A = P(1 + i)^n$

(2)
[15]

EXEMPLAR

QUESTION 3

3.1 What is the multiplicative inverse of -24?

(1)

3.2 Simplify the following without the use of a calculator.

3.2.1 $\sqrt{36} + \sqrt[3]{-216} + (-1)(-2)$

(3)

3.2.2 $-5 + (-8) - (4)(-3)$

(2)

3.3 Rethabile works part-time at a nearby food outlet. She earns R1 312,00 fortnightly, which was deposited in her bank account. She withdraws R1 200,00 and then deposits R400,00 after a week.

How much money does Rethabile have in her bank account now?

(2)
[8]

QUESTION 4

4.1 Choose the correct word from those given in brackets.

(Exponents/Expressions) are a shorter way of writing a repeated multiplication of the same number by itself.

(1)

EXEMPLAR

4.2 Each of the statements below has an error. Write the correct statement next to each one.

	Statement	Correct Statement
4.2.1	$pq \times pq = pq^2$	
4.2.2	$(xy + xy) = (xy)^2$	
4.2.3	$5^4 \times \frac{1}{5^{-3}} = 5^1$	

(3)

4.3 Simplify: $\frac{8r^3 \,.\, 2(r^2)^4}{2^4 .(r^2)^5}$

(3)
[7]

QUESTION 5

5.1 Given: 3; 6; 11; 18; ...

Write down the next TWO terms of the sequence.

(1)

EXEMPLAR

5.2 In a school hall, the chairs are stacked on top of each other. One chair is 55cm high. When 2 chairs are stacked together, the chairs are 61cm high.



5.2.1 Determine the height, in cm, if 3 chairs are stacked on top of each other.

(1)

5.2.2 If the stack of chairs is 145 cm high, how many chairs are in the stack?

(3)

5.3 Use the information provided in the table below to answer the questions which follow:

Input (n)	–2	–1	0	…	n
Output (T_n)	–17	–12	–7	…	13

5.3.1 Describe the relationship in the form $T_n = \ldots$

(2)

5.3.2 Calculate the missing input value n.

(2)
[9]

EXEMPLAR

QUESTION 6

6.1 Choose the correct property from those given in brackets:

The (associative/commutative) property says that the sequence/order of the numbers that you add or multiply does not matter. You can change the order of the numbers and still get the same answer.

(1)

6.2 Write 547 286 380 in words.

(1)

6.3 Given $12a^2 + 8a^5$

$4a^2$ is one factor of the above expression. Determine the other factor.

(1)

6.4 Determine the value of the expression: $2r^2 - 8rs - 9s^2 + 7$ if $r = 1$ and $s = -2$

(3)

6.5 Simplify the following:

6.5.1 $(15xy^2 - 27xyz - 3x^2yz^3) \div -3xy$

(3)

6.5.2 $\sqrt[3]{27y^6}$

(2)

[11]

EXEMPLAR

QUESTION 7

7.1 Write the following statement algebraically.

Four times the sum of twice a number and six equals thirty-two.

(1)

7.2 During the class discussion, 4 learners disagree on the correct step in solving the following equation: $4x - 3 = 2x - 7$.

Learner 1: $4x - 2x = 3 - 7$
Learner 2: $4x + 2x = 3 - 7$
Learner 3: $4x - 2x = 7 - 3$
Learner 4: $4x + 2x = 7 - 3$

Which learner is correct? Write down the correct step.

(1)

7.3 Solve the following equations:

7.3.1 $x^2 - 2x - 3 = 0$

(2)

7.3.2 $\frac{p-3}{4} - \frac{p-1}{3} = \frac{p}{2} - 1$

(3)

EXEMPLAR

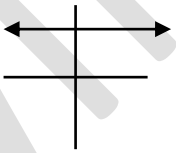
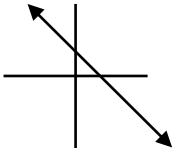
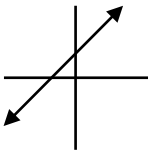
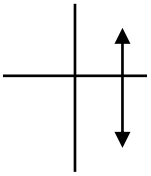
7.4 Roy left the house and drove south at an average speed of 40 km/h. Rose left some time later, driving in the same direction as Roy at an average speed of 48 km/h. After driving for five (5) hours Rose caught up with Roy.

How long did Roy drive before Rose caught up with him?

(4)
[11]

QUESTION 8

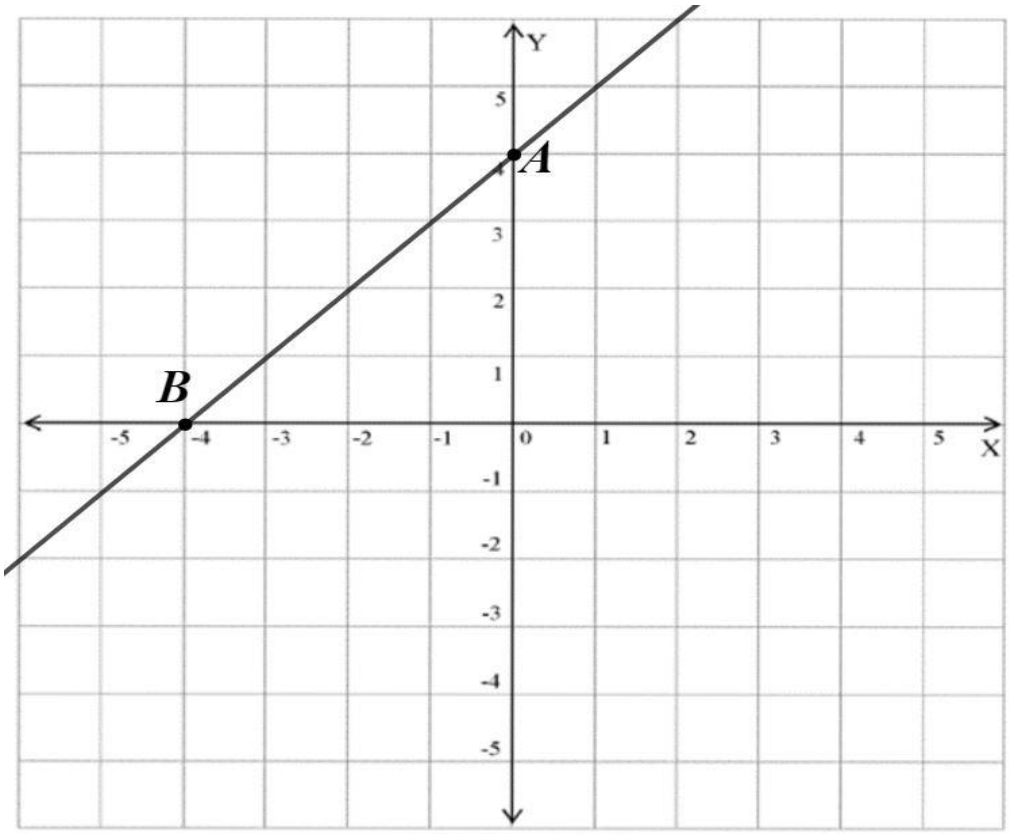
8.1 Match the description in COLUMN A with the graph in COLUMN B.

	COLUMN A	COLUMN B	ANSWER
8.1.1	The gradient is negative.	A 	_____
8.1.2	The gradient is positive.	B 	_____
8.1.3	The gradient is undefined.	C 	_____
8.1.4	The gradient is zero.	D 	_____

(4)

EXEMPLAR

8.2 The figure below is a straight line graph. Study the graph and answer the questions that follow.



8.2.1 The coordinates of A are (0; 4). Determine the coordinates of B.

(1)

8.2.2 Determine the gradient of the line AB. Use $m = \frac{y_2 - y_1}{x_2 - x_1}$.

(2)

8.2.3 Write the equation of the line AB in the form $y = mx + c$.

(1)

8.2.4 On the Cartesian plane above, draw the graph $x = -2$. (1)

[9]

TOTAL: 75

END