

MATHEMATICS METHODS FOUNDATION Level 3

Common Assessment Task

Work Requirements:

N/A

Assessment Type:

Short response

Criteria being assessed:

- Criterion 2 - elements 3 and 4
- Criterion 6 - element 3

Suggested conditions:

- This task should take learners no more than 1.5 hours.
- Learners should submit a handwritten or word-processed response.
- The task could be introduced with a short group discussion of the formulas to give learners an opportunity to ask questions.
- This task requires an individual response by each learner.

Task Description:

A comparison of equations and their structure.

What you need to do:

Respond to the prompts with explanations using your knowledge of exponential equations and their graphs. Your explanations should be accompanied by graphs and calculations where relevant.

Time's not always the same, is it?

Tea cooling	Compound Interest	Bacterial Growth
$T = 65(4^{-0.05t}) + 20$ <p>T = Temp t = Time</p>	$A = P(1 + i)^n$ <p>n = time period A = final amount P = Principal i = Interest rate</p>	$N = 15\,000(2^{0.125t})$ <p>t = Time N = number</p>

- How are these three equations similar and how are they different?
- TJ and Andy were looking at the three formulas, when TJ said, "they wouldn't all work if you use the same unit of time for each one".

How might you respond? Use tables, graphs and calculations to show your understanding of the mathematical implications of this comment.
- The tea cooling equation relates to a specific type of mug. How might the equation change if the mug is changed to hold its heat better? What if it has poorer thermal properties?
- Make a comment about the time period for the Bacterial growth. What assumptions do you have about bacteria?

Teacher use only - What needs to be submitted for assessment?

Learners respond to the questions in a separate document, clearly identifying each question.