2020 Hong Kong Mathematics Kangaroo Contest
— Ecolier —
2020香港數學袋鼠競賽 — 小學中年級
2020香港数学袋鼠竞赛 —小学中年级

Instruction | 說明 | 说明

1. DO NOT FLIP OPEN THIS FRONT COVER UNTIL YOUR PROCTOR TELLS YOU.
   在未收到監考老師指示前，請不要翻開此封面。
   在未收到监考老师指示前，请不要翻开此封面。
2. This is a 24 question multiple choice test. For each question, only one answer choice is correct.
   這是一套包括24道選擇題的測試，每道題目只有一個正確答案。
   这是一套包括24道选择题的测试，每道题目只有一个正确答案。
3. Each question is given a point value. You will receive full points for correct answer, and zero point for blank or incorrect answer. The full score of this test is 96 points.
   每道題目都有給定的分值，答對得滿分，答錯或空白得0分。本次測試的滿分為96分。
   每道题目都有给定的分值，答对得满分，答错或空白得0分。本次测试的满分为96分。
4. Only scratch paper, graph paper, rulers, protractors, and erasers are allowed as aids. Calculators are NOT allowed. No problems on the test *require* the use of a calculator.
   只能使用草稿紙、方格紙、尺、量角器和橡皮作為輔助工具。計算器是不允許使用的。測試中沒有任何問題必須需要使用計算器。
   只能使用草稿纸、方格纸、尺、量角器和橡皮作为辅助工具。计算器是不允许使用的。测试中没有任何问题必须需要使用计算器。
5. Figures are not necessarily drawn to scale.
   圖形不一定按比例繪製。
   图形不一定按比例绘制。
6. You will have 75 minutes to complete the test once your proctor tells you to begin.
   監考老師宣布開始後，你將有75分鐘的時間完成測試。
   监考老师宣布开始后，你将有75分钟的时间完成测试。

Part 1: 8 problems, 3 points each

第一部分：8 道題目，每題 3 分 | 第一部分：8 道题目，每题 3 分

1. A mushroom grows every day. Mary takes a picture of the mushroom each day from Monday to Friday as shown below. Which of these pictures was taken on Tuesday?

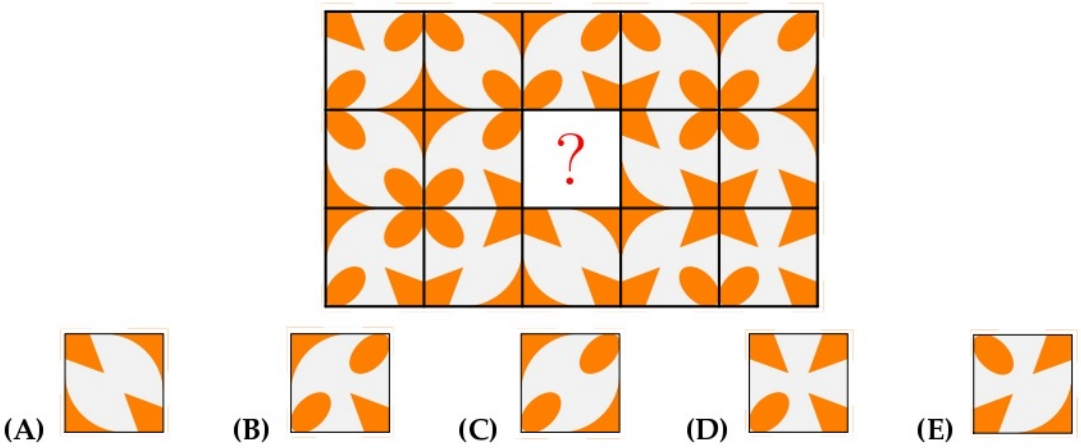
   蘑菇每天都在生長。從星期一到星期五，Mary 每天都給蘑菇拍照，照片如下。問這些照片中哪一張是星期二拍的？

   蘑菇每天都在生长。从星期一到星期五，Mary 每天都给蘑菇拍照，照片如下。问这些照片中哪一张是星期二拍的？

2. Which piece completes the pattern?

   添加哪一塊可以使圖案具有規律？

   添加哪一块可以使图案具有规律？



3. Tysger shades all the squares in the grid where the result is 20. Which shape does he get?

Tysger 將網格表中所有計算結果是 20 的格染成灰色，問他得到的圖形是什麼？

Tysger 将网格表中所有计算结果是 20 的格染成灰色，问他得到的图形是什么？

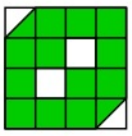
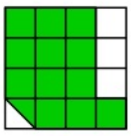
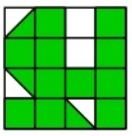
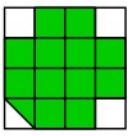
$16+4$	$19+1$	$28-8$
2×10	$16-4$	7×3

(A) (B) (C) (D) (E)

4. Which of the following figures has the largest part shaded?

以下哪個圖形中的綠色部分的面積最大？

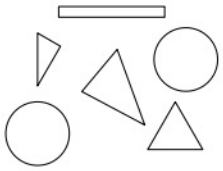
以下哪个图形中的绿色部分的面积最大？

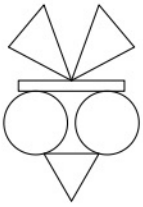
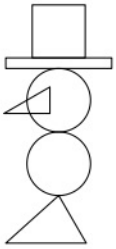
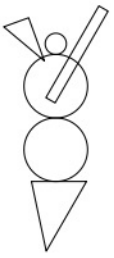
(A)  (B)  (C)  (D)  (E)

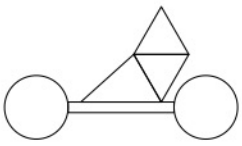
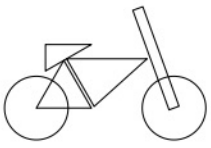
5. You can make different figures by using the below pieces. Which one of the figures below can you make with these pieces?

你可以用這些碎片拼成不同的圖形。下面哪個圖形可以用這些碎片拼成？

你可以用这些碎片拼成不同的图形。下面哪个图形可以用这些碎片拼成？



(A)  (B)  (C) 

(D)  (E) 

6. Elli draws the big square with chalk on the pavement. She starts jumping from number 1. Each time she jumps, she always jumps to a number that is 3 more than the number she is standing on. What is the largest number Elli can jump onto?

Elli 用粉筆在人行道上畫了一個大正方形。她從標有 1 的格開始跳。每次她跳的時候，她總是跳到一個比她站的數多 3 的數。問 Elli 能跳到的最大數是多少?

Elli 用粉笔在人行道上画了一个大正方形。她从标有 1 的格开始跳。每次她跳的时候，她总是跳到一个比她站的数多 3 的数。问 Elli 能跳到的最大数是多少?

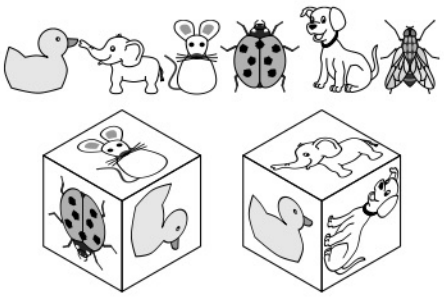
1	5	8	11
4	7	10	14
24	23	13	18
21	19	16	20

(A) 11 **(B)** 14 **(C)** 18 **(D)** 19 **(E)** 24

7. Jorge glues 6 stickers to the faces of a cube as shown. The pictures shows the cube in two positions. Which sticker is on the opposite face to the duck?

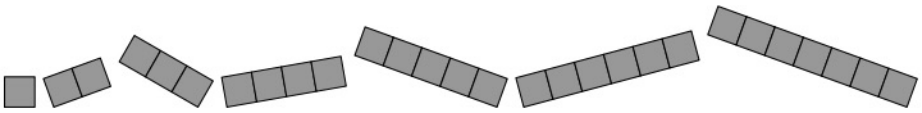
Jorge 將下面的這 6 張貼紙粘在一個立方體的各個面。立方體的兩個位置如圖所示。問鴨子所在面的對面貼是哪個標籤?

Jorge 将下面的这 6 张贴纸粘在一个立方体的各个面。立方体的两个位置如图所示。问鸭子所在面的对面贴是哪个标签?



(A) **(B)** **(C)** **(D)** **(E)**

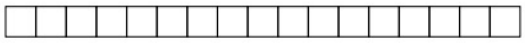
8.



Casper has the following 7 pieces. He uses some of these pieces to fully cover this grid below without overlap. He uses as many different pieces as possible. How many pieces does Casper use?

Casper 有以下 7 張紙片。他用若干張紙片、完全覆蓋了下面這個網格表，並且沒有重疊。他盡可能多地使用紙片，問 Casper 用了幾張紙片？

Casper 有以下 7 张纸片。他用若干张纸片、完全覆盖了下面这个网格表，并且没有重叠。他尽可能多地使用纸片，问 Casper 用了几张纸片？



(A) 3 **(B)** 4 **(C)** 5 **(D)** 6 **(E)** 7

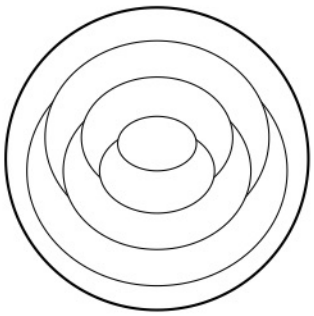
Part 2: 8 problems, 4 points each

第二部分：8 道題目，每題 4 分 | 第二部分：8 道题目，每题 4 分

9. Cindy colours each region on the pattern either red, blue or yellow. She colours regions that touch each other with different colours. She colours the outer ring (region) of the pattern red. How many regions does Cindy colour red?

Cindy 給圖案上的每個區域塗上紅色、藍色或黃色。她給互相有接觸的區域塗不同的顏色。她把圖案的最外圈塗成紅色。問 Cindy 一共給多少個區域塗了紅色？

Cindy 给图案上的每个区域涂上红色、蓝色或黄色。她给互相有接触的区域涂不同的颜色。她把图案的最外圈涂成红色。问 Cindy 一共给多少个区域涂了红色？

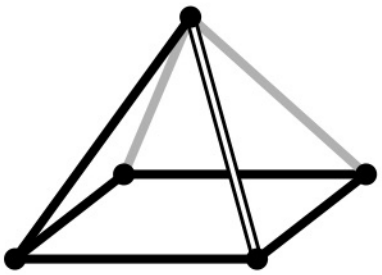


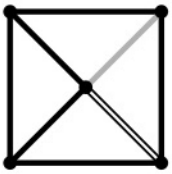
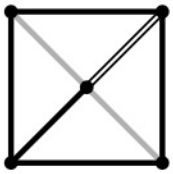
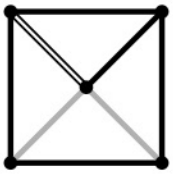
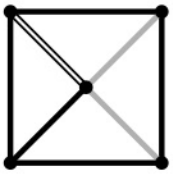
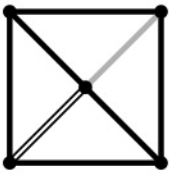
(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

10. Loes looks at the pyramid from above. What does Loes see?

Loes 從上面看這個金字塔。問 Loes 看到了什麼?

Loes 从上面看这个金字塔。问 Loes 看到了什么?

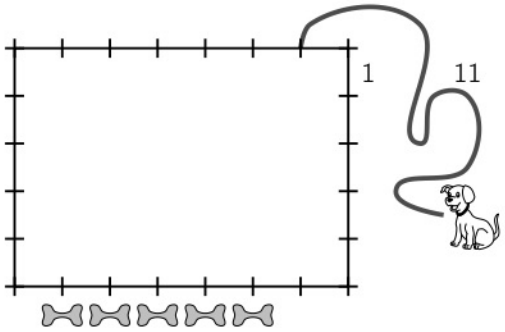


(A)  **(B)**  **(C)**  **(D)**  **(E)** 

11. Dennis ties a dog 1 metre from a corner of a 7 metres by 5 metres hut as shown in the picture using an 11 metres long leash. Dennis places 5 treats as shown. How many of the treats could the dog reach?

如圖所示，Dennis 將一條長 11 米的繩子從離一間 7 米乘 5 米小屋的角落處 1 米的地方固定，拴一隻狗。另如圖所示放置了 5 個玩具。問這隻狗能夠拿到幾個玩具?

如图所示，Dennis 将一条长 11 米的绳子从离一间 7 米乘 5 米小屋的角落处 1 米的地方固定，拴一只狗。另如图所示放置了 5 个玩具。问这只狗能够拿到几个玩具?

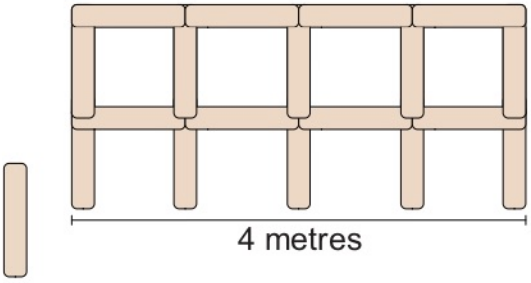


(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

12. Lonneke builds a fence using 1 metre long poles. The picture below shows a 4 metres long fence. How many poles does Lonneke need to build a 10 metres long fence?

Lonneke 用 1 米長的桿子建造了一個柵欄。下面這幅畫展示了一個 4 米長的柵欄。Lonneke 建造一個 10 米長的柵欄需要多少根桿子?

Lonneke 用 1 米长的杆子建造了一个栅栏。下面这幅画展示了一个 4 米长的栅栏。Lonneke 建造一个 10 米长的栅栏需要多少根杆子?

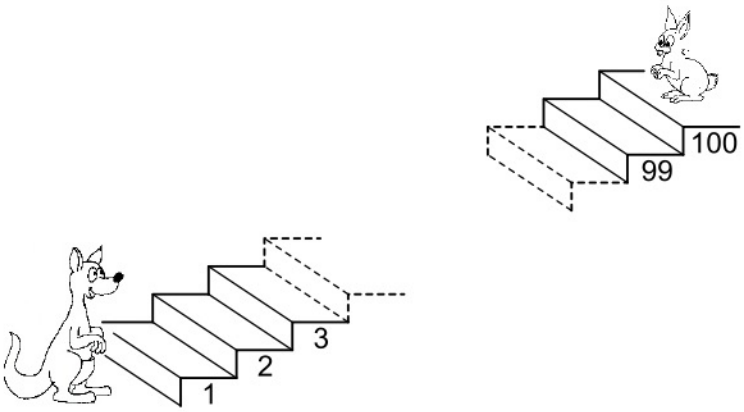


(A) 22 **(B)** 30 **(C)** 33 **(D)** 40 **(E)** 42

13. Every time the kangaroo goes up 7 steps, the rabbit goes down 3 steps. On which step do they meet?

每次袋鼠向上走 7 步，兔子向下走 3 步。問他們在哪一級台階相遇?

每次袋鼠向上走 7 步，兔子向下走 3 步。问他们在哪一级台阶相遇?



(A) 53 **(B)** 60 **(C)** 63 **(D)** 70 **(E)** 73

14. The sum of three numbers is 50. Karin subtracts a secret number from each of these three numbers. She gets 24, 13 and 7 as the results. Which one of the following is one of the original three numbers?

三個數的和是 50。Karin 從這三個數的每個數中減去減去一個秘密數。她得到的結果是 24, 13 和 7。以下哪個數是最初的三個數之一?

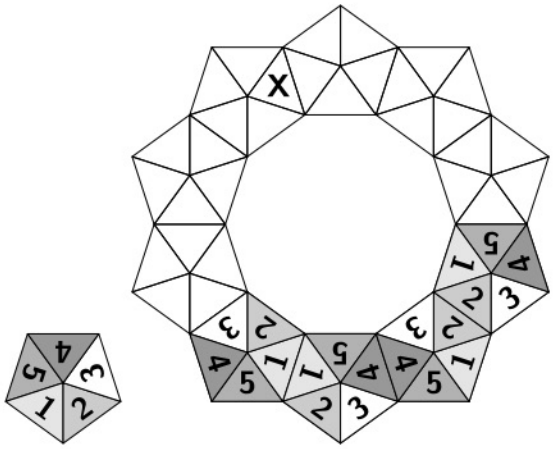
三个数的和是 50。Karin 从这三个数的每个数中减去减去一个秘密数。她得到的结果是 24, 13 和 7。以下哪个数是最初的三个数之一?

(A) 9 **(B)** 11 **(C)** 13 **(D)** 17 **(E)** 23

15. Amelie wants to build a crown using 10 copies of the token as shown on the left figure. When two tokens share a side, the corresponding numbers match. Four tokens have already been placed. Which number goes in the triangle marked with an X?

Amelie 想用 10 個如左圖所示的令牌組成一個王冠。當兩個令牌有公共邊時，對應的數字是匹配的。四個令牌已經放置好。問標有 X 的三角形中寫的是哪個數字?

Amelie 想用 10 个如左图所示的令牌组成一个王冠。当两个令牌有公共边时，对应的数字是匹配的。四个令牌已经放置好。问标有 X 的三角形中写的是哪个数字?



(A) 1 **(B)** 2 **(C)** 3 **(D)** 4 **(E)** 5

16. Farid has two types of sticks: short ones, measuring 1 cm and long ones, measuring 3 cm. With which of the combinations below can he make a square, without breaking or overlapping the sticks?

Farid 有兩種木棍：短的 1 厘米，長的 3 厘米。他可以用下面的哪個組合，在不折斷或重疊木棒的前提下，搭成一個正方形？

Farid 有两种木棍：短的 1 厘米，长的 3 厘米。他可以用下面的哪个组合，在不折断或重叠木棒的前提下，搭成一个正方形？

(A) 5 short and 2 long | 5 個短的和 2 個長的 | 5 个短的和 2 个长的

(B) 3 short and 3 long | 3 個短的和 3 個長的 | 3 个短的和 3 个长的

(C) 6 short | 6 個短的 | 6 个短的

(D) 4 short and 2 long | 4 個短的和 2 個長的 | 4 个短的和 2 个长的

(E) 6 long | 6 個長的 | 6 个长的

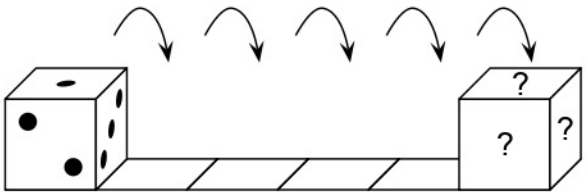
Part 3: 8 problems, 5 points each

第三部分：8 道題目，每題 5 分 | 第三部分：8 道题目，每题 5 分

17. A standard dice has 7 as the sum of the dots on opposite faces. The dice is put on the first square as shown and then rolls towards the right. When the dice gets to the last square, what is the total number of dots on the three faces marked with the question marks?

一個標準骰子的相對兩面上的點數之和是 7。如圖所示，骰子放在第一個正方形上，然後向右滾動。當骰子到達最後一個正方形時，標有問號的三個面上的點數的總是多少？

一个标准骰子的相对两面上的点数之和是 7。如图所示，骰子放在第一个正方形上，然后向右滚动。当骰子到达最后一个正方形时，标有问号的三个面上的点数的总是多少？



(A) 6 **(B)** 7 **(C)** 9 **(D)** 11 **(E)** 12

18. 6 people each order one scoop of ice cream. They order 3 scoops of vanilla, 2 scoops of chocolate and 1 scoop of lemon. They top the ice creams with 3 cherries, 2 wafers and 1 chocolate chip. They use one topping on each scoop, such that no two ice creams are alike. Which of the following combinations is **not** possible?

6 個人每人點了一球冰淇淋。他們點了 3 球香草，2 球巧克力和 1 球檸檬冰激凌。他們在冰淇淋上面的輔料有 3 個櫻桃、2 個華夫餅和 1 個巧克力片。他們在每球冰激凌讓都放了一樣輔料，使得沒有兩個冰激凌是一樣的。問以下哪種組合是**不**可能的？

6 个人每人点了一球冰淇淋。他们点了 3 球香草，2 球巧克力和 1 球柠檬冰激凌。他们在冰淇淋上面的辅料有 3 个樱桃、2 个华夫饼和 1 个巧克力片。他们在每球冰激凌让都放了一样辅料，使得没有两个冰激凌是一样的。问以下哪种组合是**不**可能的？

(A) chocolate with a cherry | 巧克力冰激凌配櫻桃 | 巧克力冰激凌配樱桃

(B) vanilla with cherry | 香草冰激凌配櫻桃 | 香草冰激凌配樱桃

(C) lemon with a wafer | 檸檬冰激凌配華夫餅 | 柠檬冰激凌配华夫饼

(D) chocolate with a wafer | 巧克力冰激凌配華夫餅 | 巧克力冰激凌配华夫饼

(E) vanilla with a chocolate chip | 香草冰激凌配巧克力片 | 香草冰激凌配巧克力片

19. The Queen tries to find out the three names of Rumpelstiltskin's wife. She asks her:

"Are you called Adele Lilly Cleo?"

"Are you called Adele Laura Cora?"

"Are you called Abbey Laura Cleo?"

Each time exactly one name and its position was right. What is the name of Rumpelstiltskin's wife?

Queen 試圖找出 Rumpelstiltskin 妻子的三個名字。Queen 問她:

"你叫 Adele Lilly Cleo 嗎？"

"你叫 Adele Laura Cora 嗎？"

"你叫 Adele Laura Cleo 嗎"

每次只有一個單詞和它的位置是正確的。問 Rumpelstiltskin 的妻子叫什麼名字?

Queen 试图找出 Rumpelstiltskin 妻子的三个名字。Queen 问她:

"你叫 Adele Lilly Cleo 吗？"

"你叫 Adele Laura Cora 吗?"

"你叫 Adele Laura Cleo 吗"

每次只有一个单词和它的位置是正确的。问 Rumpelstiltskin 的妻子叫什么名字?

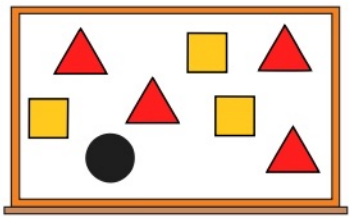
(A) Abbey Lilly Cora **(B)** Abbey Laura Cora **(C)** Adele Laura Cleo

(D) Adele Lilly Cora **(E)** Abbey Laura Cleo

20. The teacher writes the numbers from 1 to 8 on the board. The teacher then covers the numbers with triangles, squares and a circle. If you add the four numbers covered by the triangles, the sum is 10. If you add the three numbers covered by the squares, the sum is 20. Which number is covered by the circle?

老師在黑板上寫下從 1 到 8 的數。然後老師用三角形、正方形和圓形蓋住這些數。如果你把三角形蓋住的四個數相加，總和是 10。如果你把正方形蓋住的三個數相加，總和是 20。問哪個數被圓形蓋住了?

老师在黑板上写下从 1 到 8 的数。然后老师用三角形、正方形和圆形盖住这些数。如果你把三角形盖住的四个数相加，总和是 10。如果你把正方形盖住的三个数相加，总和是 20。问哪个数被圆形盖住了?



(A) 3 **(B)** 4 **(C)** 5 **(D)** 6 **(E)** 7

21. Jane has some pictures of parrots. She wants to colour only the head, tail and wings of each parrot either red, blue or green so that all three colours are used on each picture. She colours one parrot's head red, its wings green and its tail blue. How many more parrots can she colour so that all the parrots are coloured differently?

Jane 有一些鸚鵡的照片。她想只給每隻鸚鵡的頭、尾和翅膀塗上紅色、藍色或綠色，使得每幅圖上三種顏色都用。她把一隻鸚鵡的頭塗成紅色，翅膀塗成綠色，尾巴塗成藍色。她還能給多少只鸚鵡上色，使所有的鸚鵡的染色方式都不同？

Jane 有一些鹦鹉的照片。她想只给每只鹦鹉的头、尾和翅膀涂上红色、蓝色或绿色，使得每幅图上三种颜色都用。她把一只鹦鹉的头涂成红色，翅膀涂成绿色，尾巴涂成蓝色。她还能给多少只鹦鹉上色，使所有的鹦鹉的染色方式都不同？

(A) 1 **(B)** 2 **(C)** 4 **(D)** 5 **(E)** 9

22. Several teams came to the summer Kangaroo camp. Each team has 5 or 6 members. There are 43 people in total. How many teams are at this camp?

幾支隊伍來到了袋鼠夏令營。每隊有 5 人或 6 人。一共有 43 人，問共有多少支隊伍參加夏令營？

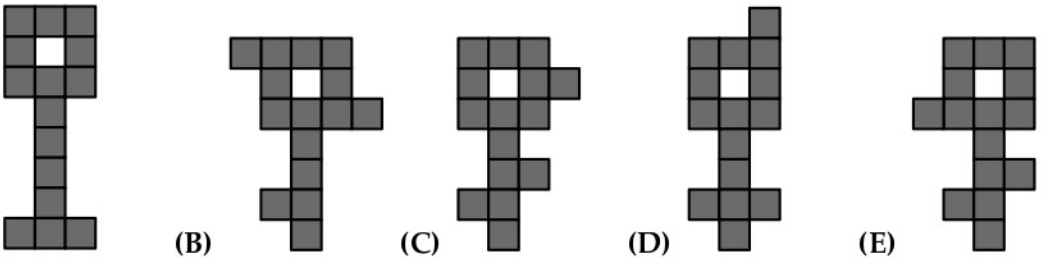
几支队伍来到了袋鼠夏令营。每队有 5 人或 6 人。一共有 43 人，问共有多少支队伍参加夏令营？

(A) 4 **(B)** 6 **(C)** 7 **(D)** 8 **(E)** 9

23. Which key would it be impossible to cut into three different figures of five shaded squares?

哪把鑰匙不可能被切割成三個不同的由五個陰影方格組成的形狀？

哪把钥匙不可能被切割成三个不同的由五个阴影方格组成的形状？



24. Ann replaces letters in the calculation KAN − ROO + GA with numbers from 1 to 9 and then calculates the result. The same letters are replaced by the same numbers and different letters by different numbers. What is the largest possible result she could get?

Ann 將算式 KAN − ROO + GA 中的字母替換為 1 到 9 之間的數字，然後計算結果。相同的字母用相同的數字代替，不同的字母用不同的數字代替。問她能得到的最大可能結果是什麼？

Ann 将算式 KAN − ROO + GA 中的字母替换为 1 到 9 之间的数字，然后计算结果。相同的字母用相同的数字代替，不同的字母用不同的数字代替。问她能得到的最大可能结果是什么？

(A) 925 **(B)** 933 **(C)** 939 **(D)** 942 **(E)** 948