



education

Department:  
Education  
**PROVINCE OF KWAZULU-NATAL**

**ZULULAND DISTRICT: GENERAL EDUCATION AND TRAINING (GET)**

*Helping Our Schools Transform Little People into Future Giants*



**Marks : 50**

**Duration : 1 hour**

**Read the following instructions carefully before answering the questions:**

1. This question paper consists of **7 pages** including the cover page.
2. This question paper consists of **FIVE** questions. Answer **ALL** questions.
3. Clearly show **ALL** calculations that you have used in determining your answer.
4. Answer Questions 2 – 5 in the spaces provided.
5. Answer only will not necessarily be awarded full marks.
6. An approved scientific calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
7. Write neatly and legibly.

<b>Circuit</b>	
<b>School Name</b>	
<b>Class (e.g. 9A)</b>	
<b>Name &amp; Surname</b>	

**Section A**

**Question 1**

**[10]**

Four options are provided as answers to the following questions. **Circle** the letter corresponding to correct answer.

1.1. Which **ONE** of the following numbers is irrational? (1)

A  $-\sqrt{3}$

B  $\sqrt{2\frac{7}{9}}$

C 3,9

D  $\sqrt[3]{-27}$

1.2. Which of the following option best represent 72 as a product of its prime factors? (1)

A  $8 \times 9$

B  $8 \times 3 \times 3$

C  $24 \times 3 \times 1$

D  $2 \times 2 \times 2 \times 3 \times 3$

1.3. Between which two consecutive integers is the  $\sqrt[3]{181}$ ? (1)

A 4 and 5

B 7 and 8

C 6 and 7

D 5 and 6

1.4. Which of the following given numbers is not an integer? (1)

A 5,5

B 0

C -153

D 1500

1.5. What is the value of  $\sqrt{7^2} + \sqrt[3]{8}$ ? (1)

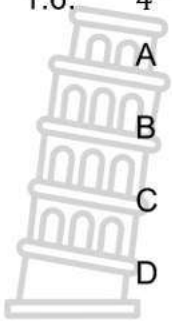
A. 53

B. 49

C. 9

D. 51

1.6.  $4^{-2} \times 2^{-3} \times 8^0 =$  (1)



- A  $\frac{1}{16}$
- B  $\frac{1}{128}$
- C  $\frac{1}{64}$
- D  $\frac{1}{256}$

1.7. What is the value (in scientific notation) of  $3,7 \times 10^{-4} \times 5,2 \times 10^{-3}$ ? (1)

- A  $1924 \times 10^{-4}$
- B  $1924 \times 10^{-3}$
- C  $192,4 \times 10^{-5}$
- D  $1,924 \times 10^{-6}$

1.8. Determine the next term in the number pattern given: (1)

8; 13; 18; 23; 28; \_\_\_\_\_

- A 30
- B 33
- C 32
- D 29

1.9. 2; 8; \_\_\_\_\_; 128; 512; 2 048; 8 192. Find the missing number. (1)

- A 32
- B 20
- C 16
- D 14

1.10. In the table below, what are the values of A and B if the rule is  $-3t + 4$ ? (1)

Input	-3	-1	0
Output	13	A	B

- A 10 and 5
- B -10 and -5
- C 7 and 4
- D -7 and -4

**Section B**

**Question 2**

**[10]**

2.1. Give the term/concept that describes the following:

2.1.1. A number that divides exactly into a number and leave no remainder. (1)

\_\_\_\_\_

2.1.2. A number with two factors only. (1)

\_\_\_\_\_

2.1.3. A number which is multiplied by itself and multiplied by itself again. (1)

\_\_\_\_\_

2.2. Use prime factorisation to find LCM of 300 and 475. (3)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2.3. Bigger is travelling 640 km in 10 hours and Brown is travelling 360 km in 6 hours. Who is travelling slower between them? (4)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Question 3**

**[08]**

Determine without using a calculator. (Show all your workings).

3.1.  $-4(-5) + 2(3 \times (-6)) + 0$  (2)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3.2.  $-\frac{42}{7} + 5(-2) - 3$

(2)




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3.3.  $\sqrt{\frac{81}{9}} - \sqrt{4}(\sqrt[3]{-125})$

(4)




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**Question 4**

[12]

4.1. Solve the following exponential problems without using a calculator.

4.1.1.  $2^4 \times 2^4$

(2)

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4.1.2.  $\frac{\sqrt{169x^6} \times \left(\frac{y}{p^{99}q}\right)^0}{\sqrt[3]{x^{12}}}$

(3)

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4.1.3.  $\left(\frac{2x^{-1}y}{3y^2}\right)^{-2}$

(4)

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4.2. Determine the value of  $5,3 \times 10^{-4} + 1,4 \times 10^{-3}$  and present your answer in expanded notation, without using a calculator.

(3)

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**Question 5**

[10]

Given the pattern  $-5; -2; 1; 4; \underline{\hspace{2cm}}$

5.1. Determine a general mathematical rule to determine any term in the above pattern.

(3)

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5.2. Use your rule to determine the 60<sup>th</sup> term in the pattern.

(3)

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5.3. Which term in the pattern will be equal to 55?

(4)



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GRADE 09

MATHEMATICS

MARCH MARKING GUIDELINE

2024

[Stanmorephysics.com](http://Stanmorephysics.com)

**Marks: 50**

This memorandum consists of 3 pages including the cover page.

### IMPORTANT INFORMATION


- This is a marking guideline. In instances where learners have used different but mathematically sound strategies to solve the problems, they (learners) should be credited.
- Underline errors committed by learners and apply Consistent Accuracy (CA) marking



Question 1		[10]
1.1.	A ✓	(1)
1.2.	D ✓	(1)
1.3.	D ✓	(1)
1.4.	A ✓	(1)
1.5.	C ✓	(1)
1.6.	B ✓	(1)
1.7.	D ✓	(1)
1.8.	B ✓	(1)
1.9.	A ✓	(1)
1.10.	C ✓	(1)

Question 2		[10]	
2.1.	2.1.1. A factor ✓	(1)	
	2.1.2. A prime number ✓	(1)	
	2.1.3. A cube number ✓	(1)	
2.2.	$300 = 2^2 \times 3 \times 5^2$ ✓ $475 = 5^2 \times 19$ ✓ $5^2 \times 2^2 \times 3 \times 19$ $5\ 700$ ✓	$2^2 \times 3 \times 5^2$ : 1 mark $5^2 \times 19$ : 1 mark 5 700: 1 mark	(3)
2.3.	<p><b>Bigger</b></p> $speed = \frac{distance}{time}$ ✓ $speed = \frac{640}{10}$ $speed = 64\ km/h$ ✓ <p><b>Brown</b></p> $speed = \frac{distance}{time}$ $speed = \frac{360\ km}{6\ hours}$ $speed = 60\ km/h$ ✓ <p>Brown is travelling at a lowest speed of 60 km/h or Brown is slower. ✓</p>	Formula: 1 mark 64 km/h : 1 mark 60 km/h : 1 mark Answer 60 km/h: 1 mark	(4)

Question 3		[08]	
3.1	$-4(-5) + 2(3 \times (-6)) + 0$ $= 20 - 36$ ✓ $= -16$ ✓	Simplification: 1 mark -16: 1 mark	(2)
3.2.	$-\frac{42}{7} + 5(-2) - 3$ $= -6 - 10 - 3$ ✓ $= -19$ ✓	$-6 - 10 - 3$ : 1 mark -19: 1 mark	(2)
3.3.	$\sqrt{\frac{81}{9}} - \sqrt{4(\sqrt[3]{-125})}$ $= \frac{9}{3} - 2(-5)$ ✓✓ $= \frac{9}{3} + 10$ $= 3 + 10$ ✓ $= 13$ ✓	$\frac{9}{3}$ : 1 mark $2(-5)$ : 1 mark $3 + 10$ : 1 mark 13: 1 mark	(4)

Question 4		[12]
4.1.	$2^4 \times 2^4$ $2^{4+4}$ ✓ $2^8$ ✓	Adding exponents: 1 mark $2^8$ : 1 mark (2)
4.2.	$\frac{\sqrt{169x^6} \times \left(\frac{y}{p^{99}q}\right)^0}{\sqrt[3]{x^{12}}}$ $\frac{13x^3 \times 1}{x^4}$ ✓ $\frac{13}{x}$ ✓ Or $13x^{-1}$ ✓	$13x^3 \times 1$ : 1 mark $x^4$ : 1 mark $\frac{13}{x}$ or $13x^{-1}$ : 1 mark (3)
4.3.	$\left(\frac{2x^{-1}y}{3y^2}\right)^{-2}$ $\frac{1}{\left(\frac{2x^{-1}y}{3y^2}\right)^2}$ ✓ ✓ $\frac{1}{\frac{4x^{-2}y^2}{9y^4}}$ ✓ $\frac{9y^4}{4x^{-2}}$ Or $\frac{9x^2y^4}{4}$ ✓	 $\frac{1}{\left(\frac{2x^{-1}y}{3y^2}\right)^2}$ : 1 mark Positive exponent: 1 mark Simplification: 1 mark $\frac{9y^4}{4x^{-2}}$ or $\frac{9x^2y^4}{4}$ : 1 mark (4)
4.4.	$5,3 \times 10^{-4} + 1,4 \times 10^{-3}$ $= 0,53 \times 10^{-3} + 1,4 \times 10^{-3}$ ✓ $= 1,93 \times 10^{-3}$ ✓ $= 0,00193$ ✓	$0,53 \times 10^{-3}$ : 1 mark Simplification: 1 mark $0,00193$ : 1 mark (3)

Question 5		[10]
5.1.	The constant different between each term is 3. ✓ $T_n = 3 \times n + c$ $c = -5 - 3$ $c = -8$ ✓ $\therefore T_n = 3 \times n - 8$ ✓	Constant difference: 1 mark Value for c: 1 mark $3 \times n - 8$ : 1 mark (3)
5.2.	$n = 60$ $T_n = 3 \times n - 8$ $T_{60} = 3 \times 60 - 8$ ✓ $T_{60} = 180 - 8$ ✓ $T_{60} = 172$ ✓	Substitution: 1 mark Simplification: 1 mark $T_{60} = 172$ : 1 mark (3)
5.3.	$T_n = 55$ $55 = 3n - 8$ ✓ $55 + 8 = 3n - 8 + 8$ ✓ $63 = 3n$ $n = 21$ ✓ $\therefore T_{21} = 55$ ✓	Equation: 1 mark Simplification: 1 mark $n = 21$ : 1 mark $T_{21} = 55$ : 1 mark (4)