

# MOSCROP MATH 8 Honours ENTRANCE EXAM

APRIL 16, 2015

NAME: \_\_\_\_\_

ELEMENTARY SCHOOL: \_\_\_\_\_

Teacher: \_\_\_\_\_

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Time: 1 hour 45 minutes

Part A is a NON-CALCULATOR section. Students are to complete part A without a calculator and then submit it to the teacher before moving on to Part B. Students have up to 45 minutes to complete Part A and a total of 1 hour and 45 minutes for the entire exam.

In Part B and C, calculators are allowed. Students will need to show all their work and justification to earn full marks. All answers must be exact or accurately rounded to 3 decimal places unless specified otherwise.

The exam consists of 10 questions in Part A, 5 questions in Part B, and 2 questions in Part C. Each question in Part A is worth 3 marks, Part B is 4 marks, and Part C is 5 marks. You can earn full marks of each question in Part A by entering the correct answer in the indicated space. If your answer is incorrect, work must be shown to be given any partial marks.

Section	Questions	Values	Total	Score
Part A	10	3	30	
Part B	5	4	20	
Part C	2	5	10	
Total			60 marks	

Name: \_\_\_\_\_

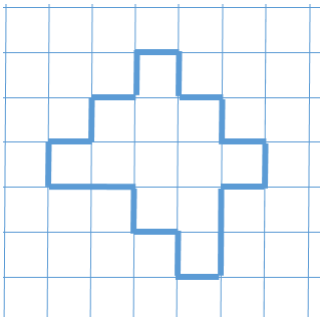
Elementary School: \_\_\_\_\_

### Part A: (10 Questions)

1. In a city block, there are 11 buildings, each building has 15 floors, and each floor has 6 apartments. If each apartment can have four people, then how many people can live in the city block?

Answer: \_\_\_\_\_

2. If each increment on the grid is 3cm wide, what is the perimeter of the object?



Answer: \_\_\_\_\_

3. If March 1 was on a Sunday, what day of the week will it be on April 30? (Note: There are 31 days in march)

Answer: \_\_\_\_\_

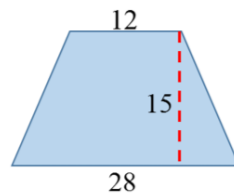
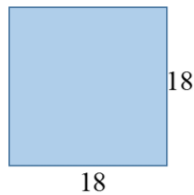
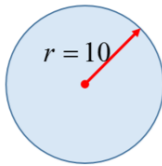
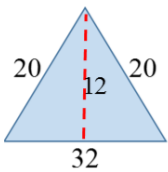
4. Three numbers add to 38. If I take any two numbers and add them, I would get either 17, 31, or 28. What is the largest number of the three?

Answer: \_\_\_\_\_

5. Jason got the following marks for his two tests:  $\frac{14}{20}$  and  $\frac{16}{20}$ . If the third test is also out of 20, what mark does he need to get to have an average of 80%?

Answer: \_\_\_\_\_

6. Given the four solids below, arrange them from the smallest area to the largest area:

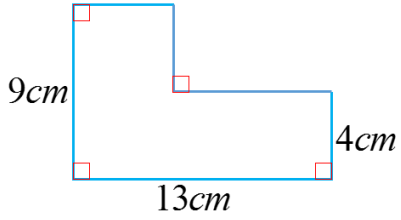


Answer: \_\_\_\_\_

7. Let "T" be the sum of the first 25 even positive integers and let "S" be the sum of the first odd positive integers. What is the difference between "T" and "S"?

Answer: \_\_\_\_\_

8. Find the perimeter of the following solid:



Answer: \_\_\_\_\_

9. A number is multiplied by 2, then added to 46, then divided by four, and then squared. The value is equal to 36. What was the original number?

Answer: \_\_\_\_\_

10. Given each sequence, find the missing numbers on each blanks:

i) 3, 6, 9, 12, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

ii) 0, 3, 8, 15, 24, 35, 48, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

iii) 1, 2, 3, 7, 22, 155, \_\_\_\_\_

Name: \_\_\_\_\_

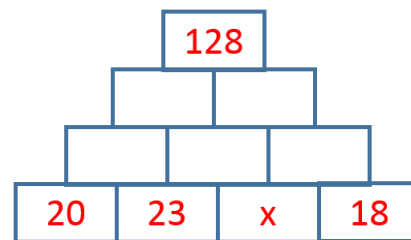
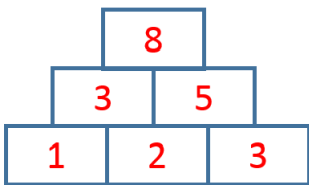
Elementary School: \_\_\_\_\_

## PART B: (5 Questions)

1. When you open a book, the first page on the right is page number 1. After flipping the first page, page 2 is on the left and page 3 is on the right. If you open the book to the middle and page 358 is on the left and 359 on the right, how many pages are in the book?

Answer: \_\_\_\_\_

2. In an "Addition Pyramid", the number in any block is equal to the sum of the two numbers underneath it. For instance, the pyramid on the left,  $8 = 5 + 3$  and  $5 = 2 + 3$ . For the "Addition Pyramid" on the right, if the top number is 128, what is the value of 'x'?



Answer: \_\_\_\_\_

3. The three numbers 5,  $-2$ , and 6 are used to replace  $A$ ,  $B$ , and  $C$  so that the expression:  $A \times B^C$  will be as large as possible. What is the largest possible value?

Answer: \_\_\_\_\_

4. Suppose you are in a country that only has the \$4 bills, \$7 dollar bills, and \$13 dollar bills. How many dollar values between \$1 to \$100 can not be created. List out all these values.

Answer: \_\_\_\_\_

5. How many numbers between 200 and 400 are divisible by 3 and the sum of any two of its digits adds to its third digit? List out all the values and explain your work to earn full marks. ['Divisible' means that the number can be divided by 3]

Answer: \_\_\_\_\_

Name: \_\_\_\_\_

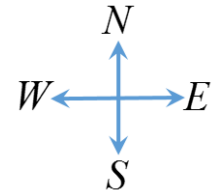
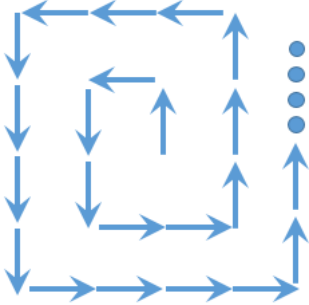
Elementary School: \_\_\_\_\_

## PART C: (2 Questions)

1. On a clock, the hour hand rotates  $30^\circ$  every hour and the minute hand rotates  $360^\circ$  every hour. At 3'O clock, the two hands are crossing at  $90^\circ$  . When is the next time after 3 'O' clock will the two hands cross at  $90^\circ$  again? Give your answer to the nearest second. Show all your work and steps. Explain your work with the space given. No marks will be given for just an answer

Answer: \_\_\_\_\_

2. A student takes one step north, then one step west, then two steps south, 2 steps east, 3 steps north, 3 steps west, 4 steps south, 4 steps east, and so on. His path creates a counter clockwise spiral centered from where he started. Which direction will the student be facing when he is taking the 2258<sup>th</sup> step? Explain your work with the space given. No marks will be given for just an answer



Answer: \_\_\_\_\_