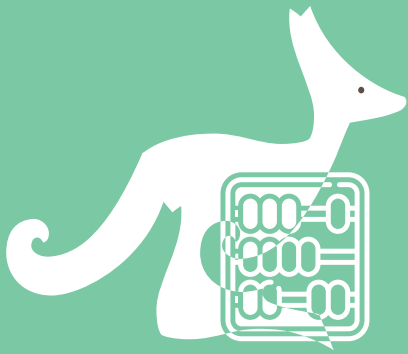




MATH KANGAROO CHINA

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。

DO NOT discuss problems and solutions in any online or public
forum until April 30.

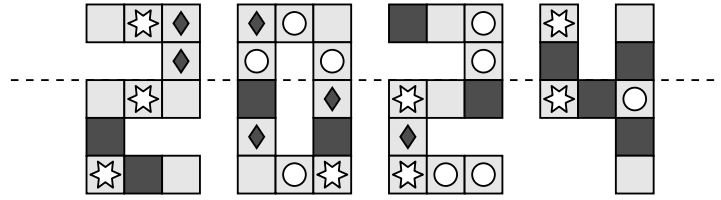
4 月 30 日前请勿以任何形式公开讨论试题和答案。

**Grade 5
&
Grade 6**

3 points

1. Alina folds the image below along the dashed line.

小娜沿虚线将下图对折。



Which of the following squares folds onto an identical one?

请问以下哪个正方形会折叠到一个相同的正方形上?

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

2. The picture shows the first few squares of a hopping game. Every fourth square in the game has the same image in it. Mia is playing the game. In which of the following squares will Mia land only on her right foot?

右图所示为跳格子游戏的前几个方格，游戏中每四个方格中的图案相同。小米正在玩这个游戏。请问小米在以下哪个方格中只能右脚落地?

- (A) the 10th 第 10 个方格 (B) the 15th 第 15 个方格 (C) the 20th 第 20 个方格
(D) the 22nd 第 22 个方格 (E) the 23rd 第 23 个方格



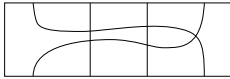
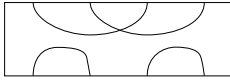
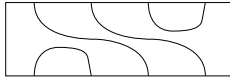
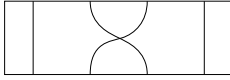
3. Sasha created a secret alphabet. He writes "basil" as  and "red" as . How does he write "bread"?

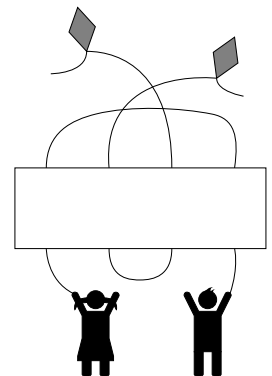
小萨发明了一个加密字母表。他把 "basil" 写成 ，把 "red" 写成 。请问他会如何写 "bread"?

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

4. Which of the strips should be placed in the space in the picture so that each child is connected to a different kite?

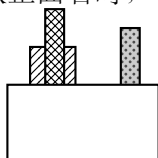
请问图中的空格处应该放上下列哪种风筝线，才可以让每个小朋友放不同的风筝?

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



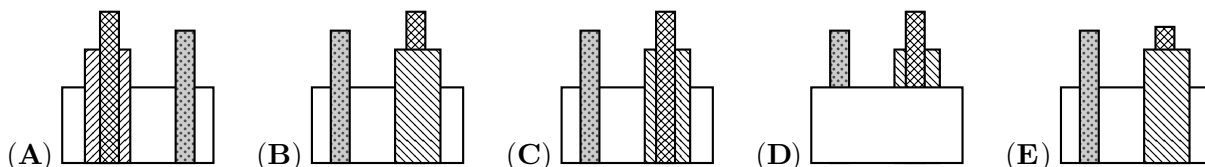
5. Dina has set up her three bricks on the floor behind a wall. When seen from the front, the bricks look like this:

小迪把地上的三块积木放在墙后。当从正面看时，积木是这样的：

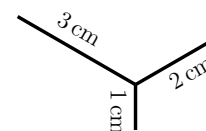


How do the bricks look from the back?

请问从背面看积木是什么样子的？



6. Mona wants to draw the figure shown without lifting up her pencil from the paper. The lengths of the three segments are given. What is the shortest total length she could draw?

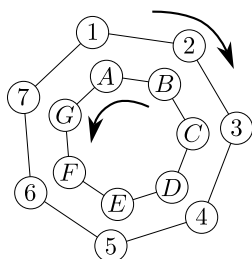


小莫想一笔画出右侧图形，笔不能离开纸面。三条线段的长度已经在图中标出。请问按照小莫的想法，画出这个图形所需的最短长度是多少？

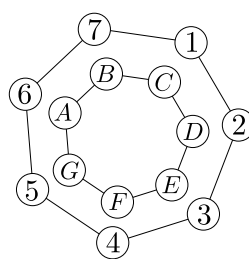
- (A) 6cm (B) 7cm (C) 8cm (D) 9cm (E) 10cm

7. There are 2 wheels each marked with 7 positions. The wheels spin in opposite directions and each makes a complete turn in seven minutes. At the end of each minute, each letter lies exactly in front of a number. The picture shows the first two positions of the wheels and we can see that initially letter A is in front of number 1, letter B is in front of number 2, and so on. The wheels turn until letter C is in front of number 2. Which number is letter F in front of that point?

在两个轮子上分别标出 7 个位置。两个轮子朝相反的方向旋转，并且每个轮子都能在 7 分钟内转完一整圈。每分钟结束时，每个字母都恰好转到一个数字前面。下图显示了两个轮子第 0 分钟和第 1 分钟的状态，可以看到在第 0 分钟时字母 A 位于数字 1 前面，字母 B 位于数字 2 前面，以此类推。直到字母 C 转到数字 2 前面时，轮子停止旋转。请问此时字母 F 在哪个数字前面？



0 min 0分钟

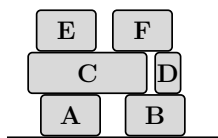


1 min 1分钟

- (A) 1 (B) 4 (C) 5 (D) 6 (E) 7

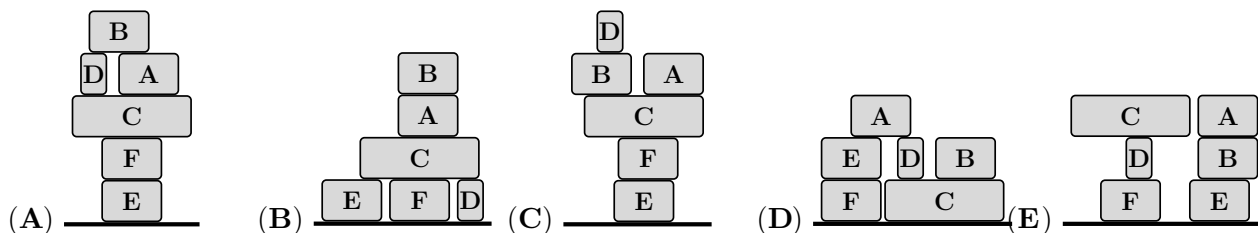
8. There are six boxes on a truck as shown.

如图所示，一辆卡车上有一个箱子。



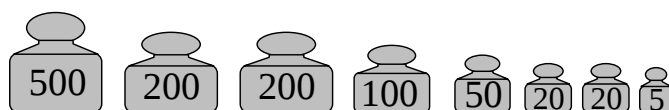
A worker puts them on the floor. He takes one box at a time, provided that box does not have another box on top of it. He places his box on the ground or on top of another box. Which of the following stacks could he not build?

一名工人想将它们堆放在地上。他每次拿起一个箱子，前提是这个箱子上面没有其它箱子，然后他可以把箱子放在地面上或堆放在另一个箱子上面。请问这名工人不能堆出下列哪个选项？



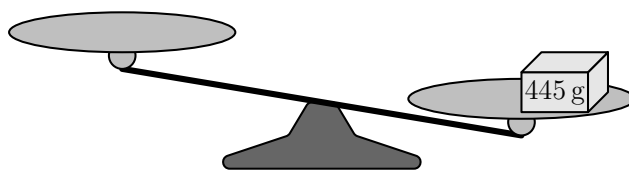
9. Pieter has a package of 445 g and the following eight weights:

小皮有一个重 445 g 的包裹，以及以下八个砝码：



He put the package on the scale, as shown. What is the minimum number of weights he needs to balance the scale?

如图所示，他把包裹放在天平一侧。请问他至少需要放上几个砝码才能使天平平衡？



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

10. The rooms in the hotel are numbered in ascending order, starting from 1. No number is omitted. Kangaroo counted the digits in the rooms and found digit 2 14 times and digit 5 3 times. What is the largest number of rooms there can be in the hotel?

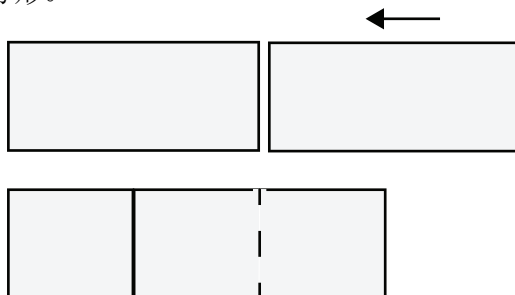
酒店的房间从 1 开始按升序进行编号，并且中间不跳过任何数字。袋鼠数了数所有房间号上的数位，发现数字 2 出现了 14 次，数字 5 出现了 3 次。请问酒店最多有几个房间？

- (A) 25 (B) 26 (C) 34 (D) 35 (E) 41

4 points

11. Two identical rectangles, each with an area of 18, overlap to form a new rectangle, as shown. The new rectangle can be divided into three identical squares.

两个面积均为 18 的相同长方形，部分重叠后形成了一个新的长方形，如图所示。这个新的长方形可以被分为 3 个相同的正方形。



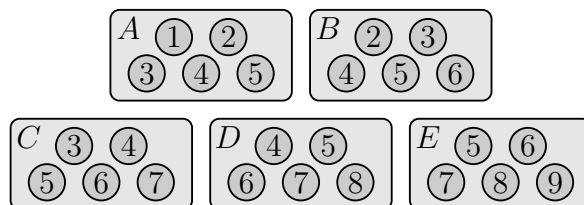
What is the area of the new rectangle?

请问这个新长方形的面积是多少？

- (A) 24 (B) 27 (C) 30 (D) 32 (E) 36

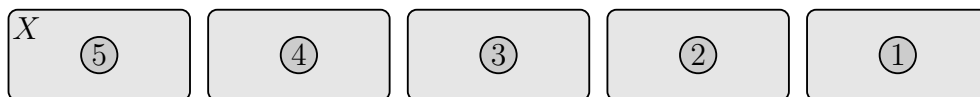
12. A student had five boxes of chocolates labelled A , B , C , D and E . The chocolates in the boxes have been given numbers according to their flavour, as shown.

如图所示，一名学生有五盒分别贴有 A 、 B 、 C 、 D 、 E 标签的巧克力。盒子中的巧克力按口味进行了编号。



He ate most of the chocolates. The picture below shows what was left. What was the label of the box marked X ?

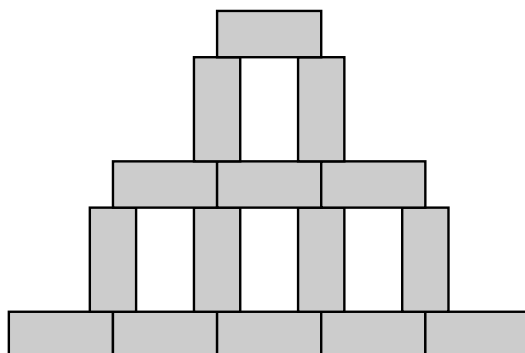
这名学生吃掉了大部分巧克力。下图所示盒子中剩余的巧克力。请问标有 X 的盒子对应的是哪个标签？



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

13. Rosa draws several identical rectangles to make the following picture. The width and the height of the picture are 45 cm and 30 cm respectively. What is the area of one rectangle?

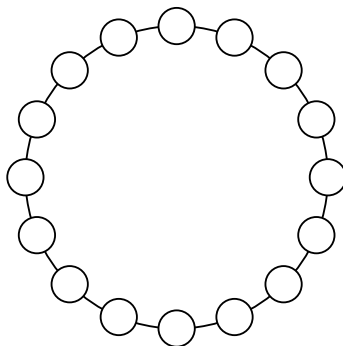
小萝用一些相同的长方形拼出下方图形。图形宽 45 cm，高 30 cm。请问其中一个长方形的面积是多少？



- (A) 24 cm^2 (B) 27 cm^2 (C) 30 cm^2 (D) 33 cm^2 (E) 36 cm^2

14. Each of the 16 circles shown contains a number. Numbers in neighbouring circles differ by 1. One of the circles contains the number 5 and another one contains 13. How many different numbers are written in the 16 circles?

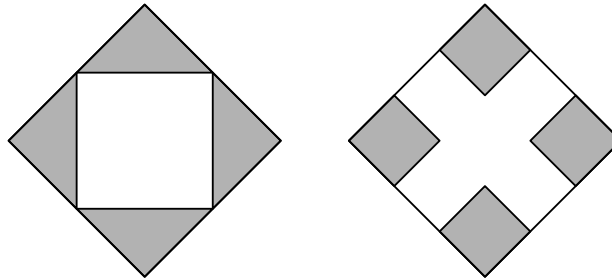
下图中有 16 个小圆圈，每个小圆圈中都包含一个数字。相邻小圆圈中的数字相差 1。其中一个小圆圈中的数字是 5，另一个小圆圈中的数字是 13。请问 16 个小圆圈中有多少个不同的数字？



- (A) 9 (B) 10 (C) 13 (D) 14 (E) 16

15. The diagram shows two large squares with the same area. Part of each square is shaded, as shown. In the first square, the midpoints of adjacent sides are joined. In the second square, four smaller squares all with side-lengths equal to a third of the side-length of the large square are shaded. The area shaded in the first square is 9. What is the area shaded in the second square?

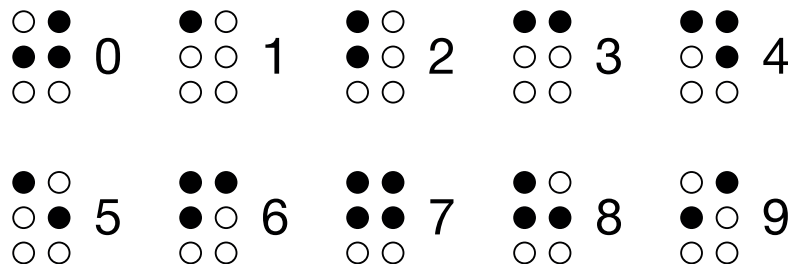
如图所示，有两个面积相同的大正方形，每个正方形都有阴影区域。在第一个大正方形中，相邻边的中点相连；在第二个大正方形中，四个阴影小正方形的边长都等于大正方形边长的三分之一。第一个大正方形的阴影面积是 9，请问第二个大正方形的阴影面积是多少？



- (A) 4 (B) 8 (C) 9 (D) 10 (E) 12

16. The Braille system for blind people, when written down, has the digits 0 to 9 represented by a set of black or white dots, as shown.

写布莱叶盲文时，会用一组黑点或白点来表示数字 0 到 9，如下图所示。



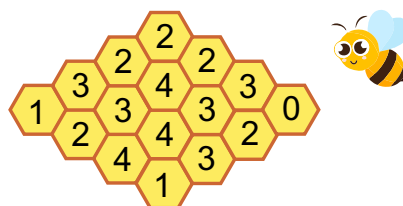
How many different two-digit numbers contain exactly five black dots?

请问有多少个不同的两位数恰好包含五个黑点？

- (A) 16 (B) 18 (C) 30 (D) 32 (E) 34

17. The figure below shows a beehive with 16 cells. Some of the cells contain honey. The number in each cell indicates how many of its neighbouring cells contain honey. Two cells are neighbours if they share a common edge. How many cells in the beehive contain honey?

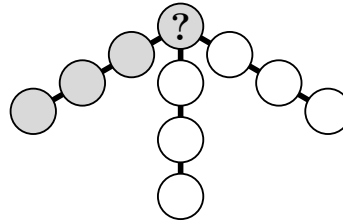
下图是一个由 16 个巢穴组成的蜂巢。其中一些巢穴中含有蜂蜜。每个巢穴上的数字表示相邻巢穴中含有蜂蜜的巢穴数量。相邻巢穴是指共用一条边的巢穴。请问这个蜂巢中有多少个巢穴含有蜂蜜？



- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11

18. Annie wants to place the numbers 1 to 10 in the circles in the diagram with one number in each circle. She wants the sum of the numbers in any four circles that are in a straight line, for example the four grey ones, to be 23. What number must she place in the circle containing the question mark?

小安想将数字 1 到 10 放入图中的圆圈，每个圆圈中放一个数字。她希望任意四个在一条直线上的圆圈（比如图中四个灰色圆圈）中的数字之和为 23。请问她必须在有问号的圆圈中放入下列哪个数字？



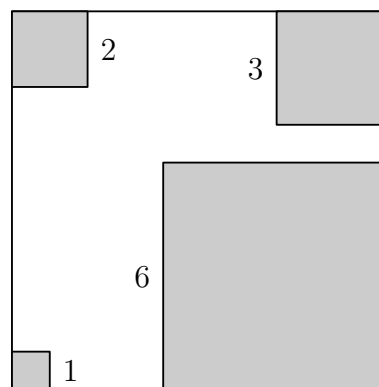
- (A) 4 (B) 5 (C) 6 (D) 7 (E) 8

19. Christian has cut four small squares from the corners of the larger square, so that the remaining area is half of the area of the original square. The side-lengths of the small squares are shown in the diagram.

What is the perimeter of the remaining shape?

小可从大正方形的角上剪掉四个小正方形，使得剩余部分的面积是原正方形面积的一半。四个小正方形的边长如图所示。

请问剩余图形的周长是多少？



- (A) 36 (B) 40 (C) 44 (D) 48 (E) 52

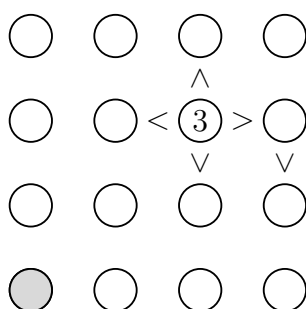
20. Ria wants to complete the puzzle shown so that each row and each column contain the numbers 1, 2, 3 and 4 exactly once. She wants to place the numbers so that the greater than and less symbols ($>$ and $<$) give a correct relationship between the two values either side of them. The symbols work in all directions, as shown in the example:

小丽想要完成如图所示的填数游戏, 使得数字 1、2、3、4 在每一行和每一列中都恰好出现一次。她希望在摆放这些数字时, 能用大于符号和小于符号 ($>$ 和 $<$) 正确地表示出符号两边数字之间的关系。这些符号在所有方向上都适用, 示例如下:

$$\begin{array}{ccc} \textcircled{1} & < & \textcircled{2} \\ \wedge & & \vee \\ \textcircled{2} & > & \textcircled{1} \end{array}$$

What number should she place in the gray circle?

请问她应该把下列哪个数字放入灰色圆圈里?



- (A) 1 (B) 2 (C) 3 (D) 4 (E) 2 or 3 2 或 3

5 points

21. There are three identical special dice on the table. What is the sum of the numbers on the faces that touch the table?

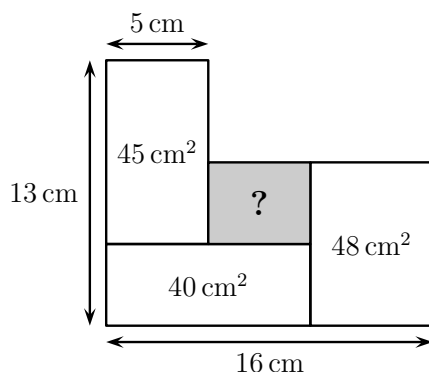
桌上有三枚完全相同的特殊骰子。请问这 3 枚骰子与桌子接触的面上的点数之和是多少?



- (A) 26 (B) 40 (C) 43 (D) 47 (E) 56

22. The diagram shows four touching rectangles. What is the area of the shaded rectangle?

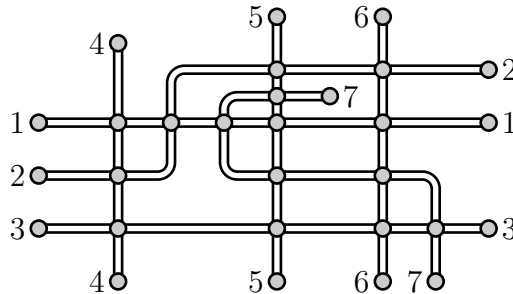
图中有四个相连的长方形。请问阴影长方形的面积是多少?



- (A) 12 cm^2 (B) 14 cm^2 (C) 16 cm^2 (D) 18 cm^2 (E) 20 cm^2

23. The figure shows the plan of the seven train routes of a small town. The circles indicate the stations. Martin wants to paint the lines in such a way that if two lines share a common station, then they are painted with different colours. What is the smallest number of colours that he can use?

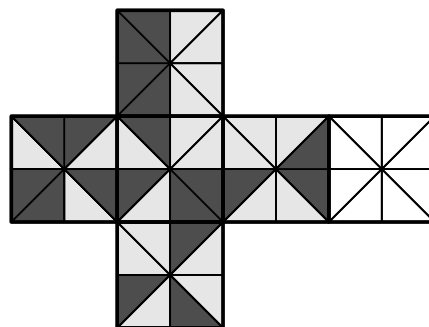
下方是一个小镇七条火车线路的规划图，圆圈表示车站。小马想给这些线路涂色，如果两条线路共用一个车站，就把这两条线路涂上不同的颜色。请问小马最少要用到几种颜色？



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

24. Dimitri wants to fold the net shown to make a cube. He wants the triangles that touch the edges of neighbouring faces of the cube to be shaded the same. How should he shade the triangles of the unshaded square in the net?

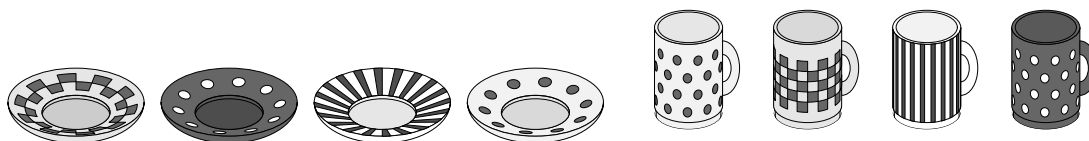
小迪想把下方展开图折叠成一个立方体，他希望立方体相邻面上共用一条边的三角形涂有相同的阴影。请问在不含阴影的正方形中，他应该如何给其中三角形涂上阴影？



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

25. Simon takes four cups out of the cupboard and puts them randomly on the four saucers. Which statement is correct?

小西从橱柜里拿出四个茶杯，随机放在四个茶碟上。请问以下哪个说法是正确的？



(A) It is certain that none of the 4 cups stands on its matching saucer.

4 个茶杯一定都没有放在与自己花纹相同的茶碟上。

(B) It is certain that exactly 1 cup stands on its matching saucer.

一定恰好有 1 个茶杯放在了与自己花纹相同的茶碟上。

(C) It is impossible for exactly 2 cups to stand on its matching saucer.

不可能恰好有 2 个茶杯放在了与自己花纹相同的茶碟上。

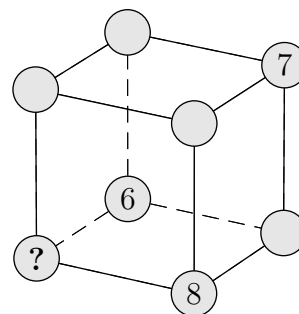
(D) It is impossible for exactly 3 cups to stand on its matching saucer.

不可能恰好有 3 个茶杯放在了与自己花纹相同的茶碟上。

(E) It is impossible for all 4 cups to stand on its matching saucer.

4 个茶杯不可能都放在了与自己花纹相同的茶碟上。

26. A cube with the filled in numbers is given. Mary wants to write the numbers 1 to 8 on the vertices of the cube. She wants the sum of the numbers of the vertices around each face to be the same. She has already written the numbers 6, 7 and 8, as shown. What number should she write on the vertex marked with the questionmark?



给定一个填有数字的立方体。小玛想在立方体的每个顶点处分别写下数字 1 到 8，使得每个面上所有顶点的数字之和相同。如图所示，她已经写下了数字 6、7、8。请问她应该在标有问号的顶点处写下什么数字？

(A) 1

(B) 2

(C) 3

(D) 4

(E) 5

27. A grandmother has some candies. She decides to divide them up amongst her grandchildren so that each has a bag containing same number of candies. She puts the largest possible number of candies in each bag and, when she is done, she sees that there are 20 candies in each bag and 12 candies are left over. What is the smallest possible number of candies she could have?

祖母有一些糖果。她决定把糖果分给她的孙子们，让每个孙子都可以有一个装有相同数量糖果的袋子。她在每个袋子里放了尽可能多的糖果，当她放完后，发现每个袋子里有 20 颗糖果，并且还剩下 12 颗糖果没分完。请问祖母原来至少有多少颗糖果？

(A) 52

(B) 232

(C) 272

(D) 411

(E) 432

28. Dan plans to cut a rope into 12 equal pieces and marks points where he needs to cut. Muhammad plans to cut the same rope into 16 equal pieces and marks points where he needs to cut. Then Maya cuts the rope at all the marked points. How many pieces does Maya get?

小丹计划把一根绳剪成 12 等份，并在需要剪断的位置做上标记。小木计划把这根绳剪成 16 等份，也在需要剪断的位置做上标记。然后小玛从所有标记处剪断绳子。请问小玛得到了几段绳子？

- (A) 24 (B) 25 (C) 27 (D) 28 (E) 29

29. Emma is playing with the seven caterpillar puzzle pieces shown.

小玛正在玩如图所示的七片毛毛虫拼图。



She wants to build a caterpillar that has one head, one tail and either one, two or three puzzle pieces in between. How many different caterpillars could Emma build?

她想拼接出一条有头有尾的毛毛虫，头尾中间可能会有一、二或三片拼图。请问小艾可以拼接出几条不同的毛毛虫？

- (A) 10 (B) 14 (C) 16 (D) 18 (E) 20

30. Ava writes a three-digit number on the whiteboard. Then Brandon writes a fourth digit to the right of the previous ones. He says "Look! The number increased by 2024". What digit did Brandon write?

小艾在白板上写下一个三位数，然后小布在这个数的右边写下了第四位数字。他说：“看！现在这个数增加了 2024”。请问小布写下的这个数字是几？

- (A) 2 (B) 3 (C) 4 (D) 8 (E) 9