阿思丹 ASEEDER 香港 HK

MATH KANGAROO CHINA

考试说明 / Instruction

Time allowed: 75 minutes
考试时长：75 分钟
Language: English & Chinese
试卷语言：英文和中文

This is a 30-question multiple-choice competition.
考试包含 30 道单项选择题。
Problems 1 to 10 are worth 3 points each.
1-10 题每题 3 分
Problems 11 to 20 are worth 4 points each.
11-20 题每题 4 分
Problems 21 to 30 are worth 5 points each.
21-30 题每题 5 分
1 point will be deducted for an incorrect answer and no point for a blank answer.
答错扣 1 分，不答不扣分。
The full score is 150 (Starting point is 30)
总分为 150 分（起始分数为 30 分）

Do not open this booklet until you are told to do so.
收到监考老师指令后，方可打开试卷册。
Mark your answers clearly on the answer sheet using a **2B pencil**.
务必使用 **2B 铅笔**在答题卡上正确填涂自己的答案。
Calculator cannot be used during the competition.
考试期间禁止使用计算器。

Good Luck!
预祝考试顺利

Grade 5 & Grade 6

3 points

1. Holger fills the rest of the table with the numbers up to 40, following the system shown:
Holger 按照下图所示的规则继续填充表格，一直到数字 40。

1	2	3	4	5	6	7	8
9	10	11	12				

Which of the pieces shown could he cut from the table?
下面哪个部分可以从这个表格中截取出来？

(A)

12	
22	23
	33

(B)

12	
20	21
	28

(C)

12	
20	21
	29

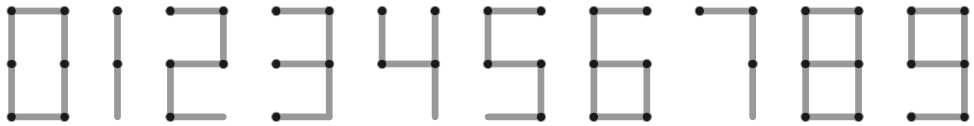
(D)

12	
21	22
	30

(E)

12	
21	22
	31

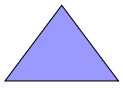
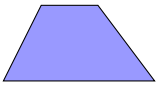
2. Matchsticks can be placed to build numbers, as shown. For example, to build the number 15, one needs 7 matchsticks, and one needs the same number of matchsticks to build the number 8.
如图所示，可以用火柴棍拼成数字。例如，要拼成数字 15，需要 7 根火柴棍，拼成数字 8 需要相同数量的火柴棍。



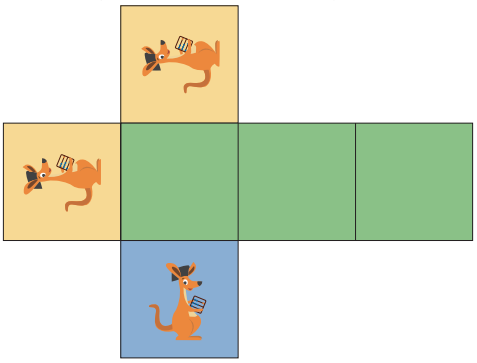
What is the largest positive number that can be built with seven matchsticks?
七根火柴棍可以拼成的最大正数是多少？

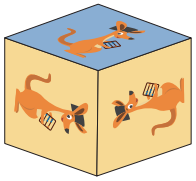
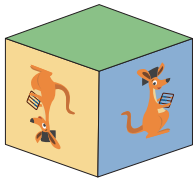
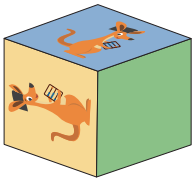
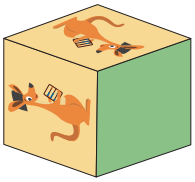
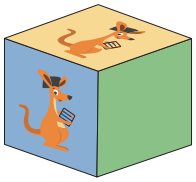
(A) 31 **(B)** 51 **(C)** 74 **(D)** 711 **(E)** 800

3. Which of the following shapes cannot be divided into two triangles by a single straight line?
以下哪个图形不能用一条直线分成两个三角形？

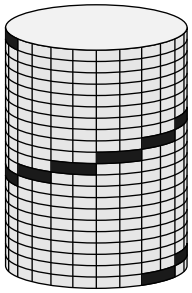
(A)  **(B)**  **(C)**  **(D)**  **(E)** 

4. Rosalinde has a piece of paper, marked as shown, which she folds to form a cube.
Which of the following five cubes can she get from this paper?
Rosalinde 有一张画有图案的纸，如图所示。将这张纸折叠成一个立方体。
以下五个立方体中，哪一个是由这张纸折叠而成的？



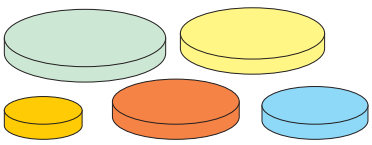
(**A**)  (**B**)  (**C**)  (**D**)  (**E**) 

5. Claude climbs from the bottom to the top of the cylindrical tower shown. The steps are all equal sized. Nine steps are visible. How many steps are not visible?
Claude 从如图所示的圆柱塔底部爬到顶部，所有台阶的大小都相同。现在可以看见九个台阶，请问有多少个台阶看不见？



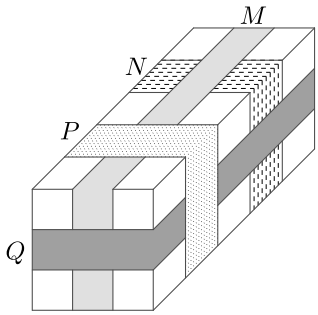
(**A**) 9
(**B**) 10
(**C**) 11
(**D**) 12
(**E**) 13

6. Anna has five circular discs of different sizes. She wants to build a tower of four discs so that each disc in her tower is smaller than the disc immediately below it. How many different towers could Anna build?
Anna 有五个大小不同的圆盘。她想用其中四个圆盘建造一座塔，使得塔中的每个圆盘都比紧邻其下方的圆盘小。Anna 可以建造多少座不同的塔？



(**A**) 4 (**B**) 5 (**C**) 9 (**D**) 12 (**E**) 20

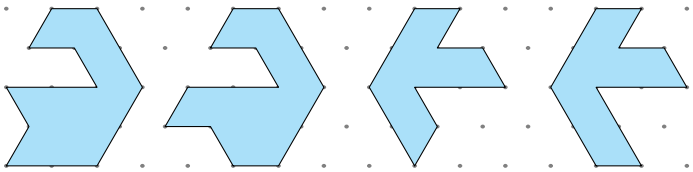
7. The picture shows a parcel around which four tapes labelled M, N, P and Q are placed.
下图是一个包裹，周围捆绑着四条标记为 M、N、P 和 Q 的胶带。



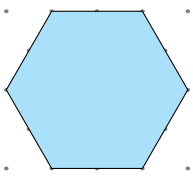
In what order, from first to last, were the tapes placed?
这四条胶带捆绑包裹的先后顺序是什么？

(**A**) M, N, Q, P (**B**) N, M, P, Q (**C**) N, Q, M, P
(**D**) N, M, Q, P (**E**) Q, N, M, P

8. Alice has the four puzzle pieces shown.
Alice 有四块拼图，如下所示。



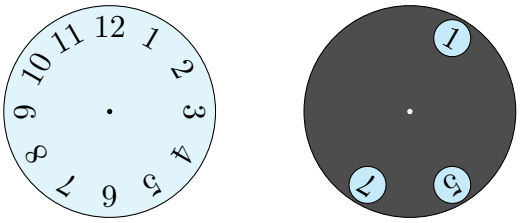
Which pair can be combined to form this hexagon?
哪一对拼图可以拼成下方六边形？



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

9. The grey circle with three holes punched in it is placed on top of the clock-face.

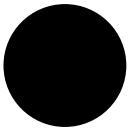
将打有三个孔的灰色圆盘放在钟面上。



The grey circle is turned around its center. Which three numbers is it possible to see at the same time?

绕灰色圆盘中心旋转，可以同时看到下面哪三个数字？

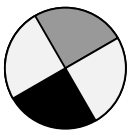
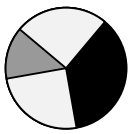
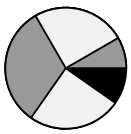
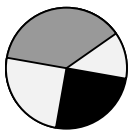
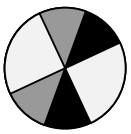
(**A**) 2, 4 and 9　2, 4 和 9
(**B**) 1, 5 and 10　1, 5 和 10
(**C**) 4, 6 and 12　4, 6 和 12
(**D**) 3, 6 and 9　3, 6 和 9
(**E**) 5, 7 and 12　5, 7 和 12

10. Jonte glued the three pieces of paper shown  onto the black circle on the right. 

Jonte 将这三张纸  粘在右边黑色圆盘上。

Which of the following patterns could he not obtain?

他无法获得下面哪个图案？

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

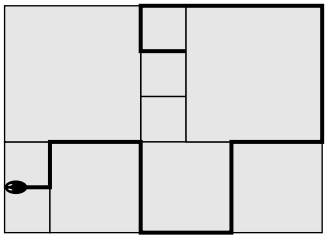
4 points

11. Francesca wrote down three consecutive 2-digit numbers in their natural order, but instead of the digits she used symbols: □◊, ♡△, ♡□. Which number is next?

Francesca 按照自然数顺序写下三个连续的两位数，但是她用符号代替了数字：□◊, ♡△, ♡□。请问下一个数字是什么？

(**A**) □♡　(**B**) □□　(**C**) ♡♡　(**D**) ◊□　(**E**) ♡◊

12. The Potters have a patio which is tiled with square tiles of three different sizes. The smallest squares have a perimeter of 80 cm. A snake rests on the patio, as shown in the diagram. What is the length of the snake?



Potter 家有一个露台，上面铺着三种大小不同的方形瓷砖。最小的方形瓷砖周长为 80 厘米。有一条蛇盘旋在露台上，如图所示。这条蛇的长度是多少？

(**A**) 380 cm 380 厘米
(**B**) 400 cm 400 厘米
(**C**) 420 cm 420 厘米
(**D**) 440 cm 440 厘米
(**E**) 1680 cm 1680 厘米

13. When I look in a mirror, I can see the image of my digital clock standing on the table behind me, as shown.

我照镜子时，看到身后桌子上数字时钟的图像如下所示。

What image will I see when I look in the mirror 30 minutes later?

30 分钟后，我在镜子中看到的时钟图像是什么？

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

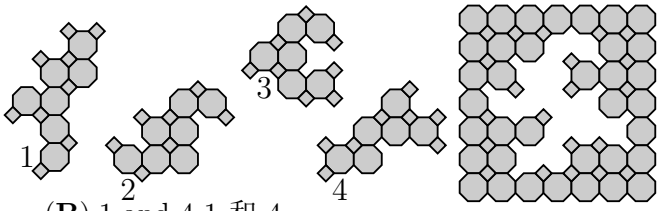
14. Maria, Peter, Richard and Tina were playing football in the classroom and one of them broke a window. When the principal asked who did it, she got the following responses: Maria: "It was Peter." Peter: "It was Richard." Richard: "It wasn't me." Tina: "It wasn't me." Only one child was telling the truth. Who broke the window?

Maria、Peter、Richard 和 Tina 在教室里踢足球，其中一个人打碎了一扇窗户。校长询问是谁干的，得到以下回答：Maria 说："是 Peter 干的。" Peter 说："是 Richard 干的。" Richard 说："不是我。" Tina 说："不是我。" 只有一个孩子说了实话。请问是谁打碎了窗户？

(**A**) Maria
(**B**) Tina
(**C**) Peter
(**D**) Richard
(**E**) can't be determined with certainty 无法确定

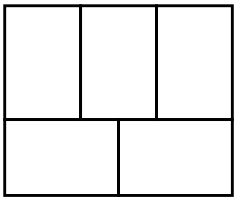
15. Which two tiles should be used to complete the puzzle?

可以使用哪两块瓷砖来完成拼图？



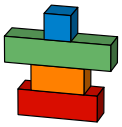
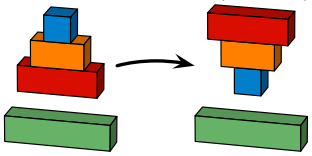
(**A**) 1 and 2 1 和 2
(**B**) 1 and 4 1 和 4
(**C**) 2 and 3 2 和 3
(**D**) 2 and 4 2 和 4
(**E**) 3 and 4 3 和 4

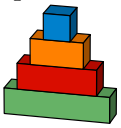
16. The diagram shows five rectangles. Lukas wants to colour the rectangles red, blue and yellow so that any two adjacent rectangles are coloured different colours. In how many different ways can he do this?



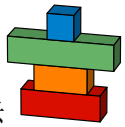
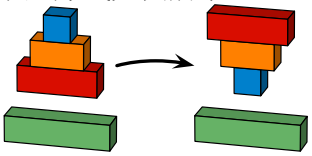
右图显示了五个长方形。Lukas 想给长方形涂上红色、蓝色和黄色，使得任意两个相邻长方形的颜色都不同。有多少种不同的涂色方式？

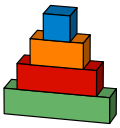
(**A**) 3 (**B**) 4 (**C**) 5
(**D**) 6 (**E**) 7

17. Goran has four blocks, stacked as shown.  In a single move, Goran can take some, or all, of the blocks from the top of the stack and place them upside down, as shown. 

He wants the blocks to be stacked in this order: 

What is the smallest number of moves he needs to make to get to the correct order?

Goran 有四个立方块，堆叠方式如图所示  。Goran 每次可以从最上方取出一些或全部立方块并将其倒置，如图所示  。

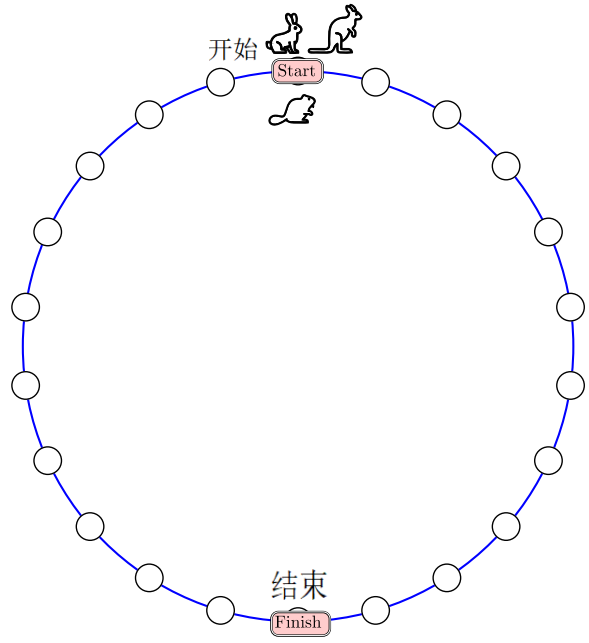
他希望立方块按照右图方式堆叠： 

他最少需要移动多少次可以使得立方块按照以上顺序堆叠？

(**A**) 2 (**B**) 3 (**C**) 4 (**D**) 5 (**E**) 6

18. A rabbit, a beaver and a kangaroo are having a competition. The beaver moves one space at a time, the rabbit moves two spaces at a time and the kangaroo moves three spaces at a time. They all start from the point marked START. The winner is the animal who lands exactly on the point marked FINISH in the smallest number of complete moves. Who wins the competition?

一只兔子、一只海狸和一只袋鼠正在比赛。海狸一次移动一个格子，兔子一次移动两个格子，袋鼠一次移动三个格子，它们都从标记 Start 的位置开始移动。获胜者是完成移动次数最少且恰好落在标有 Finish 位置上的动物。最终谁赢得了比赛？



(**A**) the beaver 海狸
(**B**) the rabbit 兔子
(**C**) the kangaroo 袋鼠
(**D**) the kangaroo and the rabbit 袋鼠和兔子
(**E**) the kangaroo and the beaver 袋鼠和海狸

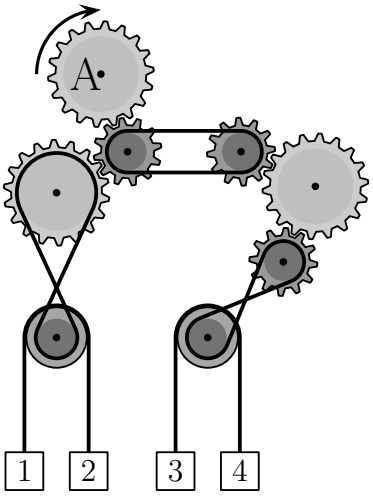
19. Lonneke wants the sum of the numbers in the white cells to equal the sum of the numbers in the grey cells. Which two numbers does she need to swap?

1	3	5	2	13
7	4	6	8	11

Lonneke 希望白色方格中的数字之和等于灰色方格中的数字之和。她需要交换哪两个数字？

(**A**) 1 and 11 1 和 11
(**B**) 2 and 8 2 和 8
(**C**) 3 and 7 3 和 7
(**D**) 4 and 13 4 和 13
(**E**) 7 and 13 7 和 13

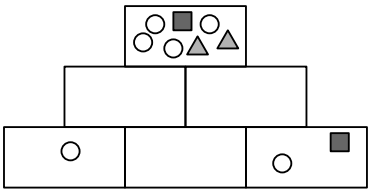
20. The gear marked A is turned clockwise, as shown. Which two boxes will move upwards?
如图所示，标记为 A 的齿轮顺时针转动。哪两个箱子会向上移动？



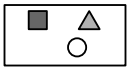
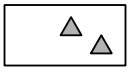
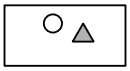
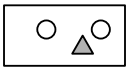
(**A**) 1 and 4 1 和 4 (**B**) 2 and 3 2 和 3 (**C**) 1 and 3 1 和 3
(**D**) 2 and 4 2 和 4 (**E**) It cannot be determined 无法确定

5 points

21. Tian wants to draw figures in the six boxes of the pyramid shown. Each box should contain all of the figures in the two boxes directly below it and nothing more. She has drawn the figures in some of the boxes already. Which figures should she draw in the box in the middle of the bottom row?

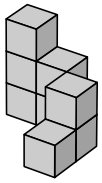


Tian 想在堆成金字塔形状的六个方框中画上图案，如图所示。每个方框中包含紧邻其下方的两个方框中的所有图案，且无任何多余图案。她已经在一些方框中画好了图案。最底行正中间的方框中应该画哪些图案？

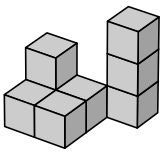
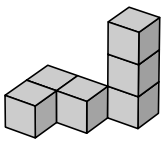
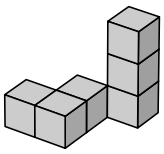
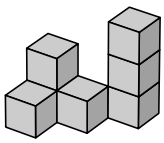
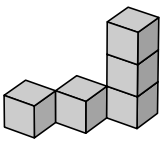
(**A**) 
(**B**) 
(**C**) 
(**D**) 
(**E**) 

22. Martha chose one of the five structures below and combined it with the structure on the right.
Martha 要从五个选项中选出一个图形与下方右侧的图形进行组合。

3	2	3
2	1	2
1	0	1

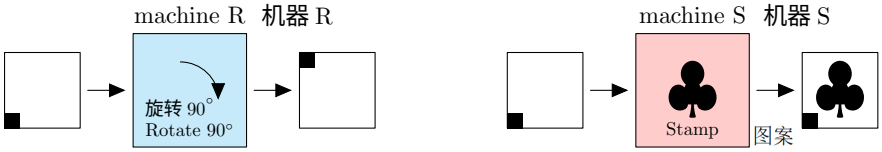


The table shows the number of cubes in each column in the combined structure when seen from above. Which of the five structures did Martha choose?
上方左侧表格表示从上方观察组合后图形中每一列的立方体数量。Martha 选出了下列哪个图形？

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

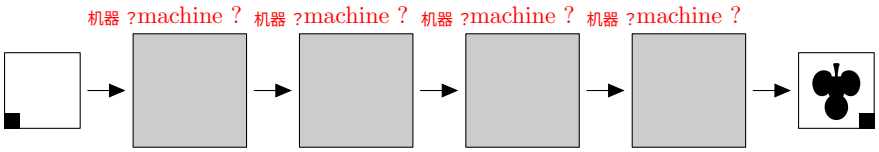
23. Else has two machines. Machine R rotates the paper 90° clockwise. Machine S stamps the paper with a ♣.

Else 有两台机器。机器 R 可以将纸张顺时针旋转 90°，机器 S 可以在纸张上打印图案♣。



In which order are the machines used to create the image shown?

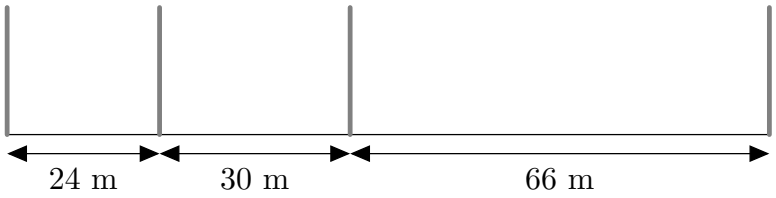
要在纸张上最终形成下图所示的图案，使用机器的顺序是什么？



(**A**) SRRR (**B**) RSRR (**C**) SRSR (**D**) RRRS (**E**) SRRS

24. Four stakes are placed along a 120m track, as shown.

如图所示，120 米长的轨道上放置有四根木桩。

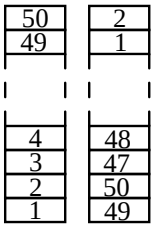


What is the smallest number of stakes that should be added so that the track is divided into sections of equal length?

要将轨道划分成长度相等的路段，最少需要增加多少根木桩？

(**A**) 12 (**B**) 15 (**C**) 17 (**D**) 20 (**E**) 37

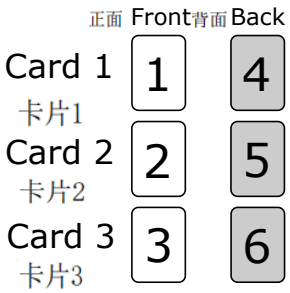
25. On a table there is a tower made of blocks numbered from 1 to 50. Emma builds a new tower in the following way. She takes two blocks from the top of the original tower and puts them on the table as the base of the new tower. She continues by taking the two top blocks from the remainder of the original tower and putting them on the top of the new tower, as seen in the diagram. Which of the following pairs of numbers are on adjacent blocks in the new tower?



桌子上有一个由编号 1 到 50 的立方块建造的塔。Emma 按照以下方式建造了一个新塔：她从原塔的顶部取下两个立方块，放在桌子上作为新塔的基座，然后继续从原塔剩余部分的顶部取下两个立方块，并将它们放在新塔的顶部，如图所示。以下哪对数字位于新塔中相邻的立方块上？

(**A**) 29 and 28 29 和 28　　(**B**) 34 and 35 34 和 35　　(**C**) 29 and 26 29 和 26
(**D**) 31 and 33 31 和 33　　(**E**) 27 and 30 27 和 30

26. Martin has three cards with numbers written on both sides. The card with number 1 on one side has number 4 on the opposite side, the card with 2 on has 5 on the opposite side and the card with 3 on has 6 on the opposite side.



Martin 有三张卡片，两面都写有数字。一张卡片正面是数字 1，背面是数字 4，一张卡片正面是 2，背面是 5，还有一张卡片正面是 3，背面是 6。

Martin randomly places three cards on the table and adds up the three numbers he sees. How many different sums can Martin get?

Martin 将三张卡片随机放在桌子上，并将看到的三张牌上的数字相加。Martin 可以得到多少个不同的和？

(**A**) 3　　(**B**) 4　　(**C**) 5　　(**D**) 6　　(**E**) 10

27. In a second hand shop, two hats are sold for the same price as five skirts, three skirts for the same price as eight t-shirts and two t-shirts for the same price as three caps. Which of the following collections is the most valuable?

在一家二手商店，两顶礼帽和五条半身裙的售价相同，三条半身裙和八件 T 恤的售价相同，两件 T 恤和三顶鸭舌帽的售价相同。以下哪种商品组合的售价最高？

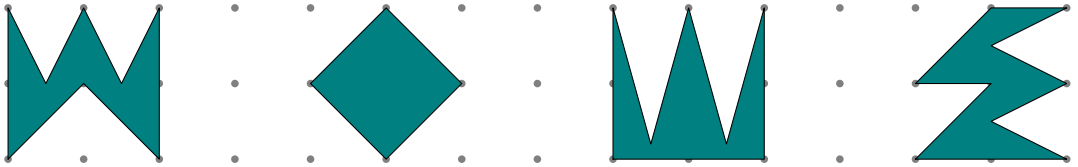
(**A**) a hat and five skirts 一顶礼帽和五条半身裙
(**B**) a hat, three skirts and a cap 一顶礼帽、三条半身裙和一顶鸭舌帽
(**C**) eight skirts and six t-shirts 八条半身裙和六件 T 恤
(**D**) thirty-seven caps 三十七顶鸭舌帽
(**E**) three skirts and three caps 三条半身裙和三顶鸭舌帽

28. Sonia and Robert are playing a game. They can alternately take 1, 2, 3, 4 or 5 tiles from a pile of tiles. Whoever takes the last tile or tiles loses. At one point of the game, there are 10 tiles left in the pile and it is Sonia's turn to take some tiles. How many tiles should Sonia leave to Robert to be sure that she will win?

Sonia 和 Robert 正在玩游戏。他们可以轮流从一堆棋子中拿走 1、2、3、4 或 5 枚棋子，谁拿走最后一枚或多枚棋子，谁就输掉比赛。在比赛的某一节点上，棋堆里还剩 10 枚棋子，此时轮到 Sonia 拿走棋子。Sonia 要想确保自己获胜，应该给 Robert 留下多少枚棋子？

(**A**) 9 (**B**) 8 (**C**) 7 (**D**) 6 (**E**) 5

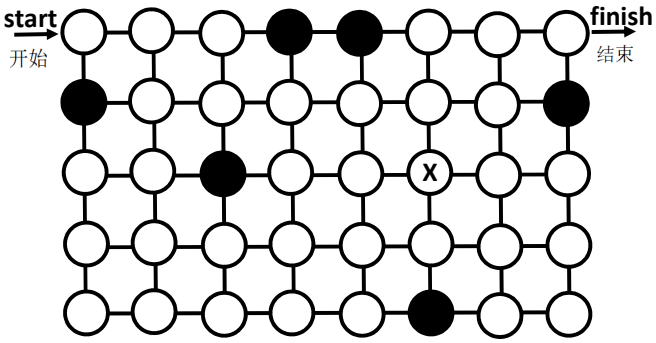
29. Which of the following four shapes has the greatest area?
以下四个形状中，哪个面积最大？



W W形 diamond 菱形 the crown 皇冠形 lightning 闪电形

(**A**) W W 形 (**B**) diamond 菱形 (**C**) the crown 皇冠形 (**D**) lightning 闪电形
(**E**) they all have the same area 四个形状的面积都相同

30. An explorer wants to find a path through the maze shown from the point marked 'start' to the point marked 'finish'. She can only move horizontally or vertically and she can only pass through white circles. She also has to pass through all the white circles exactly once. When she reaches the circle marked X, what will her next move be?



一名探险家想找到一条路径，从标记“开始”的点出发，穿过迷宫，到达标记“结束”的点。她只能水平或垂直移动，只能穿过白色圆圈且必须穿过所有白色圆圈恰好一次。当她到达标有 X 的圆圈时，接下来的移动方向将会是什么？

(**A**) ↑ (**B**) ↓ (**C**) → (**D**) ←
(**E**) there is no such path 不存在这样的路径