

# The 2010 Jamaican Mathematical Olympiad

Presented by

**The University of the West Indies**

in Collaboration with

**Sterling Asset Management Ltd.**

FIRST ROUND EXAMINATION

TEST FOR GRADES 7 AND 8

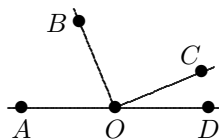
## Part A

This part consists of 7 multiple-choice questions. For each one, write the letter for the correct answer ((a), (b), (c), (d), or (e)) in the answer book provided. Each question in this part is worth 5 marks.

1) What is 50% of 40% of 200?

- (a) 180      (b) 50      (c) 90      (d) 25      (e) 40

2) In the diagram below,  $\angle BOC = 90^\circ$  and  $\angle AOB$  is three times  $\angle COD$ . What is the measure of  $\angle COD$ ?



- (a)  $22.5^\circ$       (b)  $45^\circ$       (c)  $30^\circ$       (d)  $40^\circ$       (e)  $15^\circ$

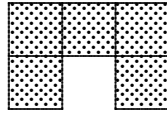
3) Suppose today is Saturday and we count this as Day 1. Which day of the week will Day 100 be?

- (a) Thursday      (b) Monday      (c) Sunday      (d) Tuesday      (e) Saturday

4) Consider the sequence of numbers 1, 11, 111, 1111, 11111, ... If the first 30 numbers in this sequence are added, what will the tens digit of the sum be?

- (a) 1      (b) 9      (c) 4      (d) 2      (e) 3

- 5) The figure below is made from five identical squares placed side-by-side. If the figure has a total area of  $45 \text{ cm}^2$ , what is its perimeter?



- (a) 60 cm      (b) 36 cm      (c) 12 cm      (d) 30 cm      (e) 72 cm
- 6) Consider the numbers between 201 and 699 which are multiples of 5. How many of them are also multiples of 4?
- (a) 99      (b) 19      (c) 24      (d) 40      (e) 25
- 7) How many prime numbers between 10 and 99 are still prime if you reverse their digits?
- (a) 0      (b) 2      (c) 5      (d) 8      (e) 9

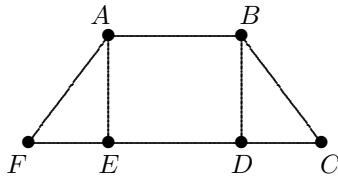
### Part B

This part consists of three written-answer questions. For each one, give a complete solution in the answer book provided. Each question in this part is worth 10 marks.

- 8) The following figure is a magic square with some of its entries filled in. When it is completed, the sum of the four numbers in each row, column, and diagonal will be the same. What are the values of  $A$  and  $B$ ?

$A$		7	12
	4	9	
	5	16	
8	11		$B$

- 9) In the diagram below,  $ABDE$  is a rectangle and the points  $C$ ,  $D$ ,  $E$ , and  $F$  are collinear. If the rectangle  $ABDE$  has area 80 and the trapezoid  $ABCF$  has area 128, what is  $AB : CF$ ?



- 10) Anna, Marissa, and Nakeisha wish to share out 10 oranges in such a way that each of them receives at least one. In how many ways can this be done?