Hillcrest High School

Grade 8

MATHEMATICS P1

NOVEMBER 2023

MARKS: 120

TIME: 2 Hours

EXAMINER: Mrs F. Oosthuyzen

MODERATOR: Mrs C. Victor

NAME :														CLASS:		
TEACHER:														DATE:		
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	TOTAL	%
10	8	8	7	7	2	19	7	4	6	5	4	19	4	10	120	

Read the following instructions carefully before answering the questions.

Instructions:

1. This examination consists of **15** questions and **15** pages.
2. Answer ALL the questions in the space provided.
3. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.
4. Answers only, will NOT necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers correct to TWO decimal places, unless stated otherwise.
7. Write neatly and legibly.

Question 1

Multiple Choice.

Choose the correct answer and write the corresponding letter in the Answer column.

Answers:

1.1 $-3 + (-6) =$

A. -9	B. 3
C. 9	D. -3

1.2 $4 \times \square = -20$

The missing value is:

A. 5	B. -5
C. 80	D. -80

1.3 Which of the following is NOT a simplified ratio?

A. $4:7$	B. $0{,}2:5$
C. $8:1$	D. $5:7$

1.4 $2x \times 3x^3 =$

A. $6x^3$	B. $5x^4$
C. $6x^4$	D. $5x^3$

1.5 $x^4 + x^4 =$

A. x^8	B. $2x^4$
C. x^{16}	D. $2x^8$

1.6 $\sqrt[3]{-8} =$

A. $non-real$	B. 2
C. -2	D. $undefined$

1.7 $\square + 14 \times 3 = 51$

The missing value is:

A. 3	B. 9
C. 12,33	D. 93

1.8 $\square\% \; of \; 60 = 45$

The missing value is:

A. 15	B. 105
C. 0,75	D. 75

1.9 Insert the following symbol to make the statement true:

$$\frac{4}{5} \square \frac{12}{15}$$

A. $>$	B. $<$
C. $=$	D. $+$

1.10 The value of $\frac{12}{0}$ is:

A. 12	B. $undefined$
C. $non-real$	D. 0

[10]

Question 2

Answer True or False for each of the following statements:

		True / False
2.1	The lowest common multiple for 4 and 5 is 40.	
2.2	All of the factors of 20 are: $2; 4; 5; 10; 20$	
2.3	The first five multiples of 6 are: $1; 2; 3; 4; 6$	
2.4	13 and 31 are both prime numbers.	
2.5	The prime factors of 60 are: $2; 3; 5$	
2.6	$3{,}487$ rounded to the nearest 2 decimal places is $3,48$	
2.7	The rule for the following number pattern is $Tn = 4n - 3$ $-3; 1; 5; 9;$ ...	
2.8	$2x^3 + x - 7$ In the given expression the degree is 3.	

[8]

Question 3

Calculate the following; show all working.

3.1 $\frac{3}{5} + \frac{2}{10}$ (2)

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3.2 $1\frac{2}{3} - \frac{4}{7}$ (3)

3.3 $\frac{1}{4} \div \frac{5}{8}$ (3)

[8]

Question 4

Convert the following:

4.1 $\frac{1}{5}$ *into a percentage* (1)

4.2 0,068 *into a percentage* (2)

4.3 $80\%\ into\ a\ fraction$ (2)

4.4 $74{,}5\%\ into\ a\ decimal\ fraction$ (2)

[7]

Question 5

Answer the following questions. Show all working.

5.1 The price of a washing machine is decreased / discounted by 15% at a sale. Calculate the new price if the original price was R 4 790 (4)

5.2 Calculate the percentage decrease if the price of a fridge goes down from R 8 500 to R 6 200. (3)

[7]

Question 6

Fill in $<$; $>$ or $=$ to make the statements true:

6.1 $4 + 6 \times 3 \square (4 + 6) \times 3$ (1)

6.2 $\sqrt[3]{-64} \square \sqrt{64}$ (1)

[2]

Question 7

7.1 Simplify the following ratios:

7.1.1 $100 : 85 : 15$ (3)

7.1.2 $16cm : 4m$ (2)

7.1.3 $\frac{3}{4} : \frac{2}{5}$ (3)

7.2 In a herd of elephants there are 12 baby elephants and their ratio of mother : babies are 3:2. (2)
How many mother elephants would there be in the herd?

7.3 The number of unemployed people has increased in a ratio of 4: 7. If there is now an unemployment rate of 28%, what was the previous unemployment rate? (2)

7.4 A car travels 420 km in 4 hours and 30 minutes.

7.4.1 Calculate the speed that the car travels at. (2)

7.4.2 Calculate the speed of the car in km/h rounded to the nearest whole number. (1)

7.5 An amount of R 60 000 was won in a competition and split between three players in a ratio of 2: 3: 5. (4)
Give the value of the person's winnings who received the smallest portion. Round off to the nearest ten thousand rands.

_____

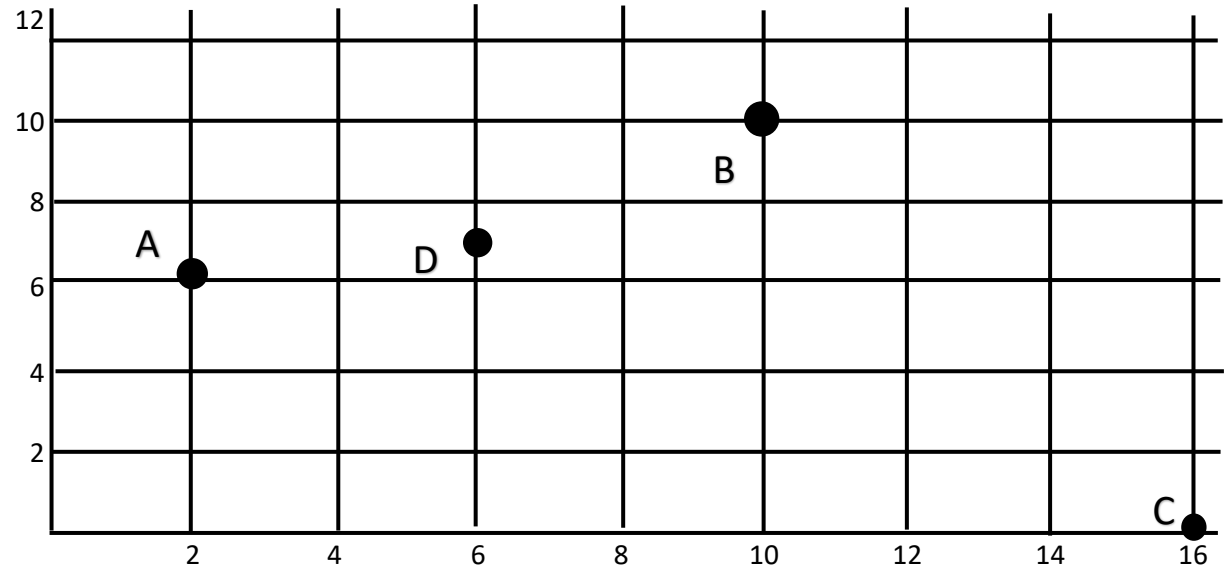
_____

_____

_____

[19]

Question 8



Use the diagram above to answer the following questions.

8.1 Give the co-ordinates of the following: (4)

A : _____

B : _____

C: _____

D: _____

8.2 Plot the following co-ordinates on the cartesian plane above. (3)

E: $(10\ ;3)$

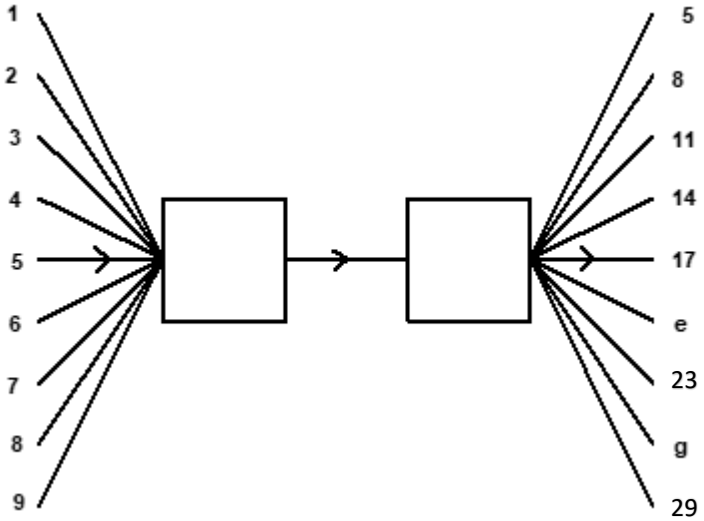
F: $(4\ ;5)$

G: $(0\ ;6)$

[7]

Question 9

9.1 Complete the given flow diagram by filling in the computing procedure. (2)



9.2 Calculate the value of e and g from the flow diagram. (2)

[4]

Question 10

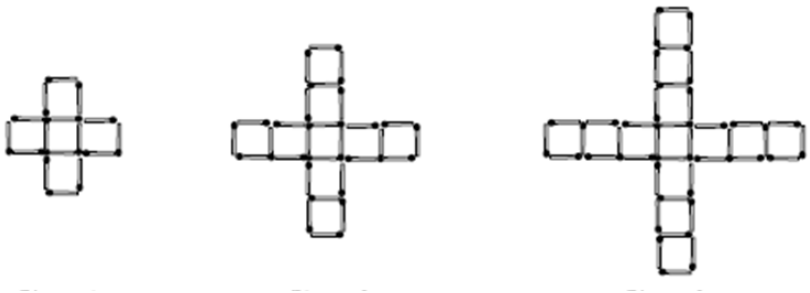
Consider the input / output diagram below:

input → **× 6** → **+ 5** → **output**

10.1 Use the flow diagram above to complete the table below: (2)

Input number	3	5	8		
Output number			53	77	83

10.2 Hayley builds patterns that consist of squares as shown below.



10.2.1 Complete the table below, assuming that the pattern continues: (2)

Picture number	1	2	3	4	10
Number of squares	5	9	13		

10.2.2 Use the table to set up a rule for this pattern in terms of n : (2)

$T_n =$

[6]

Question 11

Given the following expression, answer the questions that follow:

$$4a^2 - 6b - 8$$

11.1 Write the coefficient of b (1)

11.2 Write the base of the first term. (1)

11.3 Write the exponent of the first term. (1)

11.4 Write the constant of the expression. (1)

11.4 Write the name of the expression. (1)

[5]

Question 12

Write an algebraic expression for each of the following:

12.1 Multiply two different numbers by 3 (2)

12.2 Divide 6 more than a number, by 5 (2)

[4]

Question 13

Simplify the following algebraic expressions.

13.1 $\frac{y^5}{y^2}$ (1)

13.2 $4p \times 2q \times 5pq$ (3)

13.3 $5p^2 - 2p + 4p^2 - p$ (2)

13.4 $(-3x^2y^3)^4$ (3)

13.5 $3a^4 \times 2a^5$ (2)

13.6 $\dfrac{2a^2c^4 \times 6a^3c}{18a^4c^6}$ (3)

13.7 $3xy^3\left(\dfrac{1}{x} + 5x^2y^3\right)$ (2)

13.8 $\sqrt{25x^4 - 16x^4}$ (3)

[19]

Question 14

Calculate the value of the following expression if $a = 3$, $b = 2$, $c = -1$ and $d = 4$.
All working must be shown.

14. $3a^4 \times \frac{bc}{d}$ (4)

[4]

Question 15

Solve the following equations. All working must be shown.

15.1 $18 + x = 30$ (1)

15.2 $5k - 7 = -28 - 2k$ (3)

15.3 $5(y - 3) = 30$ (3)

15.3 $\frac{10}{x} = -300$ (2)

[10]