

Malaysia International Mathematics Olympiad Competition 2018

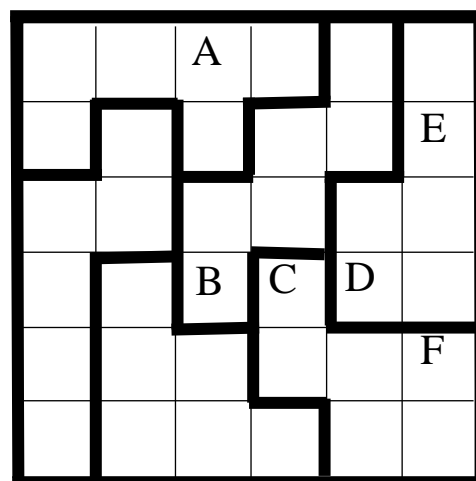
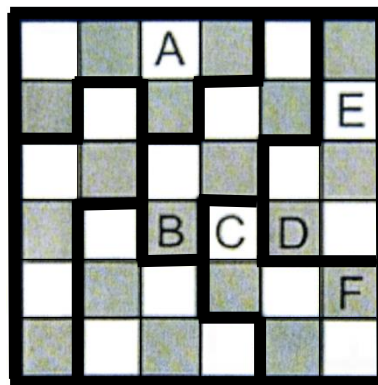
TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

1. A 6×6 chessboard is divided into 6 regions, each of them consisting of 6 squares. 6 letters are placed on this mini chessboard as shown in the figure as below. The task is to complete the chessboard by filling the remaining squares using the letters A, B, C, D, E and F and requiring that each of the 6 regions contains all the 6 letters, every row and every column of the chessboard shall have all the 6 letters appeared only once.

一个 6×6 的棋盘如下图被分成 6 个区域，每个区域共有 6 个格。如图所示，现在棋盘上已放了 6 个英文字母。若每个区域都将会有 A, B, C, D, E 和 F 这 6 个字母，而 A, B, C, D, E 和 F 这 6 个字母只在每一行与每一列均出现一次，请完成以下的棋盘。



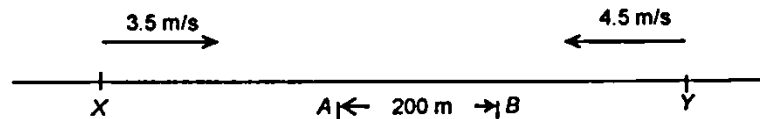
Answer : _____

Malaysia International Mathematics Olympiad Competition 2018 TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

2. Rose and Joshua jogged to and fro along a straight road between two points X and Y at a constant speed of 3.5 m/s and 4.5 m/s respectively. They started from X and Y at the same time as shown:
玫瑰和杰克在一条直路上的 XY 两地来回慢跑，两人每秒钟的速度分别是 3.5 米及 4.5 米。如下图，他们俩各别从 X 与 Y 同时起跑。



The first time they met each other was at point A. The second time they met each other was at point B. If the distance between A and B is 200 m, find the distance, in m, between X and Y.

两人第一次在 A 地相遇，第二次相遇则在 B 地。已知 AB 两地的距离为 200 米，问 XY 两地的距离。

Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

3. Carol went to market to buy three apples, five oranges and seven pears, she paid \$27.20 to buy those. Then, Charlotte went to the same place to buy two oranges and four pears, she paid \$16.10. How much will one apple, one orange and one pear cost all together?

小可到菜市场买了三粒苹果、五粒橙子、七粒梨子，总共付了\$27.20。小佳到同一档口买了两粒橙子和四粒梨子，总共付了\$16.10。请问一粒苹果、一粒橙子和一粒梨子总共多少钱？

Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

4. Calculate the sum of the digits of $\underbrace{999\dots9}_{2018} \times 0.2018 + \underbrace{111\dots1}_{2018} \times 7.1838$.计算 $\underbrace{999\dots9}_{2018} \times 0.2018 + \underbrace{111\dots1}_{2018} \times 7.1838$ 的数字和是多少?

Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

5. We call a positive integer balanced if

- it has six digits.
- each of its six digits is non-zero, and
- the product of its first three digits is equal to the product of its last three digits.

For example, 241 181 is balanced since no digit equals zero and $2 \times 4 \times 1 = 1 \times 8 \times 1$.List all balanced positive integers of the form $\overline{3b8\ d5f}$.

我们称符合以下条件的正整数为平衡数

- 它有六个数码；
- 这六个数码都不是 0，而且
- 它的前面三个数码的乘积，等于后面三个数码的乘积。

例如，241 181 是一个平衡数，因为每一个数码都不是 0，而且 $2 \times 4 \times 1 = 1 \times 8 \times 1$ 。若 $\overline{3b8\ d5f}$ 是符合平衡数条件的数，请列出所有可能的数。

Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

6. In the “New Dynasty War” game, the power of the main fighter at this moment is 1; he is holding a coin with positive and negative side. Every time when he throws the coin, his power will be doubled if he managed to get the positive side, nonetheless, his power would have decreased by 11 if he got the negative side; if his power drops below zero, the monster will die. The fighter has thrown the coin for several times, his power is still at 1, and the monster is still alive, at least how many times he had thrown the coin ?

《新王朝战争》的电玩游戏中，主将现在的攻击力是1点。这个主将带着一枚硬币，硬币有正反两面。每次投掷硬币，如果投到正面，则现有攻击力翻倍，如果投到反面，则现有攻击力减11，如果不够减，则怪兽死亡。已知这名主将投掷了若干次（至少一次）硬币之后，怪兽依然活着，而且攻击力依然为1点，那么它最少投掷了多少次硬币？

Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

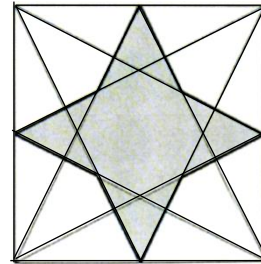
TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

7. In the square below, each vertex is joined to the midpoint of the opposite sides and a star shape is formed. What fraction of the square is shaded?

在下图的正方形中，所有顶点连接到对边的中点，形成了一个特别的星形。问阴影部分占正方形的几分之几？



Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

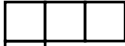
TEAM CONTEST (MP)

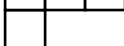
School (学校) : _____ Student ID (编号) : _____

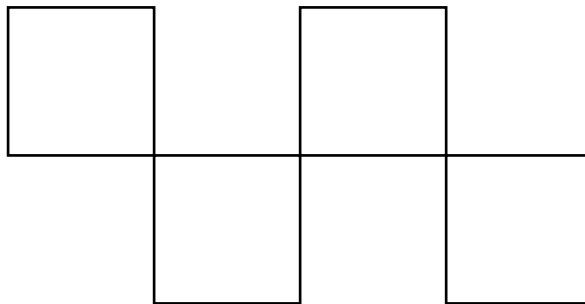
Name (姓名) : _____

8. The perimeter of the figure is 16 units. Rearrange the four squares so that the perimeter is 10 units, 12 units, and 14 units. (Answers must not be the same as the example shown)

图中的周长共 16 单位，请将这四个正方形重新排列，令其周长分别为 10 单位，12 单位及 14 单位。

Example :  10 units

例如：  10 单位 (答案不可以与例图一样)



Answers : 10 units:

12 units:

14 units :

Malaysia International Mathematics Olympiad Competition 2018

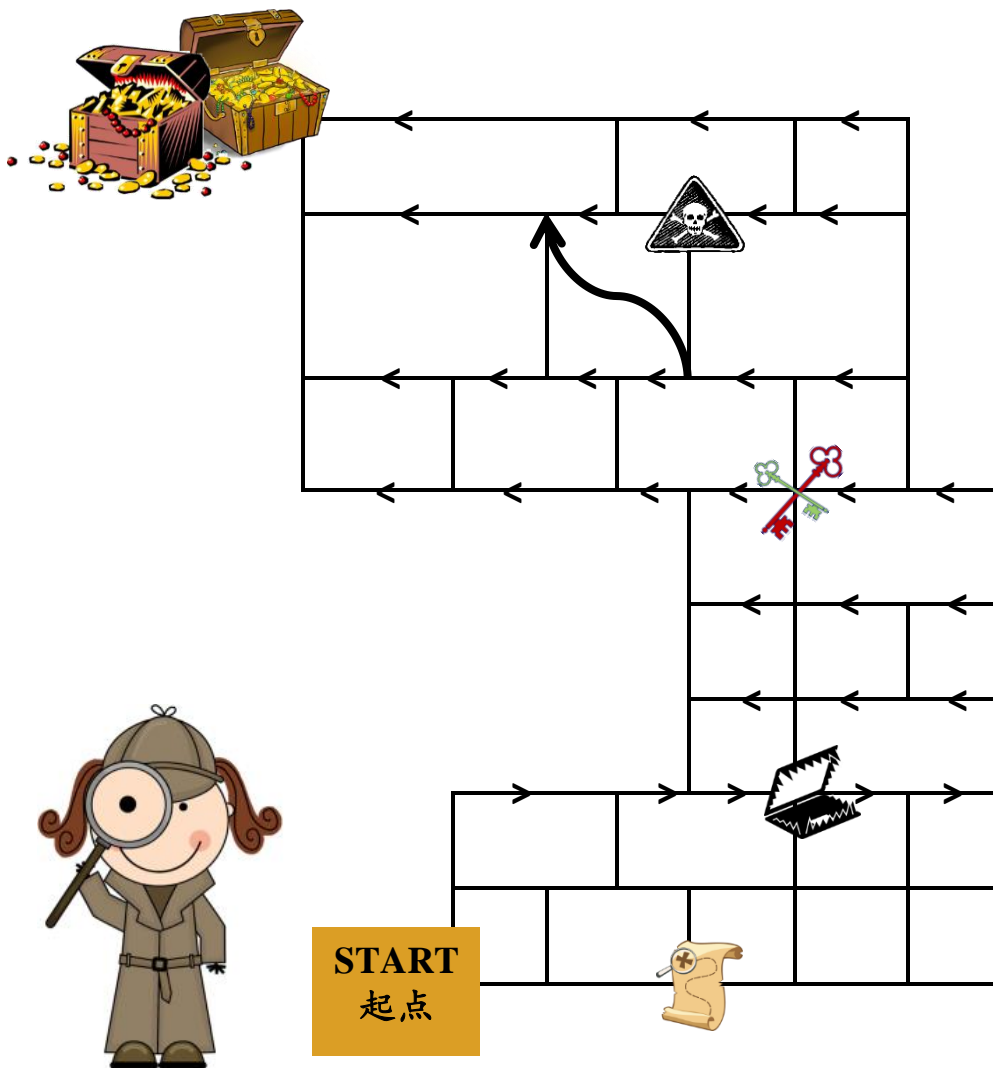
TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

9. Ashley inadvertently knowing a treasure in Batu Caves, but she must first get the treasure map, follow the map (as shown below) to get the treasure. There are 2 fatal traps to avoid, and 2 keys to be collected. How many shortest path for her to get the treasure safely ?

晓莉无意中得知黑风洞有一宝藏，但她必须先到某地拿到藏宝图，才能依藏宝图的资料找到宝藏。途中，必须绕过两个致命的陷阱，以及须寻获两把开启宝藏的钥匙。以下是晓莉拿到的藏宝图，问她有多少种最快的捷径以得到宝藏？



Answer : _____

Malaysia International Mathematics Olympiad Competition 2018

TEAM CONTEST (MP)

School (学校) : _____ Student ID (编号) : _____

Name (姓名) : _____

10. It is known that the sum of 22 different positive integers is 2017. If we omit the largest and the smallest integers, the sum will become 1910. If the 22 integers are to be arranged in ascending order, what is the second integer in the list ?

已知 22 个互不相同的正整数的总和是 2017，如果去掉其中最大数和最小数，剩下数的总和是 1910，那么，这 22 个数从小到大排列的第二个数是多少？

Answer : _____