

## Rules and Regulations 2018 L1 Competition #1

(Please read these rules and regulations carefully)

1. Please fill in your FULL name, grade, campus and student ID clearly on the answer sheet, and on the top of this page.
2. Do not open the question booklet until you are told to do so. You may only use a pencil when answering the questions.
3. No calculators or unauthorised electronic devices (including mobile phones) are allowed during the contest.
4. Strict silence must be observed at all times in the examination hall and please be reminded that you MAY NOT leave your seat without permission.
5. If you have any request or enquiry, please raise your hand and wait for an invigilator.
6. Only one candidate is allowed to leave the hall at a time. You are required to return to the hall within 10 minutes or else you will automatically be disqualified from the contest.
7. Each question in the contest has been verified by experienced trainers, thus no further explanation will be given.
8. The time allowed for the paper is 45 minutes. You must stop writing when you are told to do so.
9. You MUST fill in your answer in the answer sheet provided as you walked into the contest room. You will not be awarded marks for any answer written in the question booklet.

### Scoring System

1. The correct answers to problems 1 to 10 will be awarded 1 point each. The correct answers to problems 11 to 15 will be awarded 2 points each. The total number of marks is 20 points. You will not be penalized for each incorrect answer.
2. The organizer reserves the right to call for a re-sit in the event of malpractice and to differentiate between those outstanding students.
3. Contestants who are disqualified from the contest will not be awarded any certificates and will be forfeited any right to re-sit this year.

## **Part I Questions 1-10, 1 point each**

1. The Olympic flags of the top 7 countries with the highest medal count are to be placed along the ice rink at the Olympic Plaza. If the Canadian flag must be in the middle, how many different ways can the flags be ordered?  
A) 49      B) 120      C) 5040      D) 720
2. Mr. Arbour wants to plant Aspen trees every 1.5 metres along the sides and back of his yard for privacy. His yard measures 9 x 12 metres but his house is along one of the 12 metre sides so he does not plant trees there. What is the maximum number of trees that Mr. Arbour can plant?  
A) 21      B) 20      C) 19      D) 22
3. Joy is 36 years old and she has 3 children. Jaxon is 9, Piper is 7, and Maddie is 4. In how many years will Joy's age equal the sum of her children's ages?  
A) 8      B) 6      C) 10      D) 4
4. Each letter in the word OLYMPIAD is assigned one of eight consecutive whole numbers. If the sum of the letters is 52, what is the consecutive number range assigned to the letters?  
A) 4 - 11      B) 2 - 9      C) 3 - 10      D) 5 - 12
5. The Roman Numeral system has 7 basic symbols.

Symbol    Value

I	1
V	5
X	10
L	50
C	100
D	500
M	1,000

Numbers are formed by the following rules:

- Repeated symbols show how many times that number is multiplied. The same symbol cannot be repeated more than 3 times.
- When a smaller value is placed to the right of a larger value, the smaller value is added to the larger value. You cannot use more than 3 of the same symbols to add.
- When a smaller value is placed to the left of a larger value, the smaller value is subtracted from the larger value. You cannot use more than 1 symbol to subtract from a larger value. As well, only 1 can be subtracted from V or X, only X can be subtracted from L and C and only C can be subtracted from D and M.

Examples:  $15 = 10 + 5 = X + V = XV$

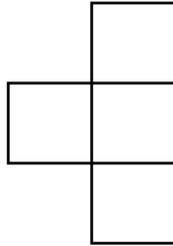
$$51 = 50 + 1 = L + I = LI$$

$$151 = 100 + 50 + 1 = C + L + I = CLI$$

Calculate:  $XXXIX + LVI + XXIV =$

- A) CIXIII      B) DXIX      C) CXIV      D) CXIX

6. The figure shows 4 identical squares joined together. If the area is  $144 \text{ cm}^2$ , what is the perimeter?



- A) 60 cm      B) 48 cm      C) 144 cm      D) 96 cm
7. Mark is 44 years old. What is the sum of his kids' ages if the sum is 2 less than, 12 less than, 6 more than, 5 less than, 2 less than, 11 more than, 8 less than, 24 more than, 3 less than, 11 less than Mark's age?
- A) 40      B) 42      C) 41      D) 45
8. How many more edges does a rectangular prism have than a triangular-based pyramid?
- A.6      B.2      C.4      D.3
9. Jodi and her Mom were both born in March. Jodi's birthday is three days before, two days after, one week prior, two days before that last day of March. If Jodi's Mom was born on March 21<sup>st</sup>, when is Jodi's birthday in relation to her Mom's?
- A) one day after      B) one day before      C) the same day      D) 2 days before
10. In one roll of 2 fair dice, what is the probability that the outcome will be two 5's?
- A)  $\frac{1}{18}$       B)  $\frac{2}{5}$       C)  $\frac{1}{36}$       D)  $\frac{1}{6}$

### **Part II Questions 11 – 15, 2 points each**

11. You need 3,000 mL of Coke for a party and want to spend the least money possible. A refundable charge is added on to your purchase at the following rates: \$0.10 per bottle under 1-litre, and \$0.25 per 2L bottle. The best value is:
- A) Six 710 mL bottles for \$4.48      B) Twelve 355 mL bottles for \$3.79
- C) One 2 L for \$1.97      D) Twenty-four 355 mL bottles for \$10.48

12. Which sequence would complete the 7<sup>th</sup> row of this sequence?

1 row 1  
 1 1  
 1 2 1  
 1 3 3 1

- A) 1, 6, 15, 20, 15, 6, 1      B) 1, 6, 16, 20, 16, 6, 1  
 C) 1, 3, 3, 3, 3, 3, 1      D) 1, 3, 3, 2, 3, 3, 1

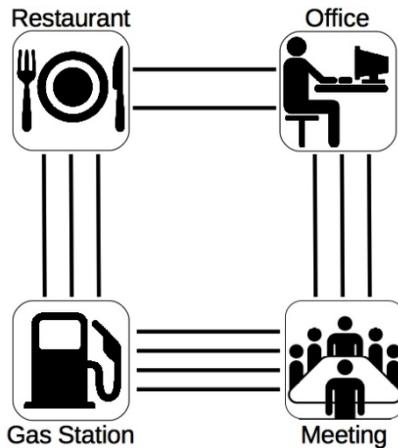
13. Megan is taking driver's training. She drives 20 km/hour for the first 10 kilometers. Her instructor encourages her to increase her speed for the next 20 kilometers. After driving 30 km in total with an average speed of 40 km/hour, what was Megan's speed for the last 20 km of the trip?

- A) 50 km/h      B) 55 km/h      C) 75 km/h      D) 80 km/h

14. The 32 Assistant Teachers that work at Spirit of Math Schools love their apps! 11 have only Snapchat and 16 have both Facebook and Instagram. Altogether, 18 Assistant Teachers have Instagram. 10 Assistant Teachers have all three apps. No one else has Facebook. How many Assistant Teachers do not have any of these apps?

- A) 3      B) 0      C) 4      D) 2

15. How many different routes can Mr. Langen take from the Spirit of Math office to the WMO meeting? Each line represents a different road on which he can travel, and once he has travelled between a location he can no longer travel back to a place he came from.



- A) 12      B) 27      C) 3      D) 72