



2023 Spring Cup
Mathematical Olympiad
PRELIMINARY ROUND

Date: 28 January 2023

Time Given: 1 hour 30 minutes

Level: Primary 1&2

Name: _____

Instructions to Candidates

1. Do not open the booklet until you are told to do so.
2. Answer ALL 20 questions.
3. Write your answers in the answer sheet provided.
4. No steps are needed to justify your answers.
5. Questions 1-7 are worth 4 marks each.
6. Questions 8-14 are worth 6 marks each.
7. Questions 15-19 are worth 8 marks each.
8. Question 20 is worth 10 marks.
9. No marks will be deducted for wrong answers.
10. No marks will be given for unanswered questions.
11. No calculators or mathematical instruments are allowed.

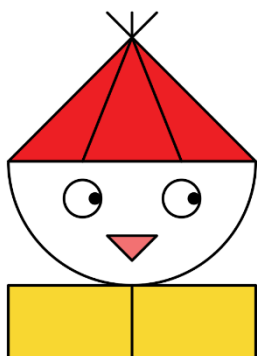
Questions 1 to 7 are worth 4 marks each.

1. The same figure below represents the same number. Which number do the square and triangle represent respectively?

$$\square + \square + \square + \triangle + \triangle = 25 \quad \square = (\quad)$$

$$\square + \triangle = 11 \quad \triangle = (\quad)$$

2. How many more triangles are there than rectangles in the figure below?



Answer: _____

3. Fill in the blanks according to the pattern.



4. How many natural numbers are there in the sequence?

7, 8, 9, ... , 67, 68, 69

Answer: _____

5. Five 10s plus four 1s equals to _____.

6. The pony, calf, crocodile and elephant had a race. According to the dialogue below, the fastest runner is the _____.



pony

I run slower than the elephant.

I run faster than the elephant.



crocodile



calf

I'm not the fastest.

I run slower than the calf.



elephant

7. In the equation below, write “+” or “-” between each two numbers such that the equation is true.

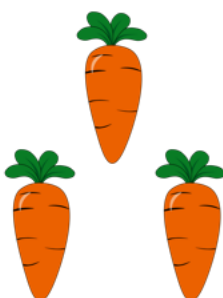
$$1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 = 13$$

Questions 8 to 14 are worth 6 marks each.

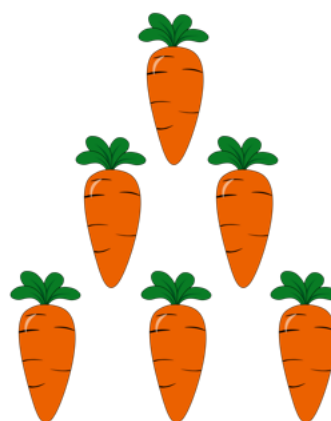
8. The naughty rabbit Coco put some carrots into four figures, the first three are as shown in the figure below. According to this pattern, there are _____ carrots in total.



(1)



(2)



(3)

9. Lily's home is 45 meters away from school. One day when Lily was heading to school, after walking 9 meters, she realised that she forgot to pack her assignment. She went back home to take her assignment, then went to school. What is the total distance Lily travelled?

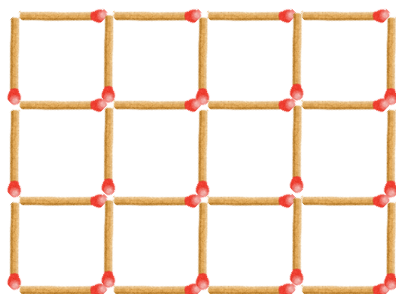
Answer: _____

10. Given a square piece of paper, if we cut off a corner, what are the possible numbers of corners we can form? (Write down all the possible answers)

Answer: _____

11. Alex and Ben compete to climb the stairs. They start from the first floor at the same time and their speed remains the same. When Alex reaches the third floor, Ben has reached the fourth floor. When Alex reaches the fifth floor, Ben has reached the _____ floor.

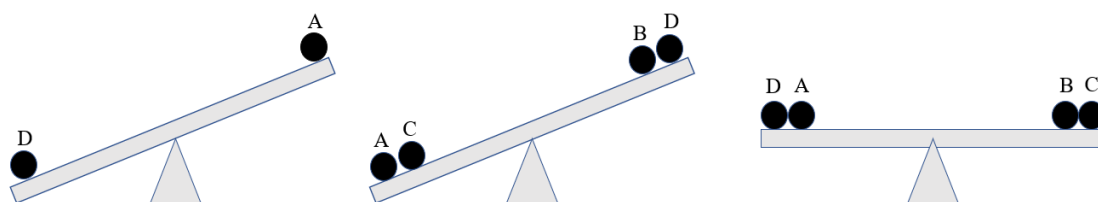
12. There are _____ matchsticks in total.



13. Fill in the blanks according to the pattern.

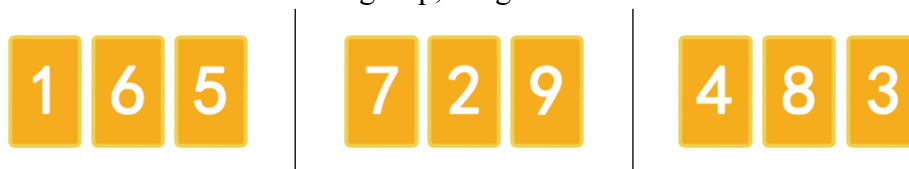
2, 1, 4, 1, 6, 2, 8, 3, 10, 5, 12, (), (), 13

14. There are four small balls with different weights. According to the figure below, please rank the balls from the heaviest to the lightest: ____ > ____ > ____ > ____.



Questions 15 to 19 are worth 8 marks each.

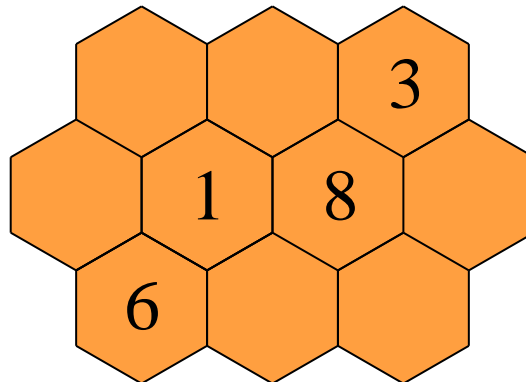
15. There are 3 groups of numbers below. Which 2 numbers can we swap such that when we sum the numbers in each group, we get the same answer?



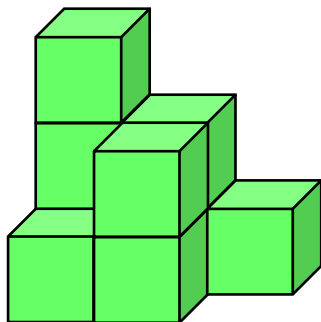
16. Bajie and Wukong compete to eat steamed buns. After the competition, Wukong said, "Even if I eat six more steamed buns, the number of steamed buns I eat is still 2 less than that of Bajie." So how many more steamed buns did Bajie eat than Wukong?



17. A smart bee needs to fill in 10 numbers, 0-9, on the hive so that the difference between any two numbers with a common side is not 1. For example, 1 and 6 are two numbers with a common side, and their difference is 5 instead of 1.



18. Below, we have a figure made of cubes. Now we paint the outer faces green. Each cube has 6 faces. Among all the faces of these cubes, how many faces are not coloured in total?



19. In the grid below, fill in the empty squares with numbers 1~6 such that every column and row will not have a repeated number. What are the values of ▲ and ★ respectively?

1				3	
	3	6		2	4
6		★			
4			3		1
2	6		5	4	▲
	4				

Questions 20 is worth 10 marks.

20. In your opinion, from question 1 to 19, your favourite question is question _____, the most difficult question is question _____. (As long as your answer is within 1 to 19, you get full marks, otherwise you get zero.)