Province of the
EASTERN CAPE
EDUCATION

AMATHOLE EAST DISTRICT

GRADE: 7
SUBJECT: NATURAL SCIENCES AND TECHNOLOGY

TERM THREE 2025

FAT- PRACTICAL TASK

Name: _____

Class: _____ Date: _____

School: _____ Teacher: _____

FAT	Activity / Form	Learner's mark	Learner's %
5.	Practical		
TOTAL		**30**	

Natural Sciences and Technology

Formal Assessment Task

Term: 3

Practical Task: No 03

Knowledge Strands: Marks: 30

Energy and Change

Grade: 7

Topic: **Insulation and Energy Saving**

Instructions

1. You will complete the practical activity in class under supervision.
2. Complete all activities as per instruction from your teacher.
3. Use a pen for writing.
4. All sketches must be done in pencil.

Major Process and Design Skills:

*Access information *Recall information *Observe *Compare *Measure *Sort *Classify *Identify problems *Raise questions *Design *Make / Construct *Evaluate and or improve products

* Communication

YOU WILL NEED:

- 4 beakers or tins
- 4 alcohol thermometers
- aluminium foil
- fabric
- newspaper
- plastic
- kettle
- timer or stopwatch

NOTES: Do you remember that heat flows from hotter area to cold area. Increasing or decreasing the rate at which heat flows between two locations is very important when it comes to insulating
houses. During winter, we must try to prevent heat escaping from the house to the environment
through the walls, Ceiling, windows, doors, and roof. In summer, we must try to prevent heat from
entering the house. We can solve these problems by using Insulating materials.

METHOD:

1. Wrap one beaker with newspaper, one beaker with plastic, one beaker with aluminium foil and the fourth beaker with fabric.
2. Boil water in a kettle.
3. Pour 250 ml of boiling water into each beaker.
4. Put a thermometer in each beaker.
5. Measure the starting temperature of the water and then measure the temperature of the water every 5 minutes for half an hour.
6. Write the measurements in the table in the results section.
7. Draw a graph representing the data you have collected.

ACTIVITY 1

Complete the following table: (4)

Time (Minutes)	**Temperature in containers of different materials (ºC)**			
	News paper	Plastic	Aluminium foil	Fabric
3				
6				
9				
12				
15				

ACTIVITY 2

2.1. Use the following space to draw a line graph for each type of material. You must plot each graph on the same set of axes. First, we need to think about which data is put on each axis.

2.1.1. What will you plot on the horizontal x-axis? This is the independent variable. (1)

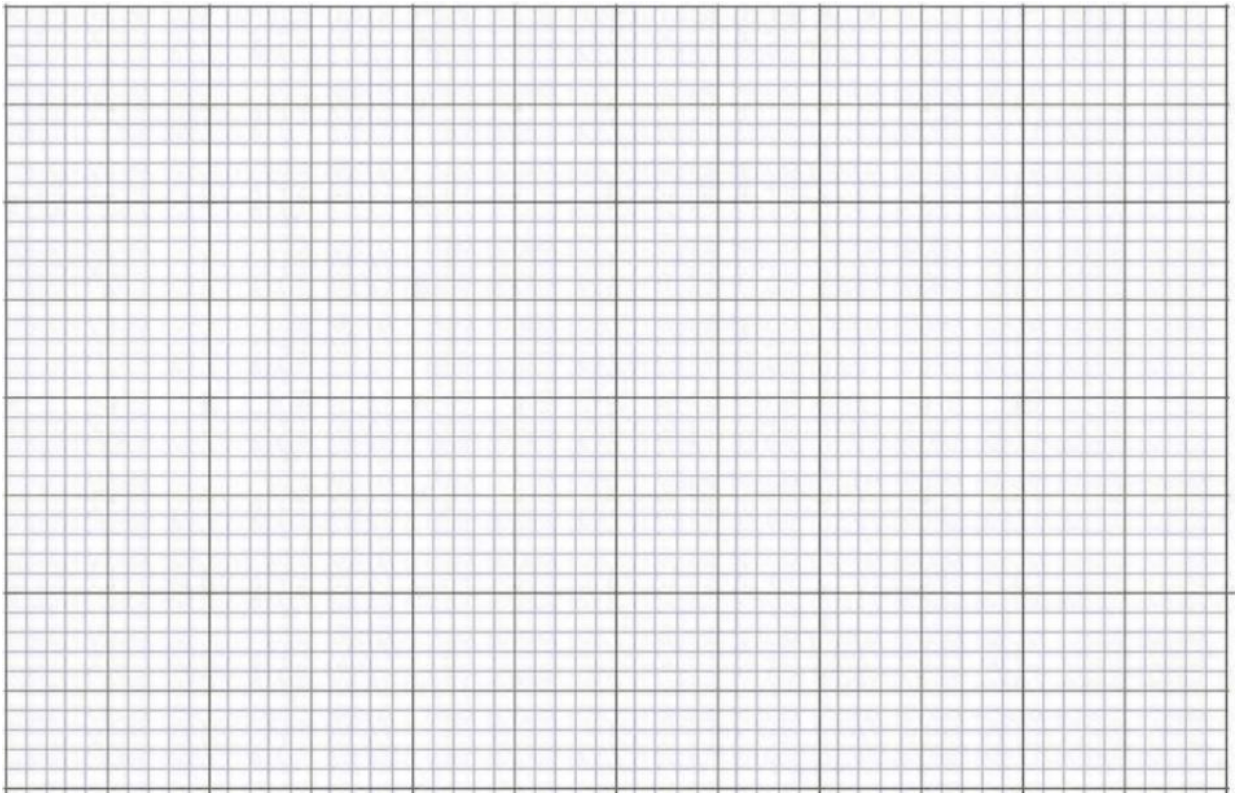
_____

2.1.2. What will you plot on the vertical y-axis? This is the dependent variable. (1)

_____

2.1.3. How are you going to show a difference between the lines for each type of material on one graph? (2)

_____



	DESCRIPTION	MARK	LEARNER'S MARK
Heading	Correct heading of the graph	1	
Vertical axis plotting - labelling	Correct labelling	1	
Horizontal axis - labelling	Correct labelling	1	
Plotting	Three or more points correctly pltted	3	
TOTALS		6	

2.2. Which of your graphs has the steepest curve? (1)

_____

2.3. What does the steepness of the curve tell you about how quickly the material allows heat to leave the water? (1)

_____

2.4. Arrange the materials in order from very good insulator to poor insulators of heat. (2)

_____

_____

2.5. Which material was the best conductor of heat? Explain your choice. (2)

_____

_____

2.6. Which material was the best insulator of heat? Explain your choice. (2)

_____

_____

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ACTIVITY 3

3.1. A man is building a wooden house. He lives in a very cold area, especially in winter. He has space for one window. He has two choices. He can put in a large window with a single pane of glass or he can put in a smaller window which has 2 panes of glass separated by a small air space trapped in between them.
Which window do you think he should use?
Why did you choose that window? (3)

_____

_____

_____

3.2. Take away coffee is often served in paper cups with a corrugated cardboard layer on the outside. Why are these materials used? (4)

_____

_____

_____

3.3. How does a thick woollen jersey help to prevent heat loss? (2)

_____

_____

_____

TOTAL MARKS : 30 MARKS