AUSTRALIAN MATHEMATICS TRUST

AUSTRALIAN MATHEMATICS COMPETITION
AN ACTIVITY OF THE AUSTRALIAN MATHEMATICS TRUST

NAME

YEAR   TEACHER

2018
CHINESE VERSION
MIDDLE PRIMARY DIVISION
AUSTRALIAN SCHOOL YEARS 3 and 4

TIME ALLOWED: 60 MINUTES

INSTRUCTIONS AND INFORMATION

GENERAL

1. Do not open the booklet until told to do so by your teacher.

2. You may use any teaching aids normally available in your classroom, such as MAB blocks, counters, currency, calculators, play money etc. You are allowed to work on scrap paper and teachers may explain the meaning of words in the paper. Mobile phones are not permitted.

3. Diagrams are NOT drawn to scale. They are intended only as aids.

4. There are 25 multiple-choice questions, each requiring a single answer, and 5 questions that require a whole number answer between 0 and 999. The questions generally get harder as you work through the paper. There is no penalty for an incorrect response.

5. This is a competition not a test; do not expect to answer all questions. You are only competing against your own year in your own country/Australian state so different years doing the same paper are not compared.

6. Read the instructions on the answer sheet carefully. Ensure your name, school name and school year are entered. It is your responsibility to correctly code your answer sheet.

7. When your teacher gives the signal, begin working on the problems.

THE ANSWER SHEET

1. Use only lead pencil.

2. Record your answers on the reverse of the answer sheet (not on the question paper) by FULLY colouring the circle matching your answer.

3. Your answer sheet will be scanned. The optical scanner will attempt to read all markings even if they are in the wrong places, so please be careful not to doodle or write anything extra on the answer sheet. If you want to change an answer or remove any marks, use a plastic eraser and be sure to remove all marks and smudges.

INTEGRITY OF THE COMPETITION

The AMT reserves the right to re-examine students before deciding whether to grant official status to their score.

1. 请问将 4 加倍等于多少?

What is double 4?

(A) 2　　　　　(B) 3　　　　　(C) 8　　　　　(D) 12　　　　　(E) 24

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2. 请问下列哪一项的图案内恰有 10 个点?

Which pattern has exactly 10 dots?

(A) 　　(B) 　　(C) 　　(D) 　　(E)

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3. 请问下列哪一项跟 6 个十与 3 个一相等

(A) 六十三　　　　　　　　(B) 六加三　　　　　　　　(C) 三十六

　　　　　(D) 六百零三　　　　　　　　(E) 六十一

Which of the following is the same as 6 tens and 3 ones?

(A) sixty-three　　　　　　(B) six and three　　　　　　(C) thirty-six

　　　　(D) six hundred and three　　　　　　(E) sixty-one

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4. 当我将 11 加上另一个数，所得到的和为 19。请问此另一个数是什么?
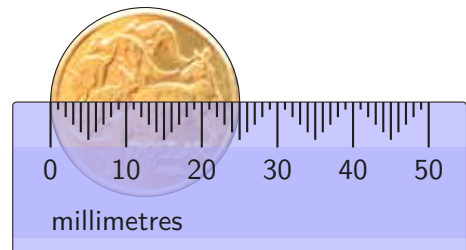
When I add 11 and another number, I get 19. What is the other number?

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

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5. 请问这枚硬币的直径是什么?

What is the diameter of this coin?

(A) 20 mm　　　(B) 21 mm　　　(C) 22 mm
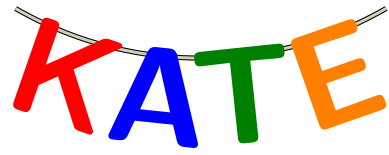
　　　(D) 25 mm　　　(E) 30 mm

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6. 请问下列哪一项内的数最接近 208?

Which one of these numbers is closest to 208?

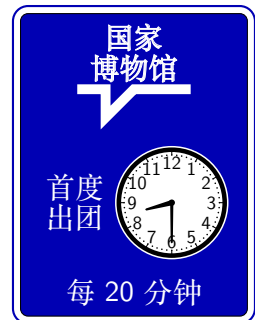(A) 190　　　　　(B) 200　　　　　(C) 205　　　　　(D) 210　　　　　(E) 218

7. 小凯用字母串珠做出右侧这个项链。
她将它翻面过来，展现出串珠的背面。请问下列哪一项内的图是现在看起来的样子？

Kate made this necklace from alphabet beads.
She put it on the wrong way around, showing the back of the beads. What does this look like?

(A)

(B)

(C)

(D)

(E)

8. 每一天，国会大厦与国家博物馆的旅游都从上午 8：30 开始。
国会大厦的旅游团每间隔 15 分钟出发一团、国家博物馆的旅游团每间隔 20 分钟出发一团。
请问每间隔多久二团会同时出发？

(A) 每 5 分钟 　　　　(B) 每 15 分钟 　　　　(C) 每 30 分钟

(D) 每 45 分钟 　　　　(E) 每 60 分钟

Each day, tours of Parliament House and the National Museum begin at 8.30 am. The tours for Parliament House leave every 15 minutes and the tours for the National Museum leave every 20 minutes.

How often do the tours leave at the same time?
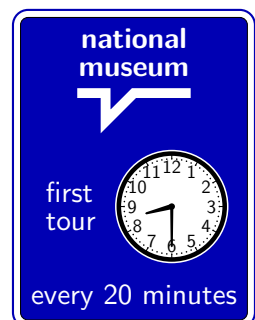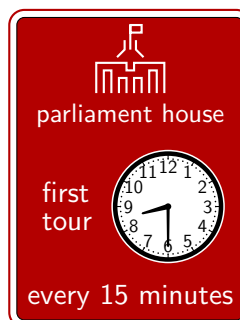
(A) every 5 minutes 　　　　(B) every 15 minutes 　　　　(C) every 30 minutes

(D) every 45 minutes 　　　　(E) every 60 minutes

9. 三年级学生投票选最喜爱的宠物。<u>小莎</u>将结果用长条图记录，但忘记画出猫这一栏。
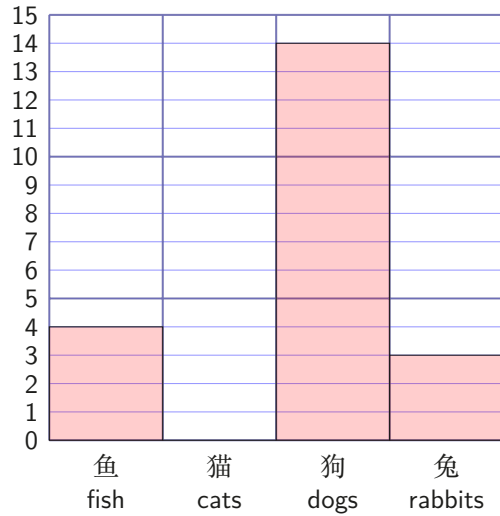
已知这一班有 29 位学生，每人恰投一票。

请问有多少位学生投票给猫？

The children in class 3P voted on their favourite pets. Sally recorded the results in a column graph but forgot to draw in the column for cats.

There are 29 children in the class and everyone voted once.

How many children voted for cats?

(A) 5   (B) 6   (C) 7

     (D) 8   (E) 9

三年级学生：最喜爱的宠物
Class 3P: Favourite Pets

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10. 请问下列哪一项是一整个？

(A) 1 个一半加上 2 个四分之一   (B) 2 个四分之一加上 2 个一半

(C) 3 个四分之一加上 1 个一半   (D) 1 个一半加上 1 个四分之一

(E) 4 个四分之一加上 1 个一半

Which of the following is a whole?

(A) 1 half plus 2 quarters   (B) 2 quarters plus 2 halves

(C) 3 quarters plus 1 half   (D) 1 half plus 1 quarter

(E) 4 quarters plus 1 half

11-20 题，每题 4 分
Questions 11 to 20, 4 marks each

11. <u>张太太</u>将 58 本书放回图书馆的书架上。除了最后一个书架外，她在每一个书架上都放了 12 本书。请问她在最后一个书架上放置几本书？

Mrs Chapman put 58 books back on the library shelves. She put 12 books on each shelf except the last shelf. How many books did she put on the last shelf?

(A) 7   (B) 8   (C) 9   (D) 10   (E) 11
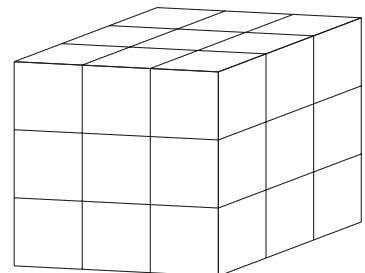
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12. 这一个实心的正立方体是由许多个小的正立方体所构造成的。

请问从这个角度看去有多少个小正立方体不能被看到？
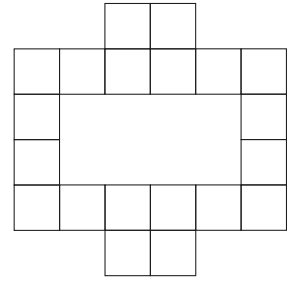
This solid cube is built from small cubes.

How many small cubes cannot be seen from this view?

(A) 6   (B) 8   (C) 9   (D) 10   (E) 11

13. 小雪走进一座电梯。
她向下 5 层楼、向上 6 层楼、再向下 7 层楼，最后停在第 2 层楼。
请问她在哪一层楼走进电梯?
(A) 第 1 层楼　　　(B) 第 2 层楼　　　(C) 第 3 层楼
　　　　(D) 第 6 层楼　　　　(E) 第 8 层楼

Shelley walked into a lift.

She went down 5 floors, up 6 floors, then down 7 floors. She was then on the second floor.

On which level did she enter the lift?

(A) 1st floor　　　　　　(B) 2nd floor　　　　　　(C) 3rd floor

(D) 6th floor　　　　　　(E) 8th floor

14. 六个朋友分别打了一通电话到其它的城市。电话费是依照打电话的时间长短与距离计价。
从右图中，请问哪一个人打电话的时间比小佩长但电话费却较少?

(A) 小熬　　　(B) 小比　　　(C) 小周
　　　(D) 小咪　　　(E) 小杰

Six friends each make a phone call to another city.

The cost of each call depends on the time taken for the call as well as the distance.

From this diagram decide whose phone call lasts longer than Pat's, but costs less.

(A) Al　　　　　(B) Bill　　　　　(C) Jo

(D) Mia　　　　　(E) Zac

15. 用选项内的多方块之一若干片可以构成右侧的图案，多方块可以旋转、翻转，但不可以重迭。请问是哪一个选项？

One of these shapes made of squares has been flipped and turned to make the following pattern, without any overlaps. Which one?

(A)　　　　　(B)　　　　　(C)　　　　　(D)　　　　　(E)
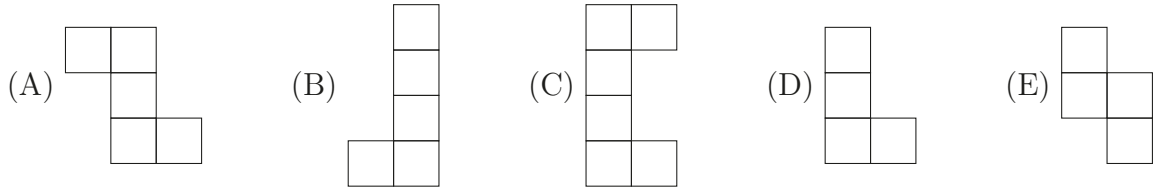
16. KAREN、WARREN 与 ANDREW 三人购买塑料字母以便在他们的生日蛋糕上拼出他们的名字。

他们的生日都在不同的日期，所以他们打算重复使用一些字母在不同的蛋糕上。

请问他们至少共需要多少个塑料字母牌？

Karen, Warren, and Andrew bought plastic letters to spell each of their names on their birthday cakes.

Their birthdays are on different dates, so they planned to reuse letters on different cakes.

What is the smallest number of letters they needed?

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

17. 在小姗的生日派对上，共有四块比萨饼均分给大家，每人可分得 $\frac{2}{3}$ 块比萨饼。请问此派对上总共有多少人？

At Susie's party, they have four pizzas to share and each person gets $\frac{2}{3}$ of a pizza. How many people are at the party?

(A) 4　　　　　(B) 6　　　　　(C) 8　　　　　(D) 12　　　　　(E) 16
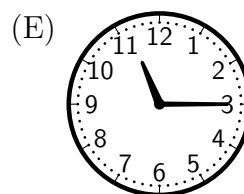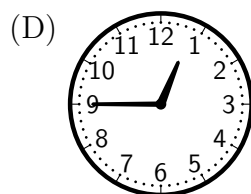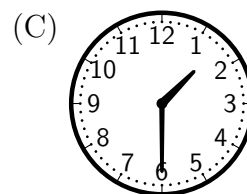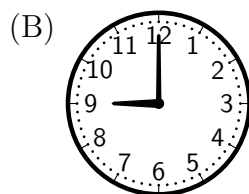
18. 小飞在星期五的课表如图所示，当在上图书馆课时他看着时钟。

请问此时可能是下列哪一项内时钟所指的时刻？

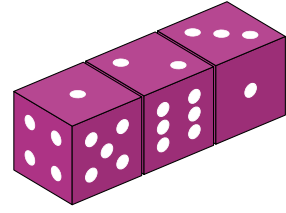| 星期五课表	
9:00 am	英文
10:00 am	数学
11:00 am	休息
11:30 am	图书馆
12:30 pm	集会
1:00 pm	午餐
2:00 pm	体育

Fred looked at the clock during the Library lesson.

Which one of these times could the clock have shown?

Friday timetable	
9.00 am	English
10.00 am	Mathematics
11.00 am	Recess
11.30 am	Library
12.30 pm	Assembly
1.00 pm	Lunch
2.00 pm	Sport

(A)

(B)

(C)

(D)

(E)
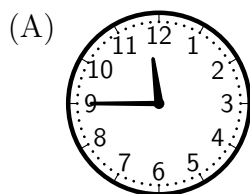
19. 三枚标准骰子一枚接着一枚连在一起，如图所示，可看见其中 7 个面。

请问看不见的 11 个面上总共有多少个点？

Three standard dice are sitting next to each other as shown in the diagram. There are 7 faces visible.

How many dots are hidden on the other 11 sides?

(A) 26   (B) 36   (C) 41   (D) 54   (E) 63

20. 将从 1 到 3 的数填入如图所示的圆圈内。由同一条线相连的两个圆圈内不可以填入相同的数。有许多种填入的方法。请问所填入的八个数之最小可能总和是多少？

The numbers from 1 to 3 are entered into the circles in the grid shown. Two circles joined by a line may not contain the same number.

There are several ways of doing this. What is the smallest possible total of the eight numbers?

(A) 10   (B) 12   (C) 14

         (D) 15   (E) 16
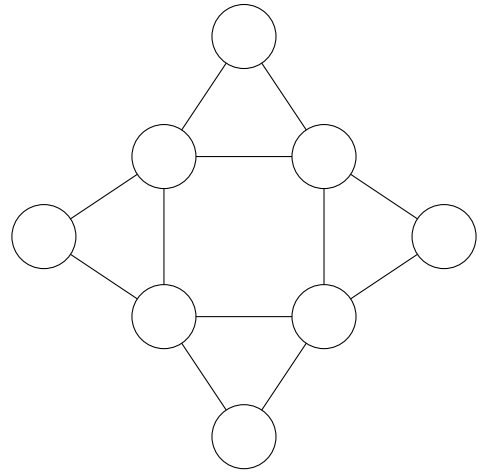
21-25 题，每题 5 分
Questions 21 to 25, 5 marks each

21. 六颗小型鸡蛋与五颗中型鸡蛋的重量相等、六颗中型鸡蛋与四颗大型鸡蛋的重量相等。请问多少颗小型鸡蛋与五颗大型鸡蛋的重量相等？

Six small eggs weigh the same as five medium eggs. Six medium eggs weigh the same as four large eggs. How many small eggs would weigh the same as five large eggs?

(A) 5 (B) 6 (C) 8 (D) 9 (E) 12

22. 一些水果的图片放在这个方格表内，它们代表小于 10 的正整数。
每一列与每一行的总和已经分别列出。
请问一颗苹果 🍎 与一颗橘子 🟠 的总和是多少？

Pictures of fruit have been placed in this grid to represent numbers less than 10.
The totals for each row and column are shown.
What is the total value of an apple 🍎 and an orange 🟠 ?
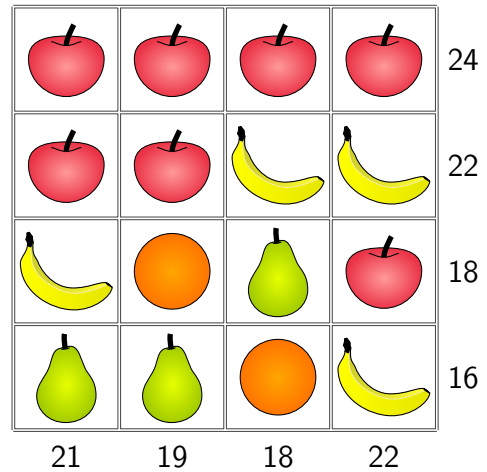
(A) 8 (B) 9 (C) 10 (D) 11 (E) 12

23. 小仁画出二片大正方形使它们重迭并构成一个六边形，如图所示。已知每个小正方形的面积为 1 cm²。请问小仁所画出的这个六边形之总面积为多少 cm²？

Warren drew two large squares that overlap to form the hexagon shown. The area of each small square is 1 square centimetre.

In square centimetres, what is the total area of the hexagon that Warren drew?

(A) 12 (B) 36 (C) 48 (D) 60 (E) 72

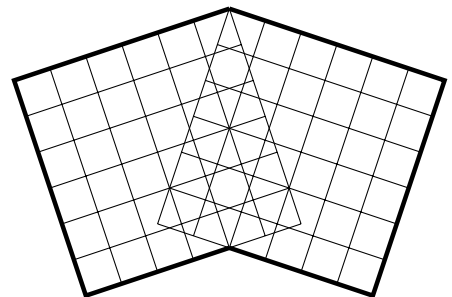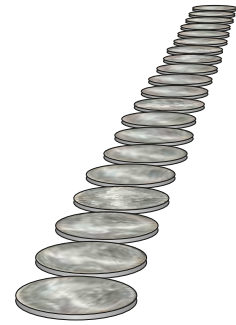**24.** 初始时 20 枚硬币排列成一行，A 先取走第一枚硬币，接着再将之后的每第四枚硬币取走。
接着从剩余的硬币中，B 取走第一枚硬币，接着再将之后的每第三枚硬币取走。
接着从剩余的硬币中，C 取走第一枚硬币，接着再将之后的每第二枚硬币取走。
最后 D 取走所有剩下的硬币。
请问是否有谁比其它人取走的硬币都来得多?

(A) 是的，A 取得最多   (B) 是的，B 取得最多   (C) 是的，C 取得最多

(D) 是的，D 取得最多   (E) 没有，他们取得硬币的数量一样多

Beginning with a row of 20 coins, Anh takes the first coin, then every fourth coin after that.

From the remaining coins, Brenda takes the first coin and every third coin after that.

From the remaining coins, Chen takes the first coin and every second coin after that.

Dimitris takes all the remaining coins.

Does anyone get more coins than all the others?

(A) Yes, Anh does   (B) Yes, Brenda does   (C) Yes, Chen does

(D) Yes, Dimitris does   (E) No, they all get the same number of coins

25. 小亚有一张 20 cm × 20 cm 单面有颜色的色纸。她沿着每个边向内折迭一条相等宽度的纸条构造一个白色正方形，其内部有一个 8 cm × 8 cm 的有色正方形。请问每个折痕与原正方形的边之距离是多少?
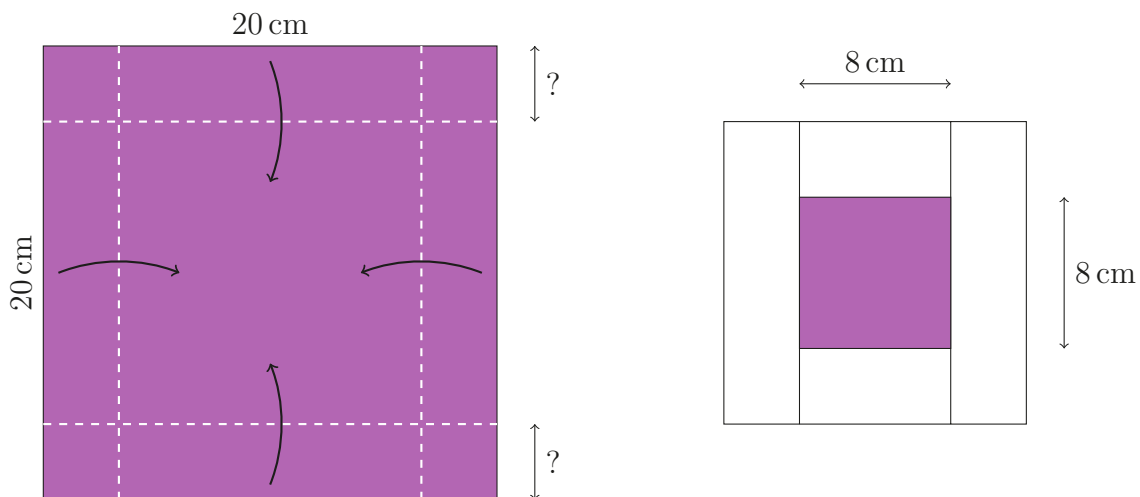
Yasmin has a 20 cm × 20 cm square of paper that is coloured on one side. She folds over a strip along each edge to make a white square with an 8 cm × 8 cm coloured square inside. How far from each edge is each fold?

(A) 8 cm   (B) 6 cm   (C) 4 cm   (D) 3 cm   (E) 1 cm

26. 四位射箭选手有一些练习靶及各有两支箭。
甲选手射中 A 与 C 区域共得到 15 分；乙选手射中 A 与 B 区域共得到 18 分；丙选手射中 B 与 C 区域共得到 13 分。若丁选手两箭都射中 B 区域，请问他可得多少分？
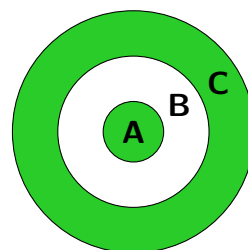
Four archers are having some target practice, each with two arrows.

Ari hits regions A and C for a total of 15. Billy hits regions A and B for a total of 18. Charlie hits regions B and C for a total of 13.

If Davy hits region B twice, what will his score be?

27. 老师请学生猜她心里想的一个三位数。她给以下的提示：

- 这个数同时可被 3 与 11 整除。
- 这个数减 1 同时可被 2 与 7 整除。

请问这个数是什么？

A teacher wants her students to guess the three-digit number that she is thinking. She gives these clues:

- It is divisible by both 3 and 11.
- If you subtract one, the result is divisible by both 2 and 7.

Which number is it?

28. 这些台阶是由一些小正立方体堆积而成的。
每个台阶都比前一个多一个小正立方体宽、一个小正立方体长、一个小正立方体高。
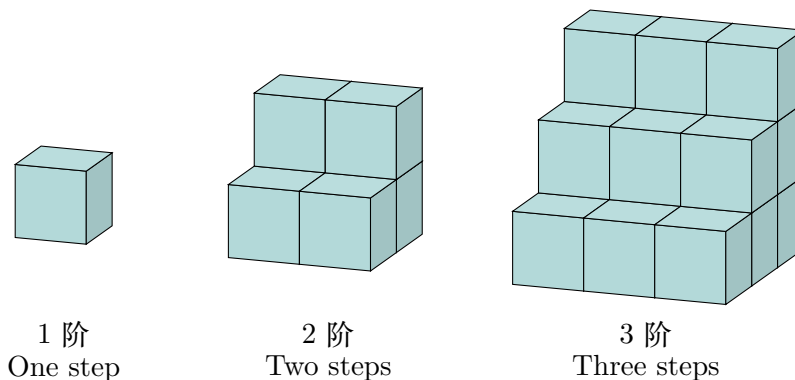请问要建造一个十二阶的台阶共需要多少个小正立方体？

1 阶	2 阶	3 阶
One step	Two steps	Three steps

These staircases are made from layers of blocks.

Each staircase is one block wider, one block longer and one block taller than the previous staircase.

How many blocks are needed to build the 12-step staircase?

29. 在下列的算式中，字母 a、b、c 分别代表 0 到 9 的不同数码。
请问三位数 $\overline{abc}$ 是什么？

In the algorithm below, the letters a, b and c represent different digits from 0 to 9.
What is the three-digit number abc?

$$
\begin{array}{rcccc}
 & & & & a \\
 & & & a & b \\
 & & a & b & c \\
+ & 1 & 0 & 0 & 0 \\
\hline
 & 2 & 0 & 1 & 8 \\
\end{array}
$$

30. 我将正整数接续写在一起：

$$12345678910111213141516 17\ldots$$

请问当我写出第 100 个零时，我所写的这个数是什么？

I wrote the counting numbers joined together:

$$12345678910111213141516 17\ldots$$

Which of the counting numbers was I writing when the 100th zero was written?

Answer Key

QUES	MP	UP	J	I	S
1	C	D	C	D	D
2	E	E	E	E	C
3	A	D	B	D	D
4	B	A	A	D	B
5	D	E	E	E	A
6	D	D	E	B	A
7	A	D	E	C	C
8	E	C	C	B	C
9	D	B	E	A	E
10	A	B	C	B	A
11	D	C	C	C	D
12	B	A	B	A	E
13	E	A	C	D	E
14	B	C	B	E	E
15	A	E	B	A	C
16	C	C	D	E	B
17	B	C	B	E	B
18	A	B	D	C	A
19	C	B	A	E	D
20	C	A	A	A	C
21	D	A	D	A	C
22	B	E	D	D	A
23	D	E	A	C	C
24	E	D	C	D	B
25	D	D	D	B	E
26	16	918	321	156	90
27	561	321	156	40	97
28	936	509	40	435	90
29	918	252	529	505	118
30	509	693	90	118	101