



# 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 : PROJECT**

**DURATION : 3 WEEKS**

**MARKS : 50**

**This assessment task consists 4 of pages.**

## INSTRUCTIONS AND INFORMATION

1. This project must be completed over a period of THREE weeks.
  2. Read questions carefully, and do thorough planning before you start with the project. Plan for ALL categories.
  3. The project can be done in groups. Everyone in the group must submit their individual work even though they worked as a group.
  4. Activity 1 is marked using a rubric and ACTIVITY 2 is marked using a memorandum.
  5. You will need the following resources for this project:
    - Pencil
    - Ruler
    - Colouring pencils or crayons
    - Calculator
    - Tape measure
    - A4 paper
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### ACTIVITY 1

A sponsor offered to pay R5 000,00 for the painting of the inside of your classroom. The centre manager asked the level 4 learners to determine the total cost for this event.

**HINT:** Study the assessment rubric and do thorough planning before you start working on this project.

**NOTE:** FURTHER INSTRUCTIONS FOR THIS ACTIVITY

Learners have to indicate the source for the price of paint, which could be a local hardware or advertising pamphlets.

Learners have to indicate the quotations from different painters.

If learners are going to do the painting themselves, they have to indicate that and calculate how and how much are they going to charge for the painting.

- 1.1 Draw a sketch of the classroom showing ALL dimensions of the four walls, the door, the windows and a board.
- 1.2 Calculate the areas to be painted using appropriate formulae and indicate the units of the area. Leave your answer in  $m^2$ .
- 1.3 Make THREE quotations for painting the classroom (including the hardware used for the quotation).
- 1.4 Provide the motivation for your particular choice of each supplier (including the companies or individual used for the labour).

- 1.5 Calculate the total cost of the painting work.
- 1.6 Write a motivational letter to the centre manager informing him/her about the total cost of the classroom, motivating your preferred theme/colour, type of paint and provider.

[25]

Marking rubric for ACTIVITY 1.1–1.6.

CRITERIA	LEVEL				MARKS
	MARKS 5-4	MARKS 3	MARKS 2-1	MARKS 0	
Planning	Thorough planning, sketch creatively presented and to scale. Fit chosen theme	Sufficient planning, classroom sketch indicating dimensions of class room provided	Evidence of some planning, a sketch of the classroom is included	No planning, no sketch of classroom	
Research	Sufficient research, enough quotations, enough samples are included, samples are well presented	Sufficient research, enough quotations, enough samples are included	Research insufficient, some quotation are included, some samples attached	No research done, no quotations, no samples	
Budget	Budget exceeds immediate requirements. Used diagrams, graphs to illustrate costs	Budget correctly and appropriately done. Calculations and estimations are correct	Budget included but with minor errors in calculations	No budget is included	
Mathematical reasoning	Proper logical reasoning. Identifies more than one strategy/ method. Good use of mathematical language	Able to reach a consistent conclusion without contradiction. Consistent analyses and appropriate explanations	Same explanations or arguments are incorrect, ineffective or unclear. Inconsistent analysis and interpretation	No logical reasoning	
Context	Clear understanding of the context in which the problem is situated. Identifies social and economic issues and address them with creativity	A good grasp of social and economic values. Good motivation regarding choice of required items	Some aspects of context are comprehended. Motivations for choice of required items	No comprehension of the context	

**ACTIVITY 2**

Pythagoras, known as 'the father of numbers', said that 'numbers is the ruler of forms and ideas'. He is best known for the Pythagoras theorem. He stated that in any right-angled triangle, the area of the square drawn on the hypotenuse (longest side of the right-angled) is equal to the total area of squares drawn on the other two sides.

2.1 Draw an equilateral triangle ABC with side length 4 cm to scale and then draw dotted lines to show all the axes of symmetry of this triangle. (3)

2.2 Redraw equilateral triangle ABC as it is in QUESTION 2.1 and draw AM, the perpendicular bisector of side BC.

NOTE: The line AM is called the altitude of  $\Delta ABC$ . (2)

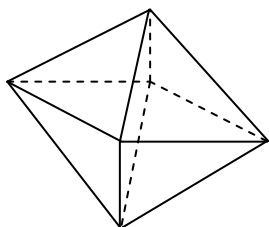
2.3 (a) Use the theorem of Pythagoras to calculate the length of AM. (Round off the answer to 1 decimal place). (4)

(b) Measure AM. How does the measure of AM compare to your answer in QUESTION 2.3 (a)? (2)

2.4 Calculate the area of  $\Delta ABC$  in square centimetres. (4)

2.5 A face of the regular octahedron given below has the same area of  $\Delta ABC$  calculated in QUESTION 2.4.

Calculate the total surface area of the regular octahedron.



(2)

2.6 The numbers inside the brackets below are the lengths of three sides of a triangle.

Prove if these sides form a right-angled triangle or not. Motivate your answer with calculations.

2.6.1 (45; 28; 53)

2.6.2 (21; 120; 122)

(2 x 4) (8)  
[25]

**TOTAL: 50**