BERGVLIET HIGH SCHOOL

MATHEMATICS DEPARTMENT

NOVEMBER EXAMINATION

GRADE 8

MATHEMATICS PAPER 1
9 November 2023

MARKS: 75
TIME: 1½ HOURS
SET BY: B. Jorge
MODERATOR : L. Storey

This question paper consists of 5 questions and an answer sheet.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer QUESTION 1 and 5.2 on the ANSWER SHEET. Staple the answer sheet to the FRONT of your other answers.
2. Clearly show ALL calculations, diagrams, graphs, etcetera that you have used in determining your answers.
3. Answers **only** will not necessarily be awarded full marks.
4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
5. If necessary, round off answers to TWO decimal places, unless stated otherwise.
6. Diagrams are NOT necessarily drawn to scale.
7. Number the questions correctly according to the numbering system used in this question paper.
8. Write neatly and legibly.

QUESTION 1 Answer this question on the answer sheet provided.

Place an X over the correct answer on the answer sheet.

1.1 Study the list of numbers: -27 ; $1{,}16$; 2π ; $0{,}\dot{1}$; $\sqrt{64}$; $-2\frac{1}{3}$; 15

1.1.1 The integer numbers in the list are: (1)

A. -27 ; $1{,}16$; $0{,}\dot{1}$

B. -27 ; $\sqrt{64}$; 15

C. $1{,}16$; $0{,}\dot{1}$; $-2\frac{1}{3}$

D. 2π ; $\sqrt{64}$

1.1.2 All the irrational numbers in the list are: (1)

A. $1{,}16$; 2π ; $0{,}\dot{1}$; $-2\frac{1}{3}$

B. 2π

C. -27 ; $1{,}16$; $0{,}\dot{1}$; $-2\frac{1}{3}$; $\sqrt{64}$

D. None

1.2 Multiples of 15 are: (1)

A. 15; 30; 45;....

B. 3×5

C. 1; 3; 5; 15

D. $1\times3\times5\times15$

1.3 The simplest form of $\frac{13}{2}:1\frac{1}{3}$ is: (1)

A. $39:8$

B. $13:4$

C. $\frac{13}{2}:\frac{4}{3}$

D. $2:3$

1.4 225 divided into the ratio 10:5 is: (1)

A. $2250:1125$

B. $150:75$

C. $150:50$

D. $50:10$

1.5 $-(-1)^2 =$ (1)

A. -1

B. -2

C. 1

D. 2

1.6 $1,421 \times 1,360$ rounded to 2 decimal places is: (1)

A. $1,93$ B. $1,94$

C. $1,933$ D. $1,92$

1.7 R16 + 14% vat = (1)

A. $R16,14$ B. $R1614$

C. $R18,24$ D. $R30$

1.8 Calculate: $\sqrt{-1000}$ (1)

A. Non-Real B. -10

C. Undefined D. 10

1.9 $-4x^3$ in expanded form is: (1)

A. $-4x \times -4x \times -4x$ B. $-4 \times -4 \times -4 \times -x \times -x \times -x$

C. $-4 \times x \times x \times x$ D. $-1 \times -4 \times x \times x \times x$

1.10 Consider the following polynomial: $-4x - 5y^2 + 2x^2$ (1)

The coefficient of y^2 is:

A. $-4x - 5$ B. $-5y^2$

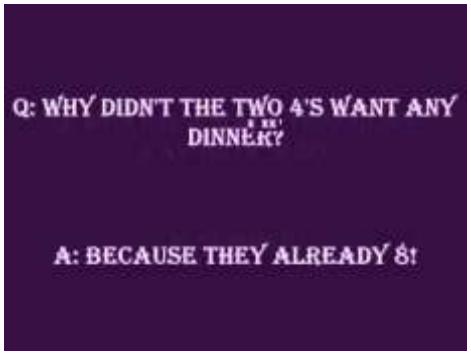
C. 3 terms D. -5

1.11 $2 \div \sqrt{2xy - 2xy}$ (1)

A. 2 B. 0

C. *undefined* D. $\frac{2}{xy}$

[12]



QUESTION 2

2.1 Arrange the following numbers from smallest to biggest: (2)

$$-\frac{1}{8}\ ;\ -5\ ;\ -1\frac{1}{2}$$

2.2

2.2.1 Write 308 and 56 as the product of prime factors. (3)
Show all your working.

2.2.2 Determine the highest common factor (HCF) of 110 and 56. (2)

2.3 Cheslin Kolbe (rugby) and Wayde van Niekerk (400m athletics) are sprinters that South Africans are proud of. Cheslin sprints 80m in 7,5 seconds and Wayde runs the 400m in 43,03 seconds.





2.3.1 Calculate both speeds in metres per second (m/s). (4)

2.3.2 Who runs the fastest? (1)

2.4 If the product of 3 primes numbers is 715, calculate their sum. Show your working. (2)

2.5 **Without a calculator** and showing ALL steps, calculate the following:

2.5.1 $7-3\left[-2\times3^2+3\left(4\div2\times\sqrt[3]{27}\right)\right]$ (3)

2.5.2 $-3\frac{1}{3}\div2\frac{1}{6}$ (3)

2.6

A	-3	8
	9	
	-5	

In a magic square the sum of the numbers in every horizontal row, vertical column and diagonal row are the same. (1)

Write down the value of **A** in this magic square.

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QUESTION 3

3.1 Simplify:

3.1.1 $x^2(x^4)$ (1)

3.1.2 $(3xy^3)^2$ (2)

3.1.3 $\frac{-2x^4y^5}{12x^4y^3}$ (3)

3.1.4 $\sqrt[5]{-x^{15}}$ (2)

3.2 Write an algebraic equation for the following: (3)

Peter is 3 years older than Mia, the sum of their ages is three times Mia's age.

3.3 Simplify the following:

3.3.1 $2x+4x^2-x+2x^2$ (2)

3.3.2 $3(3x+2)-5x$ (2)

3.3.3 $2(x+3)+4(2x-1)$ (4)

3.3.4 $(-2x)^2+(-3x^2)$ (2)

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QUESTION 4

4.1 Solve for x:

4.1.1 $3x-27=-2$ (2)

4.1.2 $2(x-1)-12=-2(3+x)$ (4)

4.1.3 $\frac{15+3x}{3}=-5$ (3)

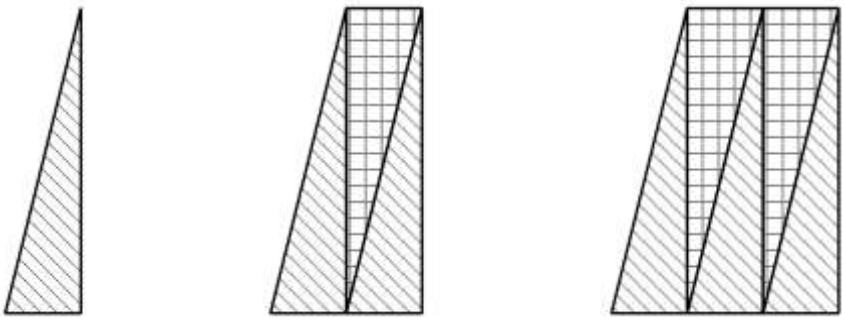
4.1.4 $5^x=5(25)$ (1)

4.2 If $12x-9$ is expressed in the form $a(4x+b)$, then determine the value of $a-b$. (2)
Show your working.

[12]

QUESTION 5

5.1 Triangular tiles are arranged in the following pattern:



5.1.1 Write down the number of tiles in the next pattern. (1)

5.1.2 Determine the general rule (T_n) of the number of tiles in each arrangement. (3)

5.1.3 Calculate the number of tiles in the 21st pattern, using your rule above. (2)

5.2 **Complete this question on the answer sheet.** (3)

[9]

ANSWER SHEET **Attach to the front of the rest of your answers.**

NAME:_____ CLASS:_____

MATHS TEACHER (circle correct): Jo / Ly / St / Vn / Eb / Sj / Wn / Gr

QUESTION 1

1.1.1	**A**	**B**	**C**	**D**
1.1.2	**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**
1.6	**A**	**B**	**C**	**D**
1.7	**A**	**B**	**C**	**D**
1.8	**A**	**B**	**C**	**D**
1.9	**A**	**B**	**C**	**D**
1.10	**A**	**B**	**C**	**D**
1.11	**A**	**B**	**C**	**D**

Mark the correct answer clearly with an **X**.

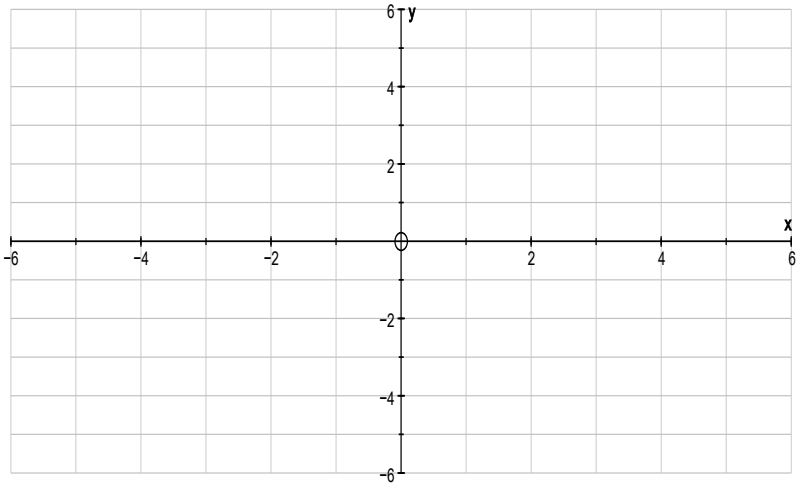
[12]

QUESTION 5.2

Complete the table, then plot each point on the axes provided. Join the points from left to right.

$y = -x + 3$

x	-2	0	2	4
y				



[3]

Have fun with this Sudoku grid, only if you have completed your exam AND checked your work.

NB: Every column AND row must have the numbers 1 – 9 (no repeats)

	6	1		8			3	
5		8	6		4	2		
	7					8		
	4	7		6	9			
6	9					4	1	
			4	3		6		
3	8	2	9	1	6			
					8			
					3		8	2