

**EXAMINER: MR A MAGANBEHARIE
MODERATOR: MRS J VAN HEESWIJK**

READ THE FOLLOWING INSTRUCTIONS CAREFULLY

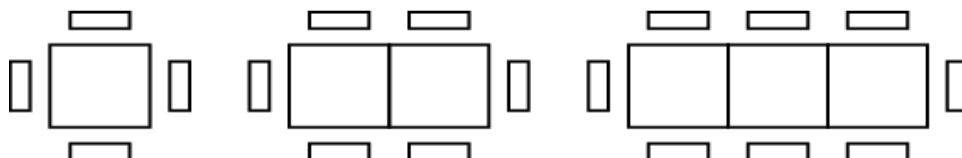
1. All questions must be answered.
2. Write your name and teachers name on the top of your answer book.
3. Show ALL your working where possible.
4. It is in your interests to work neatly.
5. No calculators may be used for this examination.

QUESTION 1

1.1 Write down the next two numbers in these sequences:

- 1.1.1 1; 2; 4; 7; ... (2)
- 1.1.2 1; 4; 9; 16; ... (2)
- 1.1.3 1; 9; 25; 49; ... (2)
- 1.1.4 10; 7; 4; 1; ... (2)
- 1.1.5 1; 1; 2; 3; 5; ... (2)

1.2 You and 3 friends decide to study for Maths and are sitting together at a square table. A few minutes later, 2 other friends arrive and would like to sit at your table. You move another table next to yours so that 6 people can sit at the table. Another 2 friends also want to join your group, so you take a third table and add it to the existing tables. Now 8 people can sit together. Study the diagram below and complete the table below.



Number of Tables	1	2	3	4	5	10
Number of People	4	6	8	1.2.1	1.2.2	1.2.3

(3)

1.3 Use the following list of numbers to answer the questions that follow (A number may be used just once):

0,131131 $\sqrt{2}$ 27 16 3

1.3.1 Which number is a square number (1)

1.3.2 Which number is a cube number? (1)

1.3.3 Which number is an irrational number? (1)

1.3.4 Which number is a rational number? (1)

1.3.5 List the prime number which is also a factor of 12. (1)

1.4 Write the number 576 as a product of its prime factors. (2)

[20]

QUESTION 2

2.1 Arrange the following in ascending order:

$\frac{15}{20}; \frac{4}{5}; \frac{1}{3}; 0,25$

(2)

2.2 Simplify the following:

2.2.1 $\frac{3}{10} \times \frac{5}{27} \div \frac{3}{2}$ (3)

2.2.2 $\frac{13}{5} + \frac{1}{6} - \frac{8}{3}$ (3)

2.2.3 $0,01 \times 0,05$ (1)

2.2.4 $0,48 \div 0,2$ (1)

2.2.5 $\sqrt{0,0036}$ (2)

2.3 Express $3\frac{1}{8}$ as a decimal fraction. (1)

[13]

QUESTION 3

3.1 Write the following ratios in simplest form:

3.1.1 1,8 kg : 3600g (2)

3.1.2 R 3,50 : 25c (2)

3.1.3 $2\frac{3}{27} : \frac{8}{9}$ (2)

3.1.4 0,5 : 0,25 (2)

3.2 There are 2 kinds of rhinoceros in Africa - the white rhino and the black rhino. In 2010, there were approximately 15 000 white rhino and 4800 black rhino surviving in the wild.

3.2.1 Express the ratio of black rhino to white rhino in its simplest form. (2)

3.2.2 In 2014 there was an increase in the number of black rhino to 5400, it was decided that $\frac{2}{3}$ of this number of would be divided between 3 national reserve parks in the following ratio:

National Reserve 1	National Reserve 2	National Reserve 3
3	5	2

How many black rhino does each National Reserve receive? (5)

3.3 A car travels a distance of 60km in 2 hours whereas a train covers a distance of 75 km in 30 minutes. What is the ratio of their speed? Express the ratio in its simplest form. (3)

3.4 Calculate 10% of R300. (2)

3.5 The enrolment in a school increased by 15% from year 2013 to 2014. If 1500 pupils enrolled in 2013, how many enrolled in 2014? (3)

[23]

QUESTION 4

4. Simplify the following, showing ALL necessary working:

4.1 $2 \times (5 - 7)$ (2)

4.2 $4^2 \div 2 + 10$ (2)

4.3 $4 - 27 \div 3 + 1$ (2)

4.4 $17 - 11 \times 9 + 12 + 13$ (2)

4.5 $10 + 20 \div 5 - 3 \times 2$ (3)

[11]

QUESTION 5

5.1 Write an algebraic expression for each of the following:

5.1.1 The sum of two and the product of four and five. (1)

5.1.2 The sum of three times h , and fifteen. (2)

5.1.3 The sum of x and y is greater than the product of p and q . (3)

5.1.4 The number of days in q weeks. (1)

5.1.5 The quotient of $16w$ and $3y$. (1)

5.2 Jabu has decided to take up canoeing. Math Rivercraft advertises a K2 Dusky canoe for $R(6x^2 + 3x - 1)$ and a paddle for $R(2x^2 - x - 4)$.

5.2.1 How much will he spend altogether if he buys both items? Give your answer in terms of x . (3)

5.2.2 He advertises his old bicycle on Gumtree and it sells for $R(3x^2 + 7x + 2)$. This money covers part of the cost of the canoe and the paddle. What is the balance he still has to pay in terms of x . (3)

5.2.3 If $x = 6$, calculate the selling price of the old bicycle. (2)

5.3 If $x = 2$ and $y = 6$:

5.3.1 Write an expression for the perimeter of the shape below using the variables given. (1)



5.3.2 Calculate the perimeter using the values given. (2)

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QUESTION 6

6.1 Write down the unlike terms which are present in the following sets of terms:

6.1.1 $2u^3v^2; 4u^2v^3; 7v^2u^3; -2u^3v^3; 3u^3v^2$ (2)

6.1.2 $3x^2y^2z; 2xz^2y^2; -5x^2y^2z; 7zx^2y^2; -11x^3y^2z$ (2)

6.2 Simplify the following showing full working:

6.2.1 $a \times 3b - 2a \times b + (a + a) \times b$ (2)

6.2.2 $-4x^2 - 3x^2 - (-6x^2)$ (2)

6.2.3 $14ab + 1a - 16a + 2ab$ (2)

6.2.4 $(-16a + 13a) - 2mn - 7nm$ (2)

6.2.5 $-12 + 3c \times 2a + 27ac \div 3ca$ (2)

[14]

QUESTION 7

Simplify the following showing full working: Write your answer's with positive exponents.

7.1 $\frac{x^2 y}{xy^2}$ (2)

7.2 $(a^2 b^3 c^4)^3$ (1)

7.3 $-4m^2 \times 3m^3$ (3)

7.4 $\frac{-g^5}{g^3}$ (2)

7.5 $\frac{9a^2 b^3}{3a^4 b^2}$ (3)

7.6 $\frac{(a^2 b^4)^5 \times ab^4}{(a^3 b^8)^3}$ (4)

[15]

QUESTION 8

Two numbers differ by two. Four times the smaller number is two more than twice the bigger number. What is the smaller number?

[5]

Total Marks: 120