GRADE 8 · NOVEMBER EXAM 2026

Preparation: Paper 1

Numbers, Operations and Relationships · Patterns, Functions and Algebra

TOTAL **132 marks** TIME **self-paced**

Prepared by Mr Simons (Danemathics)

A preparation worksheet for the Grade 8 Mathematics November examination: every type of question in the scope appears at least twice.

INSTRUCTIONS AND INFORMATION

1. This worksheet prepares you for Paper 1 of the November examination. It covers the whole scope, and every type of question appears at least twice.
2. Answer the questions in your workbook, except QUESTIONS 5.5.1 and 5.5.2, which are answered on the ANNEXURE at the back of this worksheet.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you used to determine your answers.
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. Mark your own work with the memorandum, then redo every question that you got wrong.

QUESTION 1

1.1 Write 252 as a product of its prime factors. Give your answer in exponential form. (2)

1.2 Write 600 as a product of its prime factors. Give your answer in exponential form. (2)

1.3 Share R720 between Sipho and Lerato in the ratio 5 : 3. (2)

1.4 Two friends share an amount of money in the ratio 3 : 7. The second friend receives R480 more than the first. Calculate the total amount of money that they share. (2)

1.5 Amahle and Kagiso share an amount in the ratio 2 : 5. Kagiso receives R1 200 more than Amahle. How much does each of them receive? (2)

1.6 Mrs Naidoo buys a fridge on hire purchase. The cash price is R9 000. She pays a deposit of 10% of the cash price. The balance, plus simple interest of 15% per annum, is paid off in equal monthly instalments over 2 years. Calculate her monthly instalment. (3)

1.7 Mr Dlamini buys a laptop on hire purchase. The cash price is R12 000 and he pays a deposit of 25%. The balance, plus simple interest of 8% per annum, is paid off in equal monthly instalments over 3 years.

1.7.1 Calculate his monthly instalment. (3)

1.7.2 How much more than the cash price does he pay altogether? (2)

[18]

QUESTION 2

2.1 Calculate WITHOUT using a calculator:

2.1.1 $-24 \div (-6) - 3 \times 4$ (2)

2.1.2 $18 - 4 \times (-5) + (-2)$ (2)

2.1.3 $\sqrt[3]{-125} + (-3)^2$ (2)

2.1.4 $(-2)^3 - \sqrt[3]{-8}$ (2)

2.2 Name the property of integers that is illustrated by each of the following:

2.2.1 $7 \times (-3) = (-3) \times 7$ (1)

2.2.2 $-5 \times (4 + 2) = -5 \times 4 + (-5) \times 2$ (1)

2.2.3 $(2 + 5) + (-3) = 2 + (5 + (-3))$ (1)

2.2.4 $12 + (-12) = 0$ (1)

2.3 Simplify:

2.3.1 $a^5 \times a^3$ (1)

2.3.2 $3m^2 \times 4m^5$ (1)

2.3.3 $\frac{20b^8}{5b^2}$ (1)

2.3.4 $\frac{15k^7}{3k}$ (1)

2.3.5 $(y^3)^4$ (1)

2.3.6 $(-3t^2)^3$ (1)

2.3.7 $5x^0$ (1)

2.3.8 $(4m)^0 + 2^0$ (1)

2.4 Write the number in each statement in scientific notation:

2.4.1 The population of South Africa is about 63 000 000 people. (1)

2.4.2 Light travels about 9 460 000 000 000 km in one year. (1)

2.5 Write $4{,}05 \times 10^6$ as an ordinary number. (1)

2.6 Without using a calculator, determine which of the two numbers is larger. Show ALL your working.

2.6.1 2^{50} or 4^{24} (2)

2.6.2 27^8 or 9^{13} (2)

[27]

QUESTION 3

3.1 Calculate WITHOUT using a calculator. Give your answers as common fractions in simplest form.

3.1.1 $2\frac{1}{4} \div 1\frac{1}{2}$ (2)

3.1.2 $3\frac{1}{3} \div 2\frac{1}{2}$ (2)

3.1.3 $\sqrt{\frac{25}{36}} + \left(\frac{2}{3}\right)^2$ (2)

3.1.4 $\sqrt[3]{\frac{8}{27}} - \left(\frac{1}{3}\right)^2$ (2)

3.2 Calculate WITHOUT using a calculator:

3.2.1 $0{,}4 \times 0{,}06$ (1)

3.2.2 $0{,}25 \times 0{,}8$ (1)

3.2.3 $2{,}56 \div 0{,}16$ (1)

3.2.4 $0{,}9 \div 0{,}03$ (1)

3.2.5 $(0{,}3)^2$ (1)

3.2.6 $(0{,}1)^3$ (1)

3.3 Express each learner's mark as a percentage:

3.3.1 Thabo scored 36 out of 45 in a test. (1)

3.3.2 Zinhle scored 51 out of 75 in a test. (1)

3.4 Calculate the original price in each case:

3.4.1 After a discount of 20%, a jacket costs R640. (2)

3.4.2 After a discount of 15%, a bicycle costs R2 550. (2)

[20]

QUESTION 4

4.1 Triangles are made from matchsticks, as shown below. The table shows the number of matchsticks needed to make each figure.

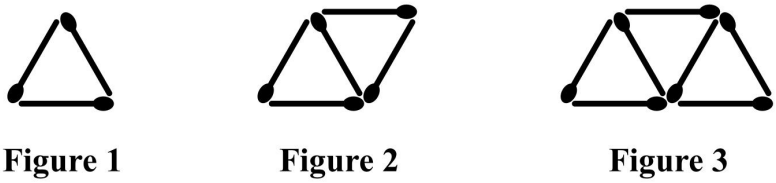


Figure 1 **Figure 2** **Figure 3**

Figure number (n)	1	2	3	4	30
Number of matchsticks	3	5	7	a	b

4.1.1 Write down the value of a. (1)

4.1.2 Determine the general rule for the number of matchsticks in Figure n. (2)

4.1.3 Hence, calculate the value of b. (1)

4.1.4 Can one of these figures be made with exactly 85 matchsticks? Show ALL your working. (2)

4.2 Consider the pattern in the table below.

Position of the term (n)	1	2	3	4	20
Term (T_n)	6	11	16	c	d

4.2.1 Write down the value of c. (1)

4.2.2 Determine the general rule for the term in position n. (2)

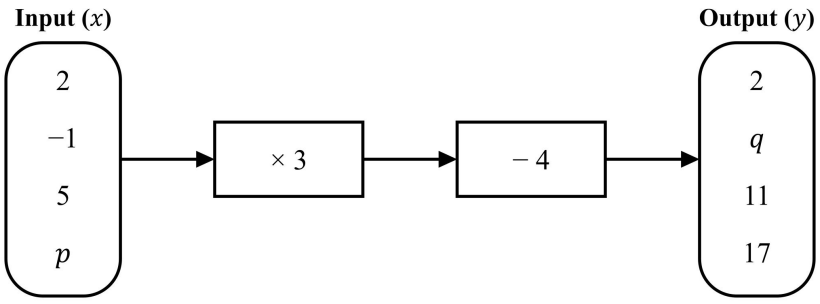
4.2.3 Hence, calculate the value of d. (1)

4.2.4 Is 150 a term of this pattern? Show ALL your working. (2)

[12]

QUESTION 5

5.1 Consider the flow diagram below.

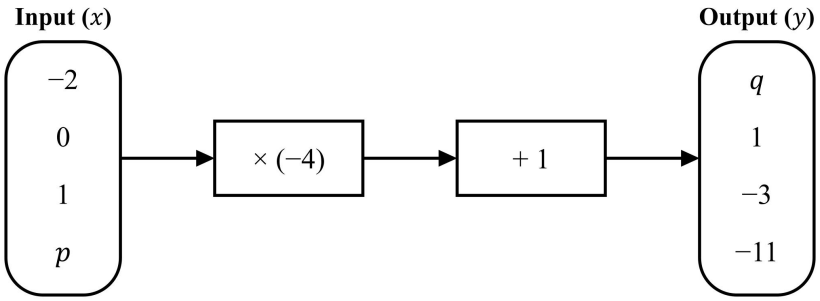


5.1.1 Determine the value of q. (1)

5.1.2 Determine the value of p. (2)

5.1.3 Write down the rule of the flow diagram in the form y = … (1)

5.2 Consider the flow diagram below.

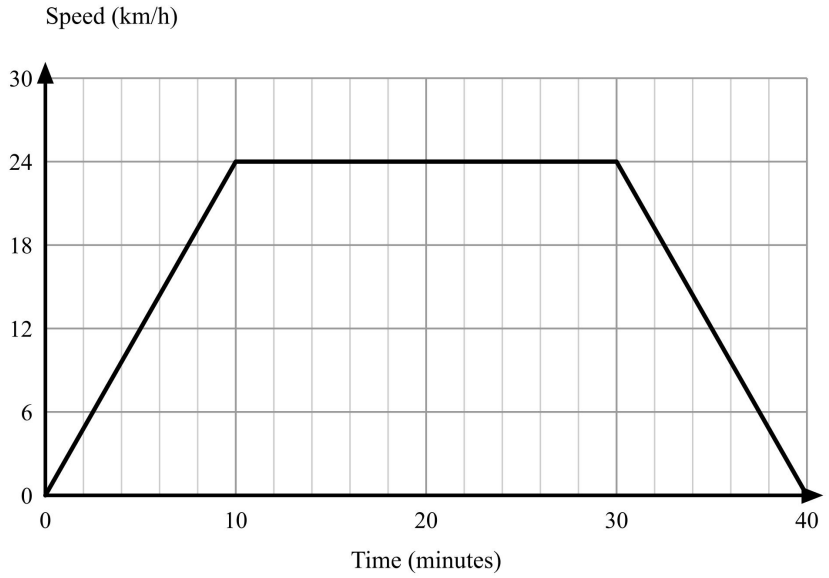


5.2.1 Determine the value of q. (1)

5.2.2 Determine the value of p. (2)

5.2.3 Write down the rule of the flow diagram in the form y = … (1)

5.3 The graph below shows the speed of a cyclist during a ride of 40 minutes.



5.3.1 During which time interval did the cyclist's speed increase? (1)

5.3.2 Between which two times did the cyclist ride at a constant speed? (1)

5.3.3 Calculate the distance, in kilometres, that the cyclist covered at this constant speed. (2)

5.4 The graph below shows the speed of a bus during a trip of 30 minutes.



5.4.1 During which time interval did the speed of the bus decrease? (1)

5.4.2 Between which two times did the bus travel at a constant speed? (1)

5.4.3 Calculate the distance, in kilometres, that the bus travelled at this constant speed. (2)

5.5 Answer QUESTIONS 5.5.1 and 5.5.2 on the ANNEXURE.

5.5.1 Complete the table of values for $y = 3x - 2$. Then use the table to draw the graph of $y = 3x - 2$ on the grid provided. (2)

5.5.2 Complete the table of values for $y = -2x + 3$. Then use the table to draw the graph of $y = -2x + 3$ on the grid provided. (2)

[20]

QUESTION 6

6.1 Consider the expression $5x^3 - 2x^2 + x - 8$.

6.1.1 How many terms does the expression have? (1)

6.1.2 Write down the coefficient of x. (1)

6.1.3 Write down the constant term. (1)

6.2 Write down the coefficient of a^2 in the expression $-3a^2 + 7a - 4$. (1)

6.3 Which of the following terms are like terms? $4xy$; $-2x^2y$; $7yx$; x^2 (1)

6.4 Simplify:

6.4.1 $3x^2y + 4xy^2 - x^2y - 6xy^2$ (2)

6.4.2 $7m - 3n + 2m^2 - 5m + n$ (2)

6.4.3 $2a(3a^2 - 4a + 5)$ (2)

6.4.4 $-4p(p^2 + 2p - 3)$ (2)

6.4.5 $3x(x + 2) - (2x^2 - 5x)$ (2)

6.4.6 $5(2y - 1) - 2(y + 3)$ (2)

6.5 Determine the value of $x^2 - 3xy$ if $x = -3$ and $y = 2$. (2)

6.6 Determine the value of $2a^2 + ab^3$ if $a = 4$ and $b = -1$. (2)

[21]

QUESTION 7

7.1 Solve for x:

7.1.1 $x - 9 = -4$ (1)

7.1.2 $-2x = 14$ (1)

7.1.3 $6x - 5 = 2x + 11$ (2)

7.1.4 $3(x - 2) = x + 8$ (2)

7.1.5 $2^x = 32$ (2)

7.1.6 $5^{x+1} = 125$ (2)

7.2 A mother is three times as old as her daughter. In 12 years' time, the mother will be twice as old as her daughter. Set up an equation and solve it to determine their present ages. (2)

7.3 The sum of three consecutive whole numbers is 87. Set up an equation and solve it to determine the numbers. (2)

[14]

TOTAL: 132

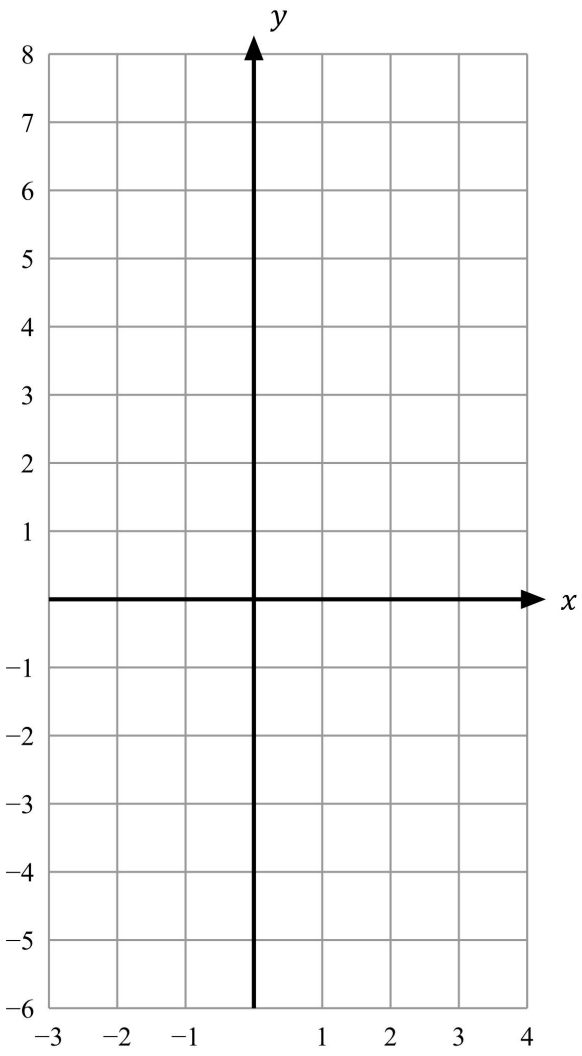
ANNEXURE

Write your name on this ANNEXURE and keep it with your worksheet.

NAME: _____ CLASS: _____

QUESTION 5.5.1: $y = 3x - 2$ (2)

x	−1	0	1	2	3
y					



QUESTION 5.5.2: $y = -2x + 3$ (2)

x	−1	0	1	2	3
y					

