BERGVLIET HIGH SCHOOL

(*Mathematics Department*)

NOVEMBER EXAM: PAPER 1

GRADE 9 (TERM 4 2024)

MARKS: 75 **TIME: 1 HOUR 30 MINUTES**

INSTRUCTIONS & INFORMATION:

Read the following instructions carefully before answering the questions.

1. Answer **ALL** the questions in **INK**. The Question Paper consists of **EIGHT (8) Questions**.
2. Present your answers according to the instructions of each question. Clearly show **ALL calculations**, diagrams, graphs, etc. that you have used in determining your answers.
3. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
4. If necessary, round answers off to **TWO decimal places**, unless stated otherwise.
5. Diagrams are **NOT** necessarily drawn to scale.
6. Write neatly and legibly. Answers only will **NOT** necessarily be awarded full marks.

SET BY: D. LEKAY (MOD: D. VILJOEN)

NAME & SURNAME: ..... **CLASS: .....**

(Circle ONLY your teacher): **LE** **JO** **VI** **SM** **EB** **WH** **SI** **WM**

QUESTION	Q1 (9)	Q2 (8)	Q3 (10)	Q4 (7)	Q5 (16)	Q6 (5)	Q7 (11)	Q8 (9)	TOTAL (75)
MARK									

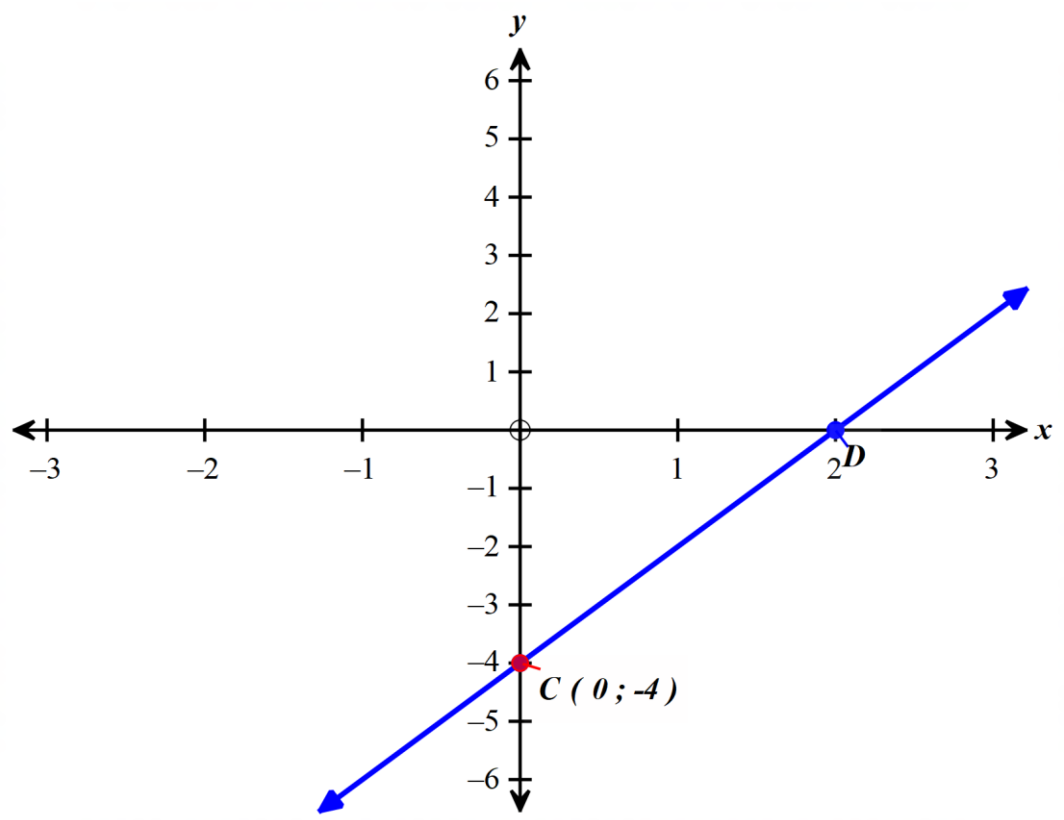
DETACH THIS PAGE AND STAPLE TO ANSWER SHEET

USEFUL FORMULAE: $A = P(1+i\cdot n)$ $A = P(1+i)^n$

QUESTION 8

DIAGRAM SHEET

8.1 **Sketch** $y = 2x + 4$ **on the axes below:**



8.1.1 .....

.....

.....

.....

.....

..... (4)

8.1.2 .....

.....

.....

..... (2)

8.1.3 .....

.....

.....

.....

..... (3)

[9]

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QUESTION 1

1.1 Consider the following set of numbers:

$$\sqrt{-10}\ ;\ 9,\dot{7}\ ;\ \tfrac{16}{28}\ ;\ \sqrt{13}\ ;\ \tfrac{20}{11}\ ;\ \pi\ ;\ \tfrac{27}{9}\ ;\ 0$$

Write down **ALL** numbers in this set that are:

1.1.1 Whole numbers. (1)

1.1.2 Irrational. (1)

1.2 Given the following table:

x	$\frac{1}{2}$	1	2	8	16
y	b	8	4	a	$\frac{1}{2}$

1.2.1 Is this table an example of Direct or Indirect/Inverse Proportion? (1)

1.2.2 Write down an equation that would represent the relationship in the table. (1)

1.2.3 Find the values of ***a*** and ***b***. (2)

1.3 An aeroplane covers a certain distance at a speed of $240\ km/h$ in 5 hours. At what speed must the aeroplane travel to cover the same distance in $1\frac{2}{3}$ hours? (3)

[9]

QUESTION 2

Simplify each of the following completely (**WITHOUT THE USE OF A CALCULATOR**) and leaving your answers as positive exponents:

2.1 $5^0 \cdot 3^{-2} + 3^2$ (2)

2.2 $\dfrac{x^2 \times x^{-3} \times 16y^{-1}}{2x^3 y}$ (3)

2.3 $\dfrac{4(a^2 b)^{-3}}{a^{-4} b c^2}$ (3)

[8]

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QUESTION 3

Simplify the following expressions completely:

3.1 $(x+4)(2x-3)$ (3)

3.2 $3+4(2x-5)^2$ (3)

3.3 $\frac{3x^2y}{2} \div \frac{6x^3}{8y} \times \frac{x^3}{y^4}$ (4)

[10]

QUESTION 4

Factorise the following expressions completely:

4.1 $16y^2 - 64$ (2)

4.2 $x^2 + 9x + 18$ (2)

4.3 $2(x-3y) - x(3y-x)$ (3)

[7]

QUESTION 5

Solve for x in the following equations:

5.1 $6x+4 = 2x-4$ (2)

5.2 $x^2 - 5x = -6$ (3)

5.3 $\frac{2x-1}{5} = 2 - \frac{x-1}{3}$ (4)

5.4 $3^{x-1} = 81$ (3)

5.5 In a multiple-choice exam, one mark is given for each correct answer and two marks are deducted for every wrong answer. A boy answers 30 questions and gets 21 marks. How many correct answers did he have? (4)

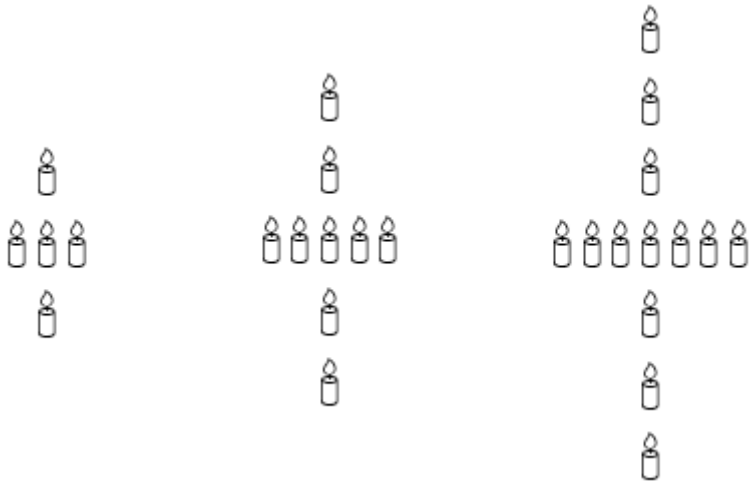
(You are required to set up an algebraic equation and to solve it. You will get a maximum of 1 mark for an answer only!)

[16]

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QUESTION 6

Candles are placed in a sequence for a carols service as shown in the diagram below.



6.1 How many candles are there in the next step in the sequence? (1)

6.2 Write a rule in terms of n for the number of candles needed in any step of the sequence. (2)

6.3 Which step in the sequence would need 37 candles? (2)

[5]

QUESTION 7

7.1 Paige wants to buy a second-hand car costing R35 000. She has a deposit of R5000 but will need to borrow the rest of the money from her dad. Her dad is prepared to lend her the money at 8% p.a. simple interest. Paige is hoping to pay her dad back the full amount, with interest, in one payment in three years' time. How much will she have to give her dad? (3)

7.2 At the start of January 2024, Peter and his wife decided to invest money for a holiday in Bali that will cost R35 000 in total. Pythag Bank offers them a fixed compound interest rate of 12% p.a. How much initial capital must they invest if the travelling agency requires them to settle the full amount (in one payment) at the start of January 2029? (3)

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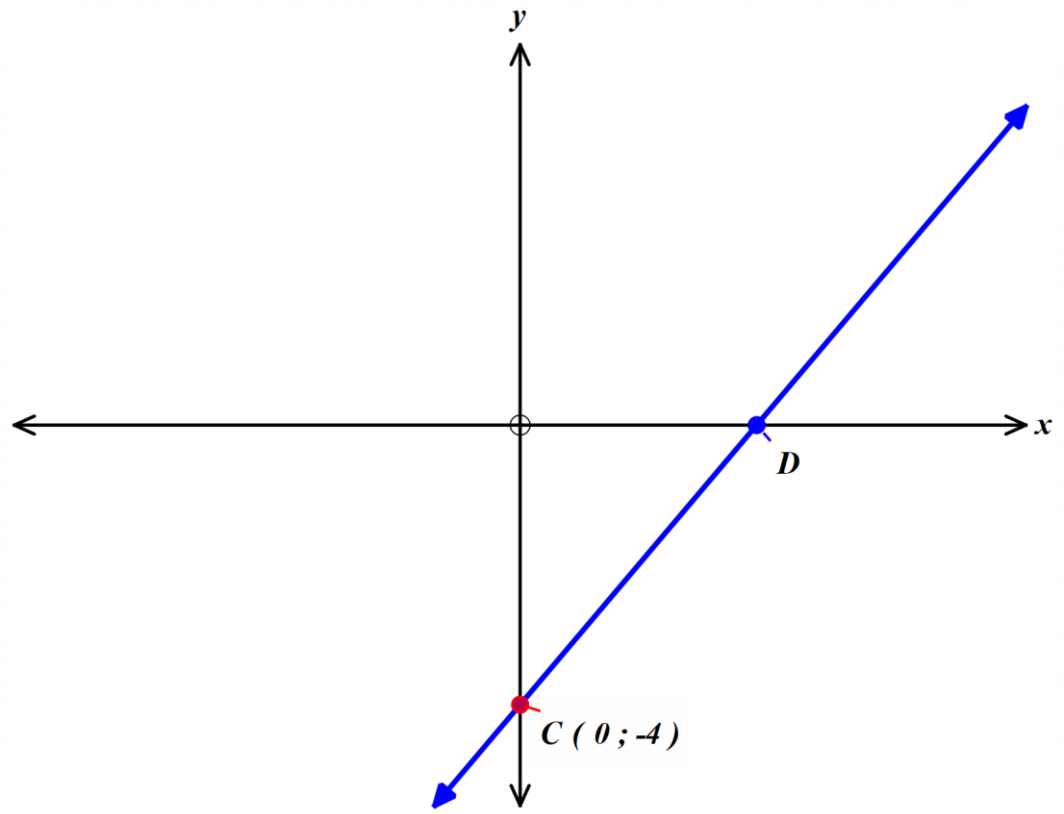
7.3 Kelly saw an advert for a couch set that states if she pays cash for the set it will cost her R15 999. However, she has the option to use Hire Purchase, with the advert saying "$(\boldsymbol{deposit\ R1600}) + \boldsymbol{R543,96 \times 36}$".

7.3.1 The furniture store claims that they are charging an interest rate of 12% in the Hire Purchase offer. Show by means of calculations that their claim is valid. (4)

[11]

QUESTION 8 (ANSWER THIS QUESTION ON THE DIAGRAM SHEET)

8.1 Line CD is parallel to the line $y = 2x + 4$ and C has the coordinates $(0;-4)$.



8.1.1 Determine the x and $y-$intercept and then sketch the graph $y = 2x + 4$ on the answer sheet provided.

Label the x and $y-$intercepts as **A and B respectively**, with their coordinates. (4)

8.1.2 Determine the length of AD. (2)

8.1.3 If the point $E(-4\ ;\ a)$ lies on the graph AB, calculate the value of a. (3)

[9]

GRAND TOTAL: 75

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