

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005: BED II PRIMARY

COURSE NUMBER: PEC 276

COURSE NAME: CURRICULUM STUDIES MATHEMATICS

TIME ALLOWED: 3 HOURS

- INSTRUCTIONS:
1. THIS PAPER IS DIVIDED INTO TWO SECTIONS.
 2. SECTION A (QUESTION 1) IS COMPULSORY. YOU MAY THEN CHOOSE ANY THREE (3) QUESTIONS FROM SECTION B (QUESTIONS 2, 3, 4, 5, AND 6).
 3. EACH QUESTION IS WORTH A MAXIMUM OF 25 MARKS.
 4. DOCUMENTS REFERRED TO IN SOME OF THE QUESTIONS ARE ATTACHED. IF YOU CAN'T FIND THEM ASK FOR THEM.
 5. ANY PIECE OF MATERIAL WHICH IS NOT FOR MARKING PURPOSES MUST BE CROSSED OUT CLEARLY.

Special requirements: Mathematics NCC Teachers' Guide

THIS PAPER MUST NOT BE OPENED UNTIL PERMISSION IS GIVEN BY THE INVIGILATOR

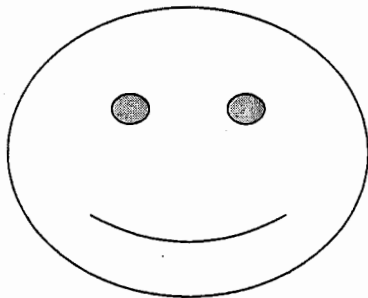
SECTION A COMPULSORY

Answer **all** questions in this section. Write your answers in the answer booklet, DO NOT write answers on the question paper. Write your answers in one word, short sentences or phrases. Where appropriate, write the letter that represents the question and then the number representing write your answer (e.g., a. A).

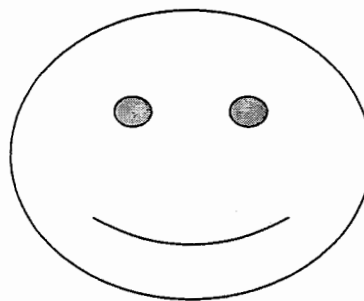
Question 1

a) Tumi, stage 1, and Teni, stage 2, were playing with dolls. They decided that each doll was to get an equal piece of a mud pie shown below and they both broke the mud pies in two pieces. In one or two sentences describe how they would typically handle the task.

Tumi's mud pie



Teni's mud pie



- (i) Tumi (2)
- (ii) Teni (2)

b) A Grade III teacher gave the following report about three of his pupils' performance on mathematics tasks.

(i)	Sam	$4 + 5 = 9$	$9 - 5 = 5.$	(1)
(ii)	Mike	$12 + 45 = 57$	$62 + 39 = 91$	(1)
(iii)	Kate	$1+1+1+1+1=5$	$1 + 1 + 1 + 1 + 1 = 6$	(1)

What problems are shown by each child? Write the number and the answer.

- c) Indicate if the following are true or false.
 - (i) Learning objectives and instructional objects are one and the same thing.
 - (ii) It is not possible to do a discovery lesson in mathematics.
 - (iii) Drill and practice can be used to assess pupils' progress in understanding mathematical concepts.
 - (iv) Irrational numbers are also found on the number line.
 - (v) Mathematical games cannot be used for serious teaching in mathematics. (5)

d) Which mathematical rules are shown by the following facts?

- (i) $6 + 2 + 5 = 5 + 6 + 2 = 13$ (1)
(ii) $(4 + 2) + 6 = 4 + (2 + 6) = 12$ (1)
(iii) $2(3 + 5) = 2 \times 3 + 2 \times 5 = 16$ (1)

e) A Mathematics laboratory approach to teaching mathematics is said to be non-threatening. Mention three characteristics of this approach to support this claim. (3)

f) Here is a problems given to a Grade V class in a test;

$$2 \times \frac{1}{4} =$$

- A $\frac{2}{4}$
B $\frac{1}{8}$
C $\frac{2}{8}$
D $\frac{3}{4}$

Indicate how each option is derived and thus how children may be attracted to each of them. Write the letter and your answer. (4)

g) Geometry is taught at primary school level to held children to

- A Develop the concept of number.
B Develop special senses.
C Increase their numerical skills.
D Develop critical thinking. (1)

h) Which of the following pairs of statements do not mean the same thing?

- A Two groups of four, and, four groups of two.
B A line segment, and, a line.
C Nine people sharing $2\frac{1}{2}$ pieces of cake, and, $27\frac{1}{2}$.
D Eight crayons in a box, and, eight crayons per box . (1)

i) As children approach new problems they study the situation and organize the new content in terms of what they already know and what fits into their perceptions of the world. This process is called;

- A Accommodation
B Assimilation
C Perception
D Equilibration.

SECTION B

Answer any **three** questions from this section.

Question 2

- a) Children come across situations where they need to use mathematical skills long before they formally learn school mathematics. Using specific examples of mathematical concepts;
- (i) Describe **three** situations in which children encounter mathematics in life. (10)
 - (ii) Explain why mathematics appears to be difficult for many primary school children. (10)
- b) Why is it important to learn mathematics in primary school? (5)

Question 3

You are a new teacher in a school and are told that you will need to set up a Mathematics laboratory.

- (a) What advice to other teachers would you give about the mathematics as laboratory arrangement? (10)
- b) What resources and materials would you initially prepare to set it up? (5)
- c) Develop an assignment card for any lesson of your choice (you may use the mathematics books available) as a sample for other teachers. (10)

Question 4

- a) Using examples from a mathematics concept of your choice, illustrate how children at stages 1, 2 and 3 might go about solving a chosen problem. (9)
- b) Describe an activity you might use to help children develop the concept of number. (6)
- c) Bruner suggests that children learn best through discovery. Describe this concept (i.e. discovery) illustrating it with specific example. (10)

Question 5

Grade 7 mathematics examinations are typically made up of two papers. Paper I contains multiple choice questions and Paper II contains short answer type questions.

- a) Write advantages and disadvantages of using both types of questions in the examination. (10)
- b)
- c) Construct one multiple choice question for a topic on fractions. The questions should be above knowledge level of Blooms' Taxonomy. (5)
- d) Here is a question which appeared in one Grade VII mathematics examination question paper.

Question

How many squares can you see in this paper?



- A. 9
- B. 10
- C. 14
- D. 18
- E. none of these

- (i) What cognitive ability does this question demand. (2)
- (ii) Write down possible choices children might make. Describe how they would get to those choices, assuming that the key is C. (2)
- d) Outline three purposes of assessment. (6)

Question 6

Study the following introductions of the same lesson in two classes. Then answer the questions which follow.

Class A

Last week we studied perimeter. What is perimeter? *A distance around an object.* You see, it is like the school fence, if you measured from that corner to that corner then to that corner until you get where you started, it is perimeter. You understand? *Yes teacher.* Now what is area? *A space covered by a figure.* Good! ...

Class B

Last week we talked about perimeter. Tell me about it. *It is a distance around an object.* Show me perimeter using any object in this room. A *student shows a distance around a desk* is that perimeter class? *Yes teacher.* As an out of class exercise find more examples of perimeter in the room and outside, indicate where the objects with perimeter are found and what their functions are. But now we will look at another measure; area.

- a) Which introduction is likely to be more effective and why? (5)
- b) Design an introduction for a lesson on area that would involve a context. (10)
- c) Write down an exercise you would give to students to help them consolidate the lesson. (10)