UNIVERSITY OF FORT HARE

EAST LONDON CAMPUS

NUM 121 E

NUMERACY

ADVANCED CERTIFICATION IN TEACHING

Year 1: November Examination

2019

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Time: 3 Hours

Subject: Numeracy

Marks: 100

This paper consists of 4 pages including the cover page

Examiner

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Internal Moderator

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Instructions:

1. There are FOUR compulsory questions in this examination paper.
2. Answer ALL questions.
3. Please number your questions correctly.
4. Calculators are not allowed in this exam.

QUESTION 1: **[40]**

1.1 FP learners use the following techniques when they are learning addition:

- Counting all
- Counting on
- Seeing tens
- Doubling and halving
- Building up and breaking down numbers

Explain and provide mathematics examples of what you would expect learners to do if they are using each of the above techniques. (15)

1.2 Formulate a Mathematics word problem that you would give to your Foundation Phase learners when "money" is the topic of the lesson. Indicate the grade that you teach. (5)

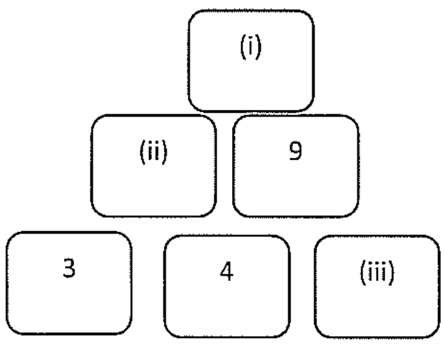
1.3 Patterns in the Foundation Phase can be presented in various ways. Give examples of how patterns could be presented in the following ways:

1.3.1 Flow diagrams

1.3.2 Number chains

(6)

1.4 Look at the pyramid given below and fill in the missing numbers:



(3)

1.5 Noma is a new grade R teacher. She needs your help to plan her mathematics lesson for term 2. She needs help with the following components of a lesson plan for teaching and learning under the topic: "Properties of 3-D objects", and concepts and skill: "describes sorts and compares physical object according to the objects that roll". Use the headings below

(a) Lesson aims (2)

(b) Introduction (2)

(c) Lesson Development with three stages (6)

(d) 2 Resources to support teaching and learning (1)

QUESTION 2: **[35]**

2.1 Mathematics learners often solve mathematical problems incorrectly. A learner was asked to calculate 72 – 37 and she worked it out as follows:

Learner's answer:
$72 - 37 = (70 - 30) - (2 - 7)$
$= 40 - 5$
$= 35$

2.1.1 Identify the error(s) committed by the learners. (2)

2.1.2 Put yourself in the learners' shoes and explain what was happening in the learners' mind when s/he was solving the problem. (2)

2.1.3 Suggest a remedy for each error. (3)

2.2 Ms Lulu gave her learners rectangles, squares and triangles. The instruction was to sort these shapes according to the number of sides. Below are the ways in which two learners organised their shapes:

Mimie: had three sets, one set with triangles, the second set with squares and the third set with rectangles.

Molly: had two sets, one set with triangles and the second set with rectangles and squares.

2.2.1 Drawing on the Van Hiele's levels of geometric understanding, state and describe the level(s) on which each learner is operating. **Motivate** your answer. (6)

2.3 Discuss Van Hiele's first three **phases of learning, enquiry phase (free play)** , **focused play and vocabulary**. Provide examples to support your discussion. (12)

2.4 Problem solving is one of the teaching strategies used in a Mathematics classroom.

2.4.1 Mention the 4 steps of problem solving. (4)

2.5 Explain the role of classwork as a form of assessment in mathematics.
(In your response, explain the importance of classwork in mathematics as well as how you will effectively manage it for monitoring continuous progress of the learners. (6)

QUESTION 3: [25]

3.1 *"Mathematics is a language that makes use of symbols and notations to describe numerical, geometric and graphical relationships. It is a human activity that involves observing, representing and investigating patterns and quantitative relationships in physical and societal phenomena and between mathematical objects themselves. It helps to develop mental processes that enhance logical and critical thinking, accuracy and problem solving that will contribute in decision – making". (DoE ,2011).*

3.1.1 Briefly discuss the ***practical implications*** of the definition of Mathematics for:

(a) teaching;
(b) learning; and
(c) assessment (10)

3.2 List and explain the three kinds of knowledge that were discussed in class (9)

3.3 Name the knowledge represented by each of the statements below.

3.3.1 Ms Namhla asks the learners in her class to count (chanting number names) as a class from 1 to 100.

3.3.2 Mr Siya asks the learners in her class (individually) to count the number of objects in a pile by touching each object as they count it.

3.3.3 The learners in Mr Siya's class are determining the values of "18 – 9 ; 15 – 9 ; and 13 – 9 ". In order to help them he reminds them of the rule that he had already taught them: " when we subtract 9 from 18, apply the method of seeing the tens and then the difference will be 9.

(6)