

**UNIVERSITY OF SWAZILAND  
FACULTY OF EDUCATION  
MAIN EXAMINATION PAPER 2014**

**TITLE OF PAPER: CURRICULUM STUDIES IN MATHEMATICS**

**COURSE CODE: EDC 381**

**PROGRAMME: B.ED 3 & PGCE**

**TIME ALLOWED: THREE (3) HOURS**

**INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS. EACH QUESTION IS WORTH 25 MARKS. DO NOT WRITE ON THE SYLLABUS SUPPLIED.**

**This paper contains 8 pages including this one**

**DO NOT OPEN UNTIL PERMISSION HAS BEEN GRANTED BY  
THE INVIGILATOR**

### Question 1

- (a) Explain in your own words **three** factors that affect reliability. [9]
- (b) The question in appendix 1 was in the 2007 paper 4 IGCSE mathematics examination.
- (i) Prepare an extensive marking guide for it using the symbols learnt in this course. Do the construction on the tracing paper supplied [10]
- (ii) Use your marking guide to mark the learner's solution in appendix 2. [6]

### Question 2

Copy and complete the table below: [25]

Language Difficulty	How this difficulty would affect the learning of maths. Give examples where possible.	How you could remedy the language difficulty
Learning mathematics in a second language		
Some words are difficult to spell or pronounce		
Symbols with the same surface structure but different deep structures		
Words that mean different things depending on context		
Different words for what seems to be similar things		

### Question 3

The two multiple choice items below were prepared by students.

- (a) Work out each item to determine the key. [5]
- (b) Analyse the distractors for each of the items to find out how each could arise [10]
- (c) On the basis of your answers to questions (a) and (b) discuss why you would accept or reject these items. [10]

#### The Items

1.  $2\frac{2}{3} - 1\frac{1}{2}$  is equal to:

- A 1      B  $4\frac{1}{6}$       B 5      D  $1\frac{1}{6}$       E none of the above

2. The number 1243.65789 correct to three significant figures is:

- A 1243.658      B 124      C 1244      D 1240      E None of the above

**Question 4**

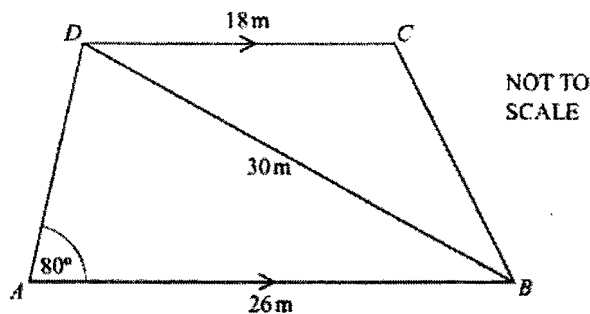
Use the graphs in appendix 3 to compare girls and boys Performance in Mathematics at the different levels of education. Conclude by making a general comment on the achievement of girls and boys across the three levels. [25]

**Question 5**

Write an essay entitled “The best approach to the teaching and learning of SGCSE mathematics is ability grouping” Your essay should indicate clear understanding of the SGCSE mathematics syllabus, your definition(s) of ability grouping and its implications for the learners. [25]

**Appendix 1**  
**Examination question**

6



The diagram shows the plan of a garden.

The garden is a trapezium with  $AB = 26$  metres,  $DC = 18$  metres and angle  $DAB = 80^\circ$ .

A straight path from  $B$  to  $D$  has a length of 30 metres.

- (a) (i) Using a scale of 1 : 200, draw an accurate plan of the garden. [3]
- (ii) Measure and write down the size of angle  $ADB$  and the size of angle  $DCB$ . [2]
- (iii) A second path is such that all points on it are equidistant from  $AB$  and from  $AD$ .  
Using a straight edge and compasses only, construct this path on your plan. [2]
- (iv) A third path is such that all points on it are equidistant from  $A$  and from  $D$ .  
Using a straight edge and compasses only, construct this path on your plan. [2]
- (v) In the garden, vegetables are grown in the region which is nearer to  $AB$  than to  $AD$  and nearer to  $A$  than to  $D$ .  
Shade this region on your plan. [1]
- (b) Use trigonometry, showing all your working, to calculate
- (i) angle  $ADB$ , [3]
- (ii) the length of  $BC$ , [4]
- (iii) the area of the garden. [3]

Appendix 2  
A Learner's Solution

6.

g) Scale 1 : 200

AB = 26 m

$$1 : 200$$

$$x : 2600$$

$$200x = 2600$$

$$\cancel{200} \quad \cancel{200}$$

$$x = 13$$

$$1 : 200$$

$$x : 1800$$

$$200x = 1800$$

$$\cancel{200} \quad \cancel{200}$$

$$x = 9$$

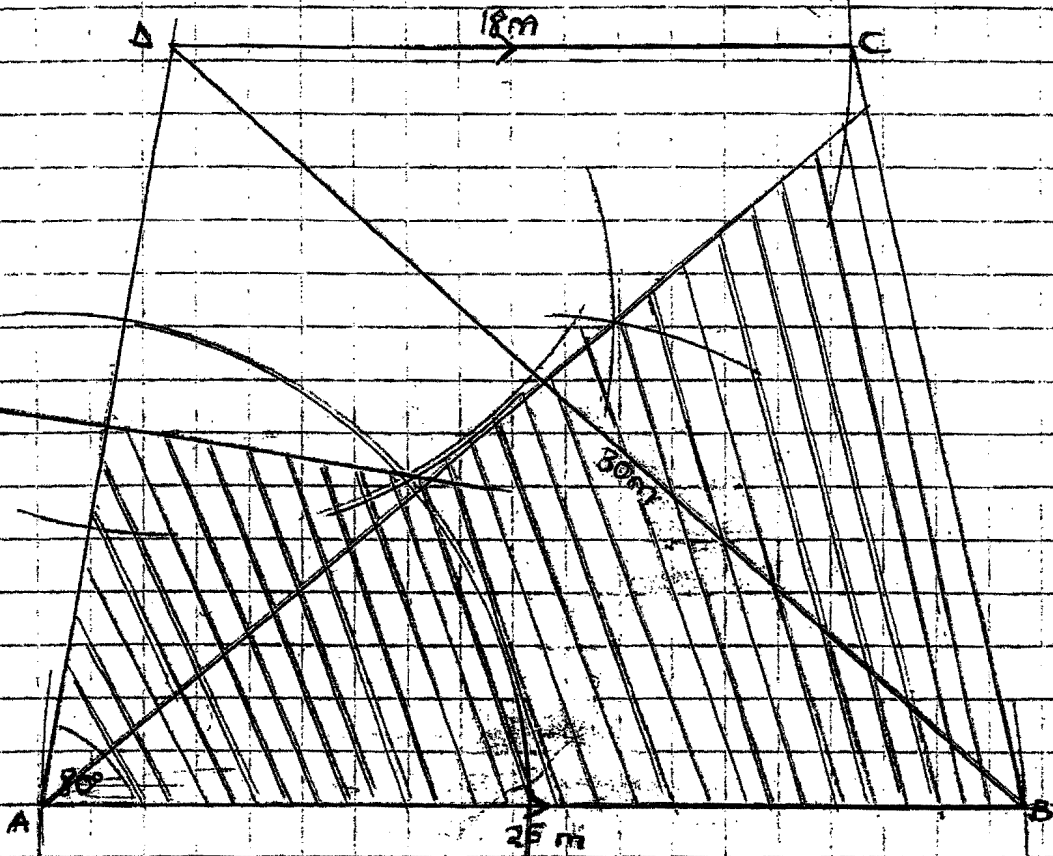
$$1 : 200$$

$$x : 3000$$

$$200x = 3000$$

$$\cancel{200} \quad \cancel{200}$$

$$x = 15$$



$$1) \hat{A}DB = 80^\circ$$

$$\hat{D}CB = 103^\circ$$

Learner's Solution Continued

$$b) \text{ (i) } \frac{\sin \hat{A}DB}{26} = \frac{\sin 80}{30}$$

$$\sin \hat{A}DB = \frac{26 \sin 80}{30}$$

$$\hat{A}DB = \sin^{-1} \left( \frac{26 \sin 80}{30} \right)$$
$$= \underline{58.6^\circ} \rightarrow$$

$$\hat{B}DC = 180^\circ - 58.6^\circ - 80^\circ$$
$$= 41.4^\circ$$

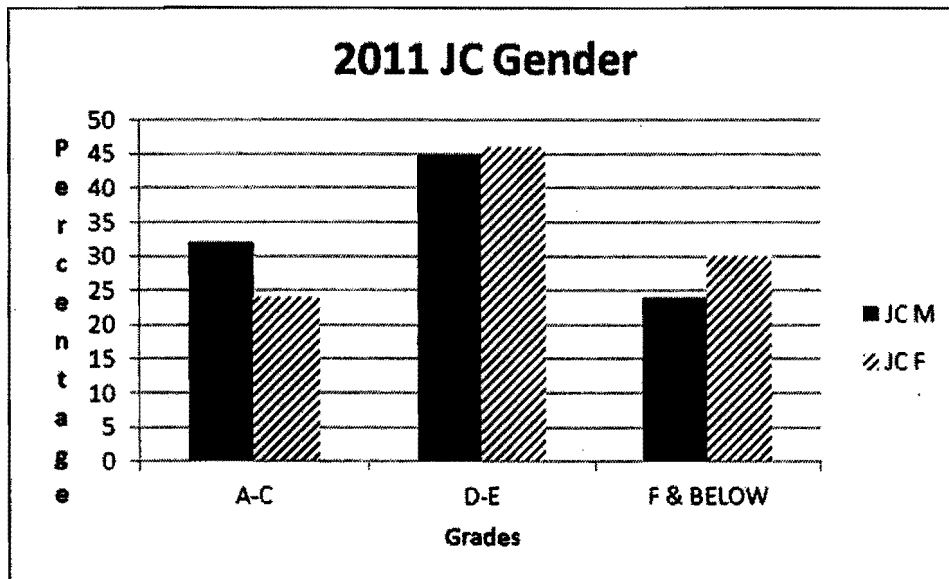
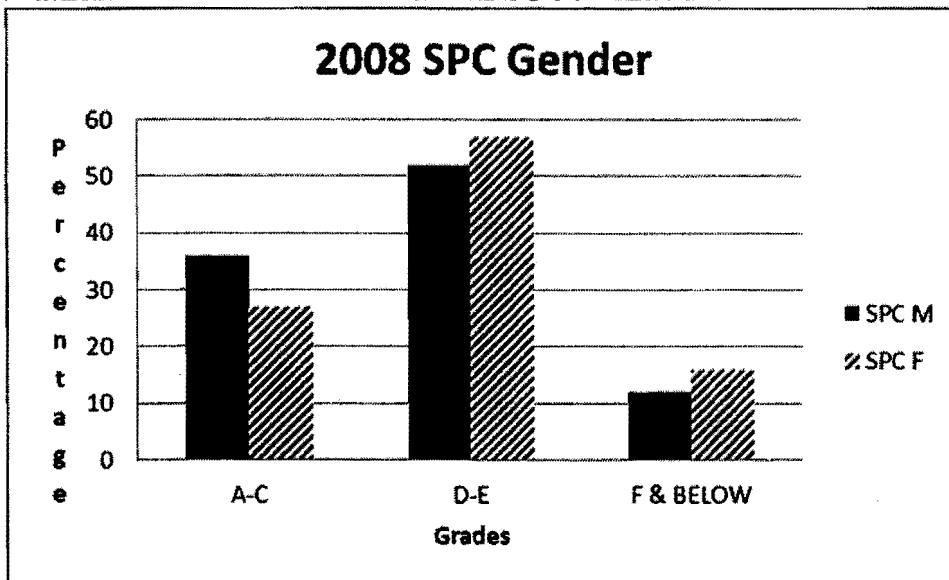
$$\text{(ii) } BC^2 = 18^2 + 30^2 - 2 \times 18 \times 30 \cos 41.4$$
$$= 144 \cos 41.4$$
$$= 108.016$$

$$BC = \underline{10.4 \text{ m}} \rightarrow$$

$$\text{(iii) Area of garden} = \frac{1}{2} \times 26 \times 30 \sin 41.4$$
$$+ \frac{1}{2} \times 18 \times 30 \sin 41.4$$
$$= 436.4658$$
$$= \underline{436 \text{ m}^2} \rightarrow$$

Appendix3

Mathematics Gender Statistics. A in SGCSE includes A\*



### 2013 SGCSE Gender

