亞 洲 國 際 數 學 奧 林 匹 克 聯 合 會

ASIA INTERNATIONAL MATHEMATICAL OLYMPIAD UNION

亞洲國際數學奧林匹克公開賽初賽

Asia International Mathematical Olympiad Open Trials

小四組 Grade 4

時限：70 分鐘

Time allowed: 70 minutes

試題
Question Paper

本試題不可取走。
THIS QUESTION PAPER CANNOT BE TAKEN AWAY.
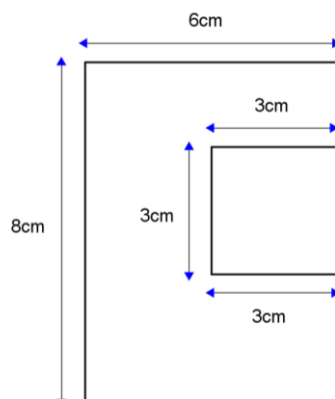
未得監考官同意，切勿翻閱試題，否則參賽者將有可能被取消資格。
DO NOT turn over this Question Paper without approval of the examiner.
Otherwise, contestant may be DISQUALIFIED.

All answers should be written on the ANSWER SHEET.

Section A – each question carries 4 marks

1) Find the perimeter of the figure below (in cm).

2) 313 boy scouts are divided into groups and each group has at most 7 scouts. At least how many groups can be divided this way?

3) Find the value of $480 \div 4 + 480 \div 6 + 480 \div 10$.

4) Find the 21st term of the arithmetic sequence 27、35、43、51、…

5) The difference between *A* and *B* is 24. *A* is 9 times of *B*. Find the value of *A*.

6) There are a total of 30 chickens and rabbits in a farm. The animals have a total of 86 legs. What is the difference between the number the chickens and the rabbits?

7) There are 7 pairs of green socks, 6 pairs of white socks, 5 pairs of red socks and 2 pairs of blue socks in a wardrobe. One person is asked to close his eyes, and draw the socks 1 pair at a time. At least how many pairs of socks should be drawn so that among the drawn socks 4 pairs of those have the same colour?

8) If a 5-digit number $\overline{81A75}$ is divisible by 11, find the value of *A*.

~ End of section A ~

請以最簡形式填寫答案。若計算結果是分數，請化至最簡，並確保為真分數或帶分數，或將計算結果寫成小數。
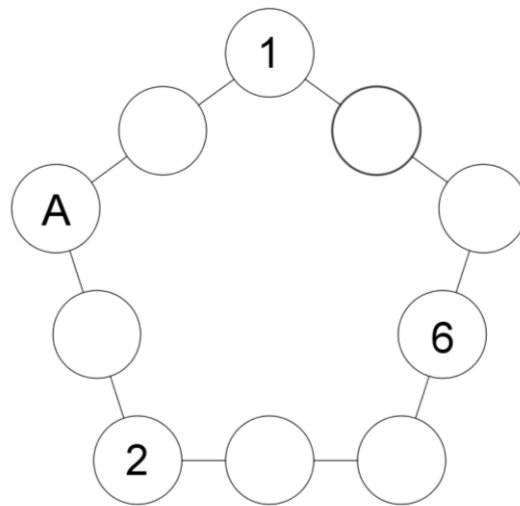答案可以根式表示，唯該根式必須是最簡形式。除特別註明外，毋需填寫單位。錯誤單位將不給予任何分數。
Write down the answer in the simplest form. If the calculation result is a fraction, please write down the answer as a proper or mixed fraction, decimal figure is also accepted. You may use square root to represent the answer which is in the simplest form.
Unless otherwise stated, no need to write down any unit. Marks will NOT be given for incorrect unit.

All answers should be written on the ANSWER SHEET.

Section B – each question carries 5 marks

9) When a five-digit number $\overline{279A5}$ is divided by 9, the remainder is 4. Find the value of *A*.

10) Find the value of $12 \times 22 + 13 \times 24 + 17 \times 36$.

11) The amount of Amy's pocket money each day is 3 times as much as the pocket money of Flora's. And the amount of Pearl's pocket money is $7 more than Amy's. If they have $980 of pocket money each week, how much pocket money does Pearl have each day?

12) Each of the numbers from 1 to 10 are filled in the circles in the figure so that the sum of each side of the pentagon is 14. What number should be filled in the circle with an A?
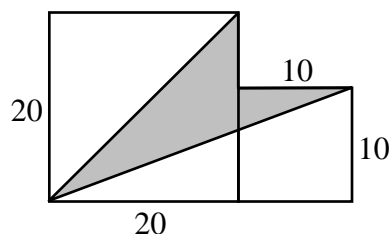

13) 10 people takes 5 days to complete one-fourth of a task. How many days are needed for 8 people to finish the same task?

14) Charles has $40 in the bank at the beginning. Starting from 1ˢᵗ February, Charles' mother will give Charles pocket money equal to the amount of money in the bank, and Charles saves $5 every day in the bank. Until the night of the 16ᵗʰ of February, how much (in $) did Charles' mother gave Charles?

15) Numbers are drawn from the 60 integers 1 to 60. At least how many numbers are drawn at random to ensure that there are two numbers whose difference is 10?

16) A 200-digit number is in the form of '393939…'. The product of digits of the number is calculated, find the unit digit of the product.

~ End of section B ~

All answers should be written on the ANSWER SHEET.

Section C – each question carries 7 marks

17) The figure is formed by 2 squares. Find the area of the shaded region
   (Hint: Consider the relationship between the area of triangle and the area of rectangle)

18) If $\overline{ABCD}$ is a 4-digit number divisible by 8 and both $\overline{ABC}$ and $\overline{DCB}$ are divisible by 8. Find the smallest possible value of $\overline{ABCD}$.

19) There are some chicken and rabbits. The animals have 304 legs in total.
   If we count the number of legs using the number of chicken as the number of rabbit, and using the number of rabbit as the number of chicken, there are 338 legs instead.
   How many chickens are there?

20) When a five-digit number is divided by 33, the remainder is 11. Find the largest possible value of the number.

~ End of Paper ~