



**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

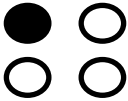
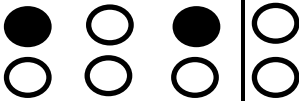

This assessment task consists of 5 pages.

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.
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QUESTION 1

- 1.1 Study the number pattern 12; 21; 30; ...; ... and answer the following questions:
- 1.1.1 Complete the number pattern by adding TWO more terms. (2)
- 1.1.2 Is the pattern formed in QUESTION 1.1.1 a linear or a nonlinear pattern? Motivate your answer. (2)
- 1.1.3 Describe the pattern formed in QUESTION 1.1.1 in your own words. (1)
- 1.2 Use the formula $T_n = 2n^2 + 1$ to calculate the TWO missing numbers in the pattern 3; 9; 19; ...; ...; 73. (4)
- 1.3 Study the patterns below made by using black and white marbles.

STAGE 1	STAGE 2	STAGE 3
 <p>1 black 3 white</p>	 <p>2 black 6 white</p>	

- 1.3.1 Draw the pattern for the third stage. (2)
- 1.3.2 Show that the rule to determine the number of white marbles (w) at a given stage (s) can be given by $w = 3s$ (2)
- 1.3.3 How many white marbles are there in a pattern with:
- (a) 12 black marbles
- (b) 102 black marbles
- (2 x 1) (2)
- 1.3.4 Determine the number of white marbles needed for the 30th stage. (2)

[17]

QUESTION 2

2.1 From $3x^2 - 4xy + 6$ subtract $x^2 - 3xy - 5$ (3)

2.2 Find the products and simplify the following where necessary:

2.2.1 $(x + 1)(x + 2)$ (3)

2.2.2 $3x^2 + 2x + 3x^2 - (x^2 - x)$ (2)

2.3 Factorise completely:

2.3.1 $9x^2 + 3x$

2.3.2 $36a^2 - 25$ (2 x2) (4)

2.4 Solve for y if $\frac{y}{7} - 3 = 1$ (2)
[14]

QUESTION 3

3.1 The table below shows the number of spectator tickets which were sold at the Olympics games.

Sport	Number of tickets sold
Swimming	1770239
Weightlifting	68945
Gymnastics	1 707 239
Athletics	2165001

3.1.1 Which sport was the most popular? (1)

3.1.2 How many spectator tickets were sold at the Olympics? (1)

3.1.3 Calculate the percentage of tickets sold for swimming. (2)

3.2 In the equation $2x + y = 8$:

3.2.1 Rewrite the equation in the form of $y = mx + c$. (1)

3.2.2 Calculate the y-intercept and x-intercept. (4)

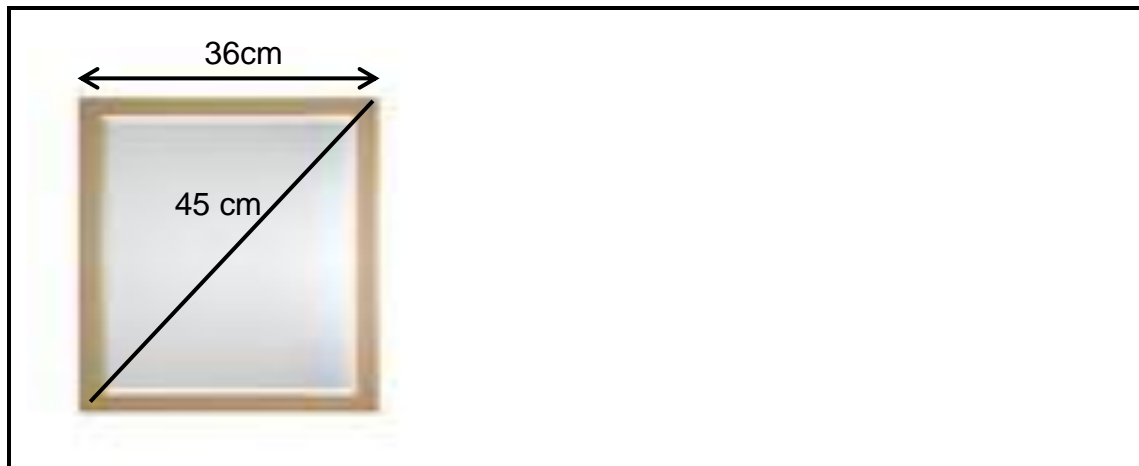
3.2.3 Calculate the gradient. (1)

3.2.4 Is the graph increasing or decreasing? (1)
[11]

QUESTION 4

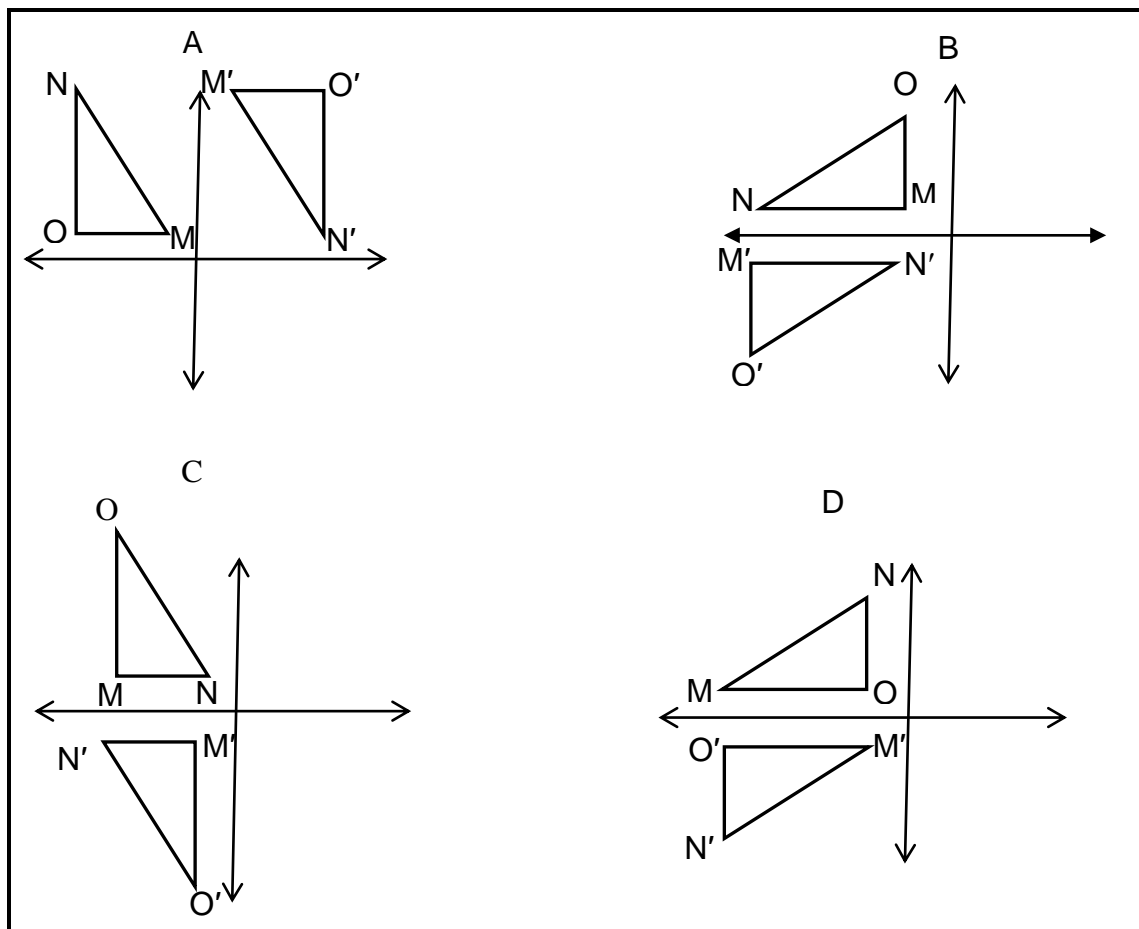
4.1 State the theorem of Pythagoras. (2)

4.2 The diagram of the mirror below is measured along the diagonal. The front part of this mirror has a diagonal of 45 cm and a width of 36 cm. Calculate the length of the mirror.



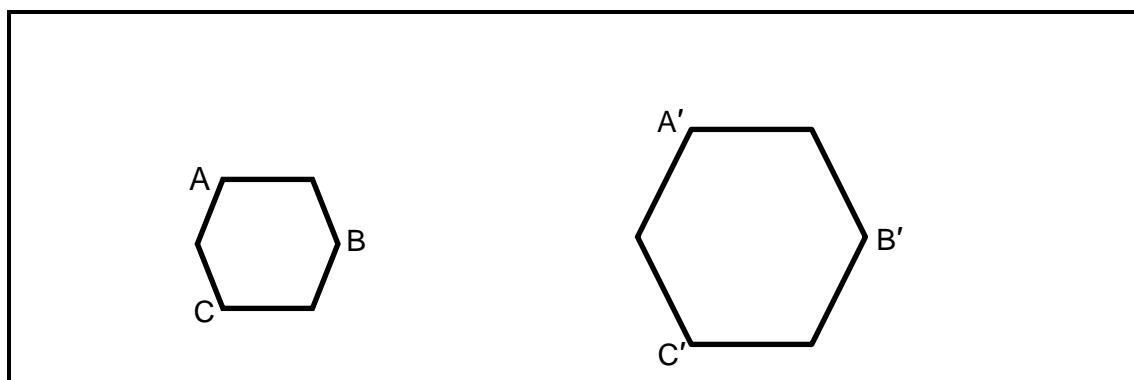
(4)

4.3 Which ONE of the following diagrams illustrates 90° rotation of the triangle MNO counter-clockwise about the origin?



(1)

4.4 What type of transformation has been applied to shape ABC to get shape $A'B'C'$?



(1)
[8]

TOTAL: 50