



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING CERTIFICATE

NQF LEVEL 1

AET LEVEL 4 SITE-BASED ASSESSMENT

**LEARNING AREA : MATHEMATICS AND
MATHEMATICAL SCIENCES**

CODE : MMSC4

TASK : TEST

TIME : 2 HOURS

MARKS : 50

This assessment task consists of 4 pages and an addendum.

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions in ANSWER BOOK.
2. Calculators may be used, but you must show ALL calculations.
3. Number the answers according to the numbering system used in this question paper.
4. Use the addendum to answer QUESTION 2.2.2.

QUESTION 1

- 1.1 Toothpicks are used to form these regular hexagons. Study the growing geometry pattern illustrated by the diagram given below. Answer the questions.



PATTERN 1



PATTERN 2



PATTERN 3

- 1.1.1 Extend the pattern by drawing the fourth pattern. (2)
- 1.1.2 What relationship do you recognise between the number of hexagons and number of toothpicks? (2)
- 1.1.3 Generate a rule or formula to generalise a relationship between the number of hexagon (n) and number of toothpicks (t). (2)
- 1.1.4 How many toothpicks are required to make a pattern with 20 hexagons? (2)
- 1.2 The general term of a sequence is $T_n = 3n + 2$.
 - 1.2.1 Determine the first three terms of the sequence. (3)
 - 1.2.2 Determine the value of 30th terms. (2)
 - 1.2.3 Which term of the sequence has a value of 257? (3)

[16]

QUESTION 2

- 2.1 An electrician charges a call out fee and then an hourly fee. The total can be calculated using the equation $y = 50x + 200$; where y represent the total fee charged in rand and x represent the number of hours worked.

NOTE: Callout fee is payment you have to make to someone when they come out to your premises to give you a quotation or repair an item.

- 2.1.1 Complete the table below using the information above.

| | | | | |
|----------------------|---|----------------|-----|-----|
| Total cost(y) | | | 350 | 425 |
| Hours worked (x) | 1 | $2\frac{1}{2}$ | | |

(4)

- 2.1.2 How much money would someone pay if the electrician worked for 15 minutes?

(3)

- 2.2 Zodwa has a total of 150 music CD's. She loves gospel music and alternative music. The number of alternative music CD's is three more than twice that of the gospel music CD's that she owns.

HINT: Let the number of gospel CD's be x , and let the number of alternative CD's be y .

- 2.2.1 Write the two equations that represent this information.

HINT: the equations should be in the form $y = \dots$

(4)

- 2.2.2 On the ADDENDUM provided, draw the two graphs that represent the equations, which you have written down in 2.2.1, on the same set of axes.

(4)

- 2.2.3 Show on the graph where you can read off how many gospel CDs Zodwa does own?

(2)

- 2.2.4 Work the answer out algebraically to prove that your answer in QUESTION 2.2.3 is correct.

(3)

[20]

QUESTION 3

3.1 Simplify:

3.1.1 $(3k)(2) =$

3.1.2 $5a + 8a + 8a =$

(2 x 1) (2)

3.2 Factorise completely:

3.2.1 $5x - 20$

3.2.2 $100b^2 - 81$

3.2.3 $a^2 - 10a - 24$

(3 x 2) (6)

3.3 Solve for p :

$17p - 8p + 16 = -9$ (3)

3.4 Solve the inequality and graph the solution:

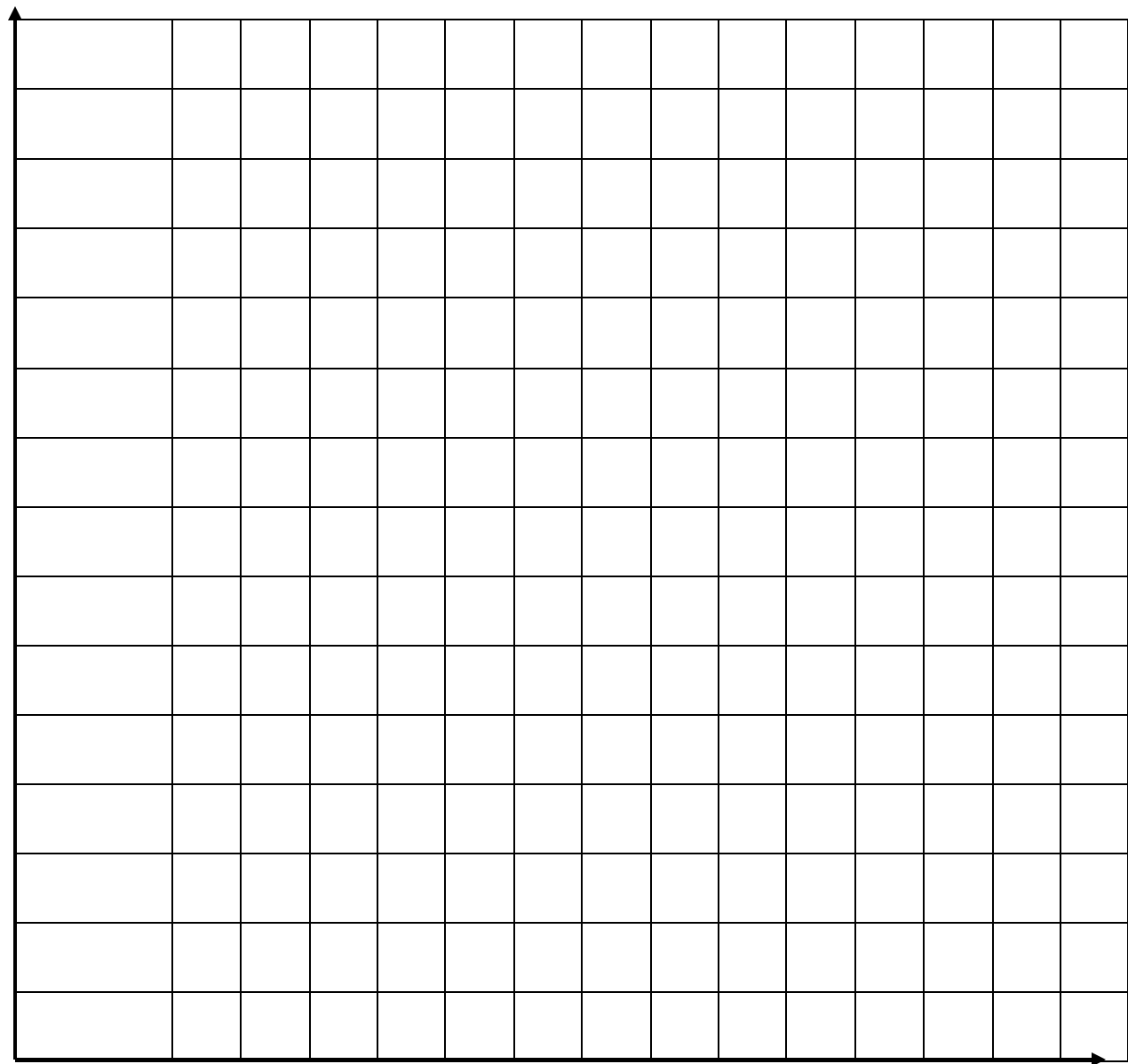
$4 > 6 - p$ (3)

[14]**TOTAL: 50**

| | |
|-------------------|--|
| NAME AND SURNAME: | |
|-------------------|--|

ADDENDUM

QUESTION 2.2.2



THIS PAGE MUST BE HANDED IN WITH YOUR ANSWER BOOK