



# INTERNATIONAL SINGAPORE MATHS COMPETITION 2019 (Primary 6)

1 hour 30 minutes

## Instructions to participants

1. Do not open the booklet until you are told to do so.
2. Attempt ALL 25 questions.
3. Write your answers neatly in the Answer Sheet provided.
4. Marks are awarded for correct answers only.
5. All figures are not drawn to scale.
6. Calculators may be used.

Questions in Section A carry 2 marks each, questions in Section B carry 4 marks each and questions in Section C carry between 6 to 10 marks each.

Jointly organised by

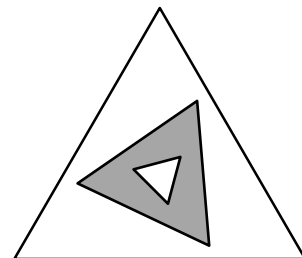


**Section A:**

Each of the questions 1 to 10 carries 2 marks.

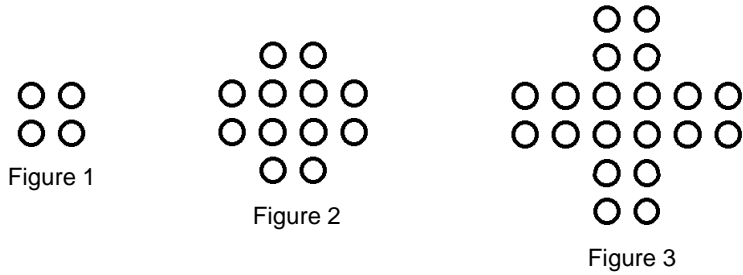
1. When asked how old he is, Mr Raju said, "I will be  $N$  years old in the year  $N^2$ ."  
How old is Mr Raju in 2019?
  
2. If the difference of 0.25 and 0.025 of the amount of water in a tank is 2.25 litres, what is the volume of all the water in the tank?
  
3. 40% of Tommy's weight is equal to 24% of his father's weight. If his father's weight is 18 kg more than Tommy, how much does Tommy weigh?

4. Jason has a set of 3 equilateral triangles of different sizes. The lengths of the edges of each of these triangles are in the ratio 1 : 2 : 6. The three triangles are placed one on top of another as shown in the figure. What is the ratio of the area of the shaded part to the area of non-shaded parts?

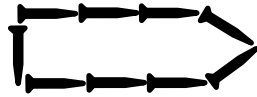


5. A piece of string is cut into two unequal pieces, each of which is used for the perimeter of a square. The sum of the areas of the two squares is  $202 \text{ cm}^2$ . What is the length of the string at first?
6. A, B and C are three cities on a map. A is north of B and  $\angle ABC$  is  $45^\circ$ . D is east of B and south of C.
- In what direction is C from B?
  - For C to be as close to A as B is to A, what is the direction of C from A?
7. I think of seven whole numbers – four are consecutive odd numbers and three are consecutive even numbers. The average of the three even numbers is 2 less than the average of the odd numbers. If all the seven numbers are greater than 0, what is the smallest possible value of the largest odd number?
8. A 2-kg durian in a shop was sold at \$17 per kg. All the seeds of that durian make up 25% of the durian by weight. How much did I pay for the seeds alone?

9. Study the pattern below. How many circles are there in the 16<sup>th</sup> figure?



10. Sandy arranged 9 similar nails to form the following shape.



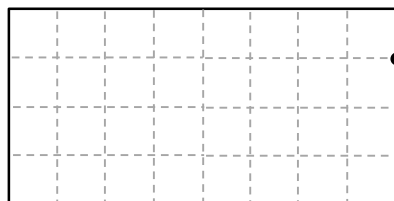
Draw to show how he can use 15 similar nails to form a second shape that is triple the area of the first shape. Draw it in your Answer Sheet.

**Section B**

Each of the questions 11 to 20 carries 4 marks.

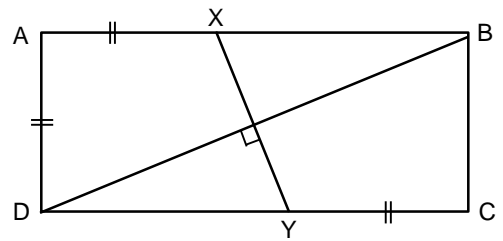
11. Chaisee is baking some cookies to bring to the children at a Child Care Centre. However, she cannot remember whether the centre has 44 or 48 children. How many cookies should she bake at least so that she will be able to give each of the children an equal number of cookies no matter if the centre has 44 or 48 children?

12. Divide the rectangle into quarters by drawing two straight lines; one of the lines must pass through point A.



13. I have 3 piles of cards. Each pile has 4 cards and each card has a different letter on it. Taking a card from each pile, I can form 3-lettered words. These are some of the words I can form:
- BEG EGO GAP GOD LID PIN TAN WEB
- What are the letters in each pile of cards?
14. A bottle has 3 types of nuts – peanuts, cashew nuts and almonds. 45% are peanuts. The cashew nuts and almonds are in the ratio of 2 : 3. There are 69 more peanuts than cashew nuts. How many nuts are there in the bottle?
15. When Don was twice as old as Kim, Lin was 20 years old. When the ratio of Lin's age to Don's age was 5 : 3, Kim was 10 years old. If Lin is the oldest among them, find Kim's age when Lin is 55 years old.
16. Two brothers want to own the same Gundam figurine. If both save regularly, it will take the younger brother 90 days to afford the figurine and the older brother  $\frac{2}{3}$  of that time. How long must they save if they combined their savings so as to co-own the figurine?

17. ABCD is a rectangle. X and Y are points on AB and CD respectively such that XY is perpendicular to BD. If  $AX = CY = AD$ , find  $\angle DXY$ .



18. If 70% of a class of pupils wear spectacles, 75% of them like Mathematics, 80% of them prefer indoor games, and 90% of them said that their favourite hero is Spiderman, at least what percentage of the class of pupils wear spectacles, like Mathematics, prefer indoor games and whose favourite hero is Spiderman?
19. The sum of the page numbers on two pages of a book that is facing each other is  $4x - 1$ . Express the smaller page number in terms of  $x$ .
20. Amy has 220 unit-cubes. 150 of them are blue cubes while the remaining are red cubes. She wants to build a  $216 \text{ unit}^3$  cube that has only a single colour on its outer faces. What is the fewest number of unit-cubes, and of what colour, does Amy need in addition to what she has?

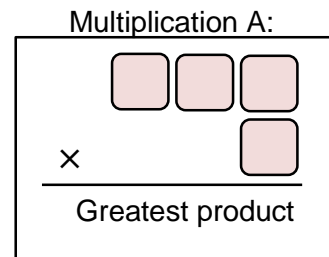
**Section C**

Questions 21, 22, 23, 24 and 25 carry 6, 7, 8, 9 and 10 marks respectively.

21. In a conservatory are 3000 butterflies of three types - the White Tiger Butterfly, the Peacock Butterfly and the Blue Moon Butterfly, in the ratio 7 : 8 : 5. After a few months, the number of butterflies increased by 255. The White Tiger Butterfly has increased by 12%, the Peacock Butterfly has increased by 7%. By what percentage has the number of Blue Moon Butterfly increased?
22. Daisy has a total of 720 Singapore and Indonesian stamps. She did a one-for-one exchange of 60 Singapore stamps and a fraction of her Indonesian stamps for Korean stamps. She then has an equal number of Singapore, Indonesian and Korean stamps. What fraction of Indonesian stamps did she exchange for Korean stamps?
23. Five bags of different colours (Red, Green, Blue, Yellow and White) each contains a ball (also Red, Green, Blue, Yellow and White).  
The following are the predictions that 5 students made:  
Student 1: The Yellow bag contains a White ball. The Blue bag contains a Yellow ball.  
Student 2: The Yellow bag contains a Blue ball. The Green bag contains a Red ball.  
Student 3: The White bag contains a Red ball. The Red bag contains a Green ball.  
Student 4: The Blue bag contains a Yellow ball. The Green bag contains a Green ball.  
Student 5: The Yellow bag contains a Yellow ball. The Red bag contains a White ball.  
After inspecting the bags, it was found out that each student had made at least 1 correct prediction. Which of the bags contains a ball of the same colour?

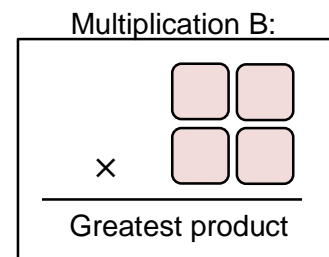
24. I have four sealed envelopes. One of them contains a cube number and the remaining three contains numbers which were factors of the cube number. The product of these three factors is equal to the cube number. If two of the factors are 14 and 4, what is the smallest possible cube number?

25a. How many different products can you get by filling the blanks in Multiplication A with the digits 1, 2, 3 and 4?



b. What is the greatest product of Multiplication A?

c. How many different products can you get by filling the blanks in Multiplication B with the digits 1, 2, 3 and 4?



d. What is the greatest product of Multiplication B?

e. What is the greatest product you get by filling the blanks in Multiplication C with the digits 1, 2, 3, 4 and 5?

