



LIMPOPO  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF  
EDUCATION

## SEKHUKHUNE SOUTH DISTRICT

GRADE 08

**MATHEMATICS**

**TEST 02**

**TERM 2**

**DATE : JUNE 2022**

**MARKS :60**

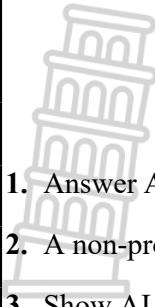
**DURATION : 1,5 HRS**



Stanmorephysics.com



**This question paper consists of 6 pages.**



**INSTRUCTIONS AND INFORMATION**

1. Answer ALL questions in this question paper.
2. A non-programmable calculator may be used.
3. Show ALL calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. Write neatly and legibly.



### QUESTION 1

#### Whole numbers and integers.

1.1 From the list numbers of below, choose a number that;

**8 13 14 18 24 49 77**

- 1.1.1 Is a multiple of 2 and 3 (1)  
1.1.2 Is a perfect square (1)  
1.1.3 Is a prime number (1)  
1.1.4 Is a factor of 24 (1)  
1.1.5 Is the square root of 169 (1)  
1.1.6 Is the highest Common Factor of 48 and 72 (1)

1.2 A list of words is provided bellow. Use your knowledge of properties of whole numbers to select the correct word for the following.

**Commutative property, Associative property, Distributive property, Identity of zero, Identity of one.**

- 1.2.1  $r + (s + t) = s + (r + t)$  (1)  
1.2.2  $14x \times 0 = 0$  (1)  
1.2.3  $m \times (n + p) = (m \times n) + (m \times p)$  (1)
- 1.3 Determine the HCF of 8 and 180 using prime factorisation (*tree diagram*). (3)
- 1.4 A library buys 638 new books. Each shelf in the library can take 32 books. How many shelves are needed. (2)
- 1.5 Decrease R60 in the ratio 4:5 (2)
- 1.6 Calculate the following and say whether it is **true** or **false**: (3)

$$(-3)^3 > \sqrt[3]{(-125)}$$

[19]

### QUESTION 2

#### Common and decimal fractions.

2.1 Calculate the following.

2.1.1  $3\frac{1}{6} - 5\frac{5}{8}$

2.1.2  $4\frac{1}{8} \div 2\frac{2}{11}$

2.1.3  $168,2 \div 2,9 + 1,4$

(3)

(3)

(2)

2.2 Round the following :

2.2.1 17,702 to nearest whole number. (1)

2.2.2 20,345 to two decimal places . (1)

[10]

### QUESTION 3

#### Laws of exponents

3.1 Simplify the following

3.1.1  $a \times a^3 \times x \times x \times a^2$  (2)

3.1.2  $(x^{63} \times c \times 2^2)^0$  (1)

3.1.3  $(x^3y)^4 \times 2x^3$  (2)

3.1.4  $\sqrt{25a^4c^8}$  (2)

3.1.5  $\frac{3y^3a^2}{y \times y^4 \times a^2}$  (3)

[10]

### QUESTION 4

#### Numeric and geometric patterns and Relationships

4.1 Study the following sequence and answer the questions that follow:

**1, 3, 5, 7, a, b**

4.1.1 Give the values of *a* and *b*. (2)

4.1.2 Determine the general term ( $T_n = \dots$ ) to describe the above pattern. (2)

4.1.3 Use the general term to find  $T_{12}$  of the sequence. (2)



4.1 Study the following geometric pattern and answer the following questions.

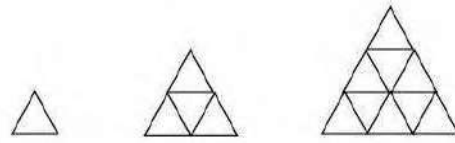


Figure 1

Figure 2

Figure 3

4.2.1 Fill in the missing numbers in the table below:

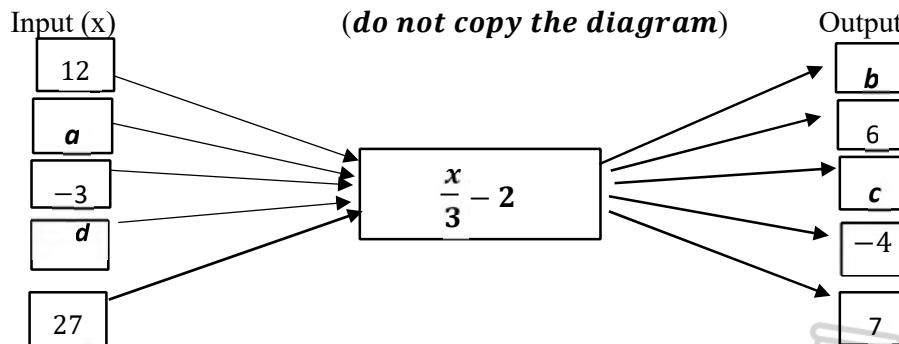
Figure	1	2	3	4	5
Number of small triangles	1	4	9	<i>a</i>	<i>b</i>

(2)

4.2.2 Write down the general term,  $T_n$ , of the number sequence formed by the number of small triangles in the above pattern.

(2)

4.3 Find the values of  $a$ ,  $b$ ,  $c$  and  $d$ .



(4)

4.4 Given the following general term:  $T_n = n^3 - 1$   
Create a three terms sequence.

(2)

[16]



**QUESTIONS 5**

**Algebraic expressions (language)**

5.1 Given below is an algebraic expression, answer the following questions based on it:

$$3x^2 + x^4 - 2x + 1$$

5.1.1 How many terms are given in the expression? (1)

5.1.2 What is the degree of this expression? (1)

5.1.3 Give the constant term of this expression. (1)

5.1.4 Give the coefficient of  $x$ . (1)

5.2 Write an algebraic expression that will symbolize each of the following.

5.2.1 Six more than the product of five and a number. (1)

5.2.2 The product of ten and the sum of two different numbers (2)

[7]

**TOTAL MARK [60]**



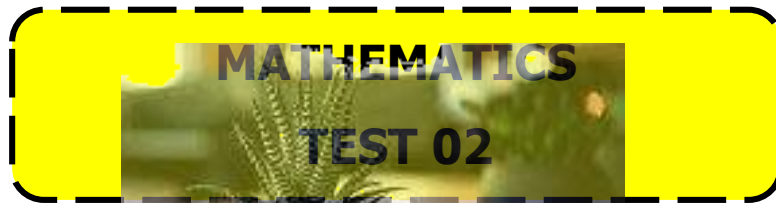


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## **SEKHUKHUNE SOUTH DISTRICT**

**GRADE 08**



**TERM 2**

**MARKING GUIDELINE**

**DATE : 07 JUNE 2022**

**MARKS :60**



**This Marking guideline consists of 5 pages.**

QUESTION 1			
Whole numbers and integers.			
1.1			
	1.1.1	18 Or 24 ✓	(1)
	1.1.2	49 ✓	(1)
	1.1.3	13 ✓	(1)
	1.1.4	8 ✓	(1)
	1.1.5	13 ✓	(1)
	1.1.6	24 ✓	(1)
1.2			
	1.2.1	Associative property ✓	(1)
	1.2.2	Identity of zero ✓	(1)
	1.2.3	Distributive property ✓	(1)
1.3	Determine the HCF of 8 and 180 using prime factorisation ( <i>tree diagram</i> ).		
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  8 \\  \swarrow \quad \searrow \\  2 \quad \quad 4 \\  \quad \swarrow \quad \searrow \\  \quad 2 \quad \quad 2 \\  \quad \quad \checkmark  \end{array}  </math> </div> <div style="text-align: center;"> <math display="block">  \begin{array}{c}  180 \\  \swarrow \quad \searrow \\  2 \quad \quad 90 \\  \quad \swarrow \quad \searrow \\  \quad 2 \quad \quad 45 \\  \quad \quad \swarrow \quad \searrow \\  \quad \quad 3 \quad \quad 15 \\  \quad \quad \quad \swarrow \quad \searrow \\  \quad \quad \quad 3 \quad \quad 5 \checkmark  \end{array}  </math> </div> </div> <p>HCF: <math>2 \times 2 = 2^2 = 4</math> ✓</p>		(3)
1.4	<p>1 Shelf : 32 Books ✓</p> <p><math>x</math> : 638 books</p> <p><math>\therefore x = \frac{638}{32} = 19,9375</math></p> <p><math>\approx 20</math> shelves ✓</p>	<p>Simplify : 1 MARK</p> <p>Answer : 1 MARK</p>	(2)
1.5	<p>Decrease R60 in the ratio 4:5</p> <p><math>R60 \times \frac{4}{9} = R48</math> ✓</p>	<p>Simplify : 1 MARK</p> <p>Answer : 1 MARK</p>	(2)
1.6	<p><math>-27 \checkmark &gt; -5 \checkmark</math></p> <p>False ( <math>-5</math> is greater than <math>-27</math>) ✓</p>	<p>Calculation: <math>-27 \checkmark</math> and <math>-5 \checkmark</math></p> <p>Conclusion : 1 MARK</p>	(3)



				[19]
<b>QUESTION 2</b> <b>Common and decimal fractions.</b>				
2.1				
2.1.1	$3\frac{1}{6} - 5\frac{5}{8}$ $= \frac{19}{6} - \frac{45}{8} \checkmark$ $LCD = 24$ $= \frac{(4)(19) - (3)(45)}{24} \checkmark$ $= \frac{76 - 135}{24}$ $= -\frac{59}{24} \checkmark$	Conversion( Mixed number) : 1MARK  Simplify: 1 MARK Answer 1 MARK	(3)	
2.1.2	$4\frac{1}{8} \div 2\frac{2}{11}$ $= \frac{33}{8} \div \frac{24}{11} \checkmark$ $= \frac{33}{8} \times \frac{11}{24} \checkmark$ $= \frac{121}{72} \checkmark$	Conversion( Mixed number) : 1MARK  Simplify: 1 MARK Answer 1 MARK	(3)	
2.1.3	$= 58 + 1,4 \checkmark$ $= 59,4 \checkmark$		(2)	
2.2	Round the following :			
2.2.1	18 ✓		(1)	
2.2.2	20,35 ✓		(1)	
			[10]	
<b>QUESTION 3</b> <b>Laws of exponents</b>				
3.1	Simplify the following			
3.1.1	$a^6 \times x^2 \checkmark$	Product law: MARK	(1)	
3.1.2	1 ✓		(1)	

3.1.3	$(x^{12}y^4) \times 2x^3 \checkmark$ $2x^{15}y^4 \checkmark$	Power product law: 1 MARK Answer : 1 MARK	(2)
3.1.4	$\sqrt{25a^4c^8}$ $5a^2c^4 \checkmark$		(1)
3.1.5	$\frac{3y^3a^2}{y \times y^4 \times a^2}$ $\frac{3y^3a^2}{y^5a^2} \checkmark$ $3y^{3-5}a^{2-2} \checkmark = \frac{3}{y^2} \checkmark$		(3)
			[8]

**QUESTION 4**

**Numeric and geometric patterns and Relationships**

4.1	Study the following sequence and answer the questions that follow: <b>1, 3, 5, 7, a, b</b>		
4.1.1	$a = 9 \checkmark$ $b = 11 \checkmark$		(2)
4.1.2	$T_1 = 2(1) - 1 = 1$ $T_2 = 2(2) - 1 = 3 \checkmark$ $T_n = 2n - 1 \checkmark$		(2)
4.1.3	$T_{12} = 2(12) - 1 \checkmark = 23 \checkmark$		(2)
4.2	4.2.1 Fill in the missing numbers in the table below:		
	$a = 16 \checkmark$ $b = 25 \checkmark$		(2)
	4.2.2	$T_n = n^2 \checkmark \checkmark$	(2)
4.3	<b>Find the values of a, b, c and d.</b> $a = 24 \checkmark$ $b = 2 \checkmark$ $c = -3 \checkmark$ $d = -6 \checkmark$		(4)
4.4	$T_n = n^3 - 1$ <b>0; 7; 26</b> $\checkmark \checkmark$		(2)
			[16]

<b>QUESTIONS 5</b> <b>Algebraic expressions (language)</b>			
5.1			
5.1.1	4 (FOUR) TERMS ✓		(1)
5.1.2	4 <sup>th</sup> degree (FOUR) ✓		(1)
5.1.3	1 ✓		(1)
5.1.4	-2 ✓		(1)
5.2			
5.2.1	$5x + 6$ or $5 \times x + 6$ ✓		(1)
5.2.2	$10(x + y)$ ✓ $10x + 10y$ ✓		(2)
			<b>[7]</b>

**TOTAL MARK [60]**

