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

小五組 Grade 5

時限:70 分鐘

Time allowed: 70 minutes

樣本試題 Sample Questions

本試題不可取走。 THIS QUESTION PAPER CANNOT BE TAKEN AWAY.

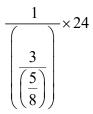
未得監考官同意,切勿翻閱試題,否則參賽者將有可能被取消資格。 DO NOT turn over this Question Paper without approval of the examiner. Otherwise, contestant may be DISQUALIFIED. 請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

甲部:每題4分

Section A – each question carries 4 marks

- 1) 求 3+6+9+...+24+27+30+27+24+...+9+6+3 的值。 Find the value of 3+6+9+...+24+27+30+27+24+...+9+6+3.
- 2) 求 2491 最小的兩位正因數。 Find the smallest positive 2-digit factor of 2491.
- 3) 求下列算式的值。 Find the value of the expression below.



- 4) 求 $1\times2\times3\times11\times12\times13\times21\times22\times23\times31\times32\times33\times...\times212$ 的個位數。 Find the unit digit of $1\times2\times3\times11\times12\times13\times21\times22\times23\times31\times32\times33\times...\times212$.
- 5)
- 6)
- 7)
- 8)

~ 甲部完 ~

~ End of section A ~

請將答案寫在答題紙上。

All answers should be written on the ANSWER SHEET.

乙部:每題5分

Section B – each question carries 5 marks

- 9) 1至2016中 (包括1和2016),有多少個數字不可以被7或13整除? Among integers from 1 to 2016 (1 and 2016 inclusive), how many numbers are there cannot be divided by neither 7 nor 13?
- 10) 小花、小克兩人同時在泳池同一端開始,游向另一端,當到達另一端之後,立即轉身返回。小花的游泳速度是每秒3米,小克的游泳速度是每秒2米;已知游泳池長90米,那麼他們兩人第一次相遇時,距離他們的出發點多少米?

Flora and Clark start swimming at the same time from the same side of a rectangular swimming pool. When they touches the edge of the other end of the swimming pool, they immediately swim back in the opposite direction. The speed of Flora is 3m/sec and that of Clark is 2m/s. It is also known that the length of the pool is 90m. What is the distance between their starting point and the point they first met?

- 11) 小克把 5 位數 83427 重覆寫 60 次變成一個 300 位數,問這 300 位數除以 6 的餘數是多少? Clark repeatedly wrote '83427' 60 times to form a 300-digit number. Find the remainder when the 300-digit number is divided by 6.
- 12) 0、1、2、6 和 7 可以組成多少個沒有重覆數字的三位數?
 How many different 3-digit number can be formed by using 0, 1, 2, 6 and 7 without repeating any digits?

13)

14)

15)

16)

~ 乙部完 ~

 \sim End of section B \sim

請將答案寫在 答題紙 上。

All answers should be written on the ANSWER SHEET.

丙部:每題7分

Section C – each question carries 7 marks

17) 小花、小克兩人同時從甲地出發前往乙地,小花每小時比小克快 8 公里。小花出發後三小時到了乙地,然後出發返回甲地,在距離乙地 16 公里的路上遇到小克。問甲地和乙地之間的距離是多少公里?

Flora and Clark starts a journey at the same time from City A to City B. The speed of Flora is 8km faster than that of Clark per hour. Three hours later, Flora reaches City B and starts to return to City A. Flora meets Clark at 16km from City B. What is the distance between the two cities?

18) 如果下列方程中 A 的值。

Find the value of A in the equation below.

$$2 + \frac{1}{2 + \frac{1}{1 + \frac{1}{1 + \frac{1}{A}}}} = \frac{88}{37}$$

19)

20)

~ 全卷完 ~ ~ End of Paper ~