



Rules and Regulations

(Please read these rules and regulations carefully)

- 1. Please fill in your FULL name, school name, school code and the date and time of contest clearly in the spaces above. Those who do not fill in the required particulars will be disqualified automatically.**
- 2. Do not open the question booklet until you are told to do so. You may only use a 2B 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 90 minutes. You must stop writing when you are told to do so.**
- 9. You MUST fill in your answer in the answer sheet provided in the last page of the question booklet. 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 6 points each. The correct answers to problems 11 to 20 will be awarded 10 points each. The total number of marks is 120 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.**



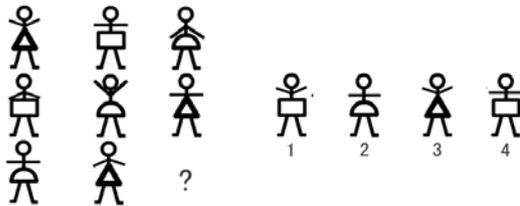
Total: 120 marks Time: 90 min

I. Choice Questions (6 marks per question, total 60 marks)

1. A string is 4 decimetres long. Cut it in half, then cut each piece in half again. The length of each piece is () decimetres.

- A.0.5 B.1 C.2 D.4

2. Fill in the question mark with one of the figures on the right (1, 2, 3, or 4) to complete the pattern.



- A.1 B.2 C.3 D.4

3. The total number of basketballs and soccer balls a school has is between 31 and 39. The number of basketballs is 4 times larger than the number of soccer balls. The number of basketballs is ()

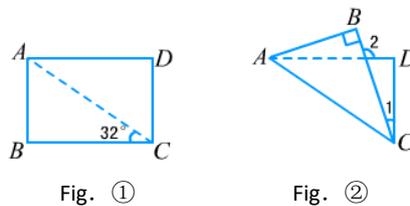


- A.21 B.28 C.32 D.35

4. Assume two children can lift up as much weight as one adult can. If 3 children and 2 adults together can lift up a barbell of 280 pounds, then 4 children and 3 adults together can lift up a barbell of () pounds.

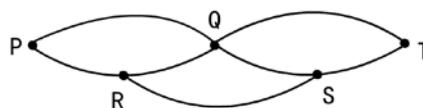
- A.350 B.400 C.420 D.560

5. See how the rectangular paper (ABCD) is folded from Figure ① to Figure ②. Then the degree of $\angle 1 =$ ()



- A. 24° B. 26° C. 38° D. 64°

6. The highway network that connects five cities (P, Q, R, S and T) is shown as the figure below. If each highway and city can only be used once, then there are () ways to drive from City P to City T.



- A.6 B.7 C.8 D.9



WORLD MATHEMATICAL OLYMPIAD

7. The driving distance from the bottom to the top of a mountain is 60 kilometres. A car is driving

the entire way up and back at the speed of 20 kilometres per hour uphill, and 30 kilometres per hour downhill. The average speed of this car is () kilometres per hour.



- A.23 B.24 C.25 D.26

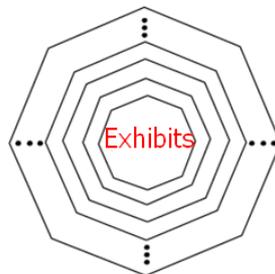
8. If a large square is cut into 4 small squares, the total perimeter will increase by 24 cm. The perimeter of the large square is () cm.

- A.12 B.16 C.24 D.48

9. Tom's father is 4 times older than Tom. Three years ago, the sum of their ages was 39. What is the age of Tom's father now?

- A. 9 B.30 C.33 D.36

10. The security system of the museum exhibit has an octagonal layout with infrared heat detectors. Centered by the exhibit, the first layer of the octagon will install two heat detectors on each side; the second layer will install 3 detectors on each side; the third layer will install four on each side; and so on and so forth. How many detectors are needed at least if the whole system has 8 layers in total?



- A.200 B.240 C.268 D.288

II. Blanks-filling Questions (10 marks per question, total 60)

11. Look at the grid on the left (Figure ①), find how can figure 1① make up a big grid as shown in Figure ②. Please shade your work.

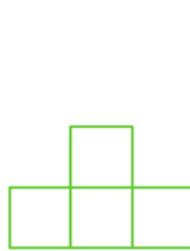


Fig. ①

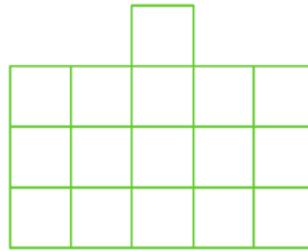


Fig. ②

12. Place number 1 to 5 into the boxes to complete the grid:

- 1) Each box contains only 1 number;
- 2) Each number is placed only once in each column and row;
- 3) Numbers in connected boxes are same.

		2		1
	3			
5		4		3
			3	
	4	3		

13. A grocery store had a bulk inventory of bok-choi. Half of the total inventory, minus 3 tonnes, was sold on the first day. Five tonnes more than half of the remaining inventory were sold on the second day. There were still 6 tonnes of bok-choi not sold. How many tonnes of bok-choi were there in the original bulk inventory?



Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500



M	1,000
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14. The Roman Numeral system has 7 basic symbols. 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 I 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: $15 = 10 + 5 = X + V = XV$;

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

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

$345 = 300 + 40 + 5 = \dots\dots$.

Please write the numbers 44 and 99 in Roman Numerals using the above rules.

15. On Friday, May 1st, Bob and his father go to the movie theatre to see “Super Hero”. While they are lining up for tickets, Bob sees a poster for the movie. Help Bob find out how many shows there are in total in May.



16. Katsusawa went to a 2-day tour in Rome. He had two options for his budget of this tour: (Order of attraction visits is not relative)

Option 1:

Regular Costs for 2 days

Transportation Fees		
	Subway: €1.5/once	Bus: €1.5/once
Day 1	once	once
Day 2	once	once



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Attractions	
Vatican Museum	€20
The Coliseum	€12
Pantheon	Free
National Museum of Rome	€10
Trevi Fountain	Free
Piazza di Spagna	Free
Borghese Gallery and	€14
Cuneo Arts Gallery	€6

Option 2:

Roma Pass €28



- Valid in 2 days;
- Unlimited free public transportation rides;
- First visited museum or gallery Free! Other attractions half price. (Vatican Museum excepted);
- Free visit to The Coliseum .

Katusawa chose option 2. He went to all attractions in Rome in 2 days. What was the maximum amount Katusawa saved (in Euros, €) using the Roma Pass instead of paying the regular costs?

COUNTRY	LEVEL	L1
NAME	SCORE	

No.	ANSWER				No.	ANSWER
1	A	B	C	D	11	
2	A	B	C	D		
3	A	B	C	D	12	



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4	A	B	C	D		
5	A	B	C	D	13	
6	A	B	C	D	14	
7	A	B	C	D	15	
8	A	B	C	D		
9	A	B	C	D	16	
10	A	B	C	D		