

2024

AUSTRALIAN MATHEMATICS COMPETITION

AMC.

AMT.
AUSTRALIAN
MATHS TRUST

Level A
Middle Primary
Years 3-4

Information 考试信息

- There are 30 questions: 25 multiple-choice and 5 integer.
本次考试共 30 题，包含 25 道选择题和 5 道答案为整数的填空题。
- You are allowed 60 minutes to do the questions. There is no extra reading time.
考试时长为 60 分钟，无额外读题时间。
- There are no penalties for incorrect answers. You should attempt all questions.
答错不扣分，鼓励学生尝试解答所有问题。
- The questions have been checked thoroughly. Each question is clearly written and no further explanation will be given.
本场考试的所有问题已仔细核查。题目陈述清晰，不提供更多解释。
- Diagrams are not drawn to scale. They are intended only as aids.
图形未按比例绘制，仅供参考。

Competition rules 考试规则

- You must maintain silence at all times.
考试过程中请保持安静。
- Do not open the paper until told to do so.
收到监考老师指示前，请勿打开试卷。
- Mobile phones and smart watches are not allowed. If you have one you must give it to a supervisor, who will store it in a safe place.
禁止使用手机和智能手表。如有携带这些设备，请立刻交与监考老师保管。
- You may use printed language dictionaries.
允许使用纸质语言词典。
- You may use calculators.
允许使用计算器。
- You may not borrow equipment without a supervisor's permission.
未经监考老师许可，禁止向他人借用工具。
- You must not leave your seat during the competition. You must remain seated until the competition finishes.
考试期间禁止离开座位，直到考试结束。
- If you wish to leave the room, a supervisor must accompany you. Raise your hand and wait for a supervisor to come to you.
如需离开考场，必须举手示意并等待监考老师陪同。
- If you have any other questions or problems, raise your hand and wait for a supervisor.
如果有其他问题，请举手示意监考老师。

No student may sit the competition more than once or sit more than one division of the competition. AMT conducts integrity checks on competition results and reserves the right to withhold results or disqualify students if plagiarism or duplicate sittings are suspected.

DATE

28 Sept.

TIME ALLOWED

60 minutes

IMPORTANT

All papers must be immediately returned to a supervisor at the end of the competition.
考试结束后，由监考老师回收所有试卷。

This paper is not for circulation or distribution until Monday 30 September 2024.
在 2024 年 9 月 30 日星期一之前禁止讨论或传播试卷内容。

Middle Primary Division

Questions 1 to 10, 3 marks each

1-10 题, 每题 3 分

1. What is the value of the digit 7 in the number 57021?
 请问在数字 57021 中, 7 在其数位上代表的数值是多少?
- (A) 7 (B) 70 (C) 700 (D) 7000 (E) 70 000

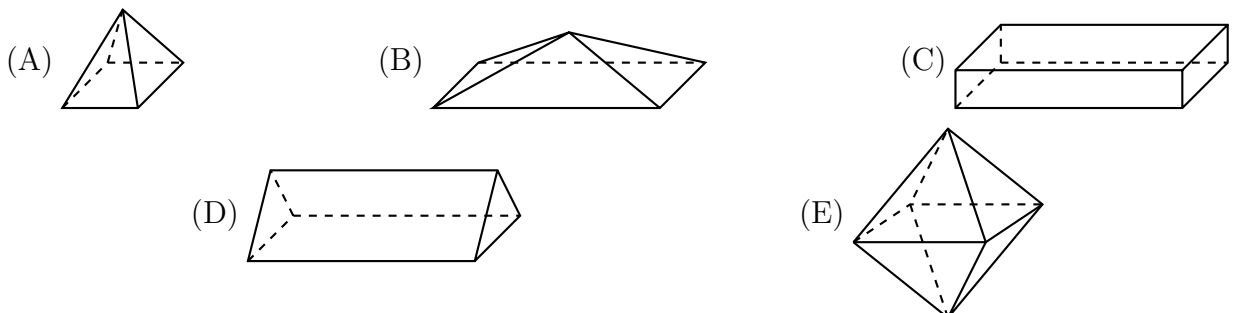
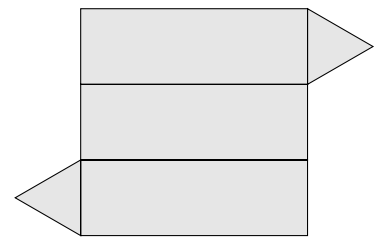
2. Which one of these numbers is closest to 365?
 请问下列哪个数字最接近 365?
- (A) 265 (B) 356 (C) 361 (D) 368 (E) 375

3. Which pattern has exactly 8 dots?
 下列哪个图案恰好包含 8 个点?

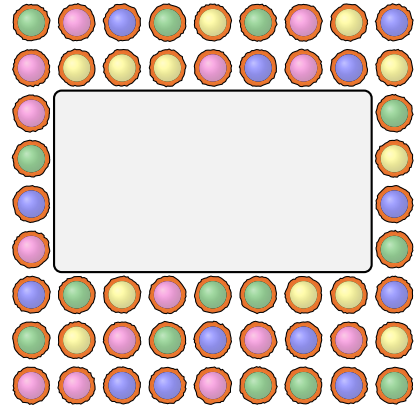


4. Marlie was born in 2016. In which year will she turn 14?
 小玛出生于 2016 年, 请问她将于哪一年迎来她的 14 岁?
- (A) 2026 (B) 2028 (C) 2030 (D) 2032 (E) 2034

5. Karl cuts out this cardboard shape then folds it along the lines to make a box. What does the box look like?
 小可将纸板裁剪为如图所示的形状, 然后沿折线将其折叠成一个盒子。请问这个盒子的外观是什么样的?



6. Sam has arranged some cupcakes in equal rows on her kitchen table. To work out how to pack them for the party, she places a box over a number of them, as shown. How many are covered by the box?



小珊计划将餐桌上的纸杯蛋糕打包带去派对。她将这些蛋糕排列为多行，每行蛋糕数量相等。然后在其中一些蛋糕上方放上一个盒子，如图所示。请问这个盒子盖住了多少个纸杯蛋糕？

- (A) 24 (B) 28 (C) 32 (D) 45 (E) 81

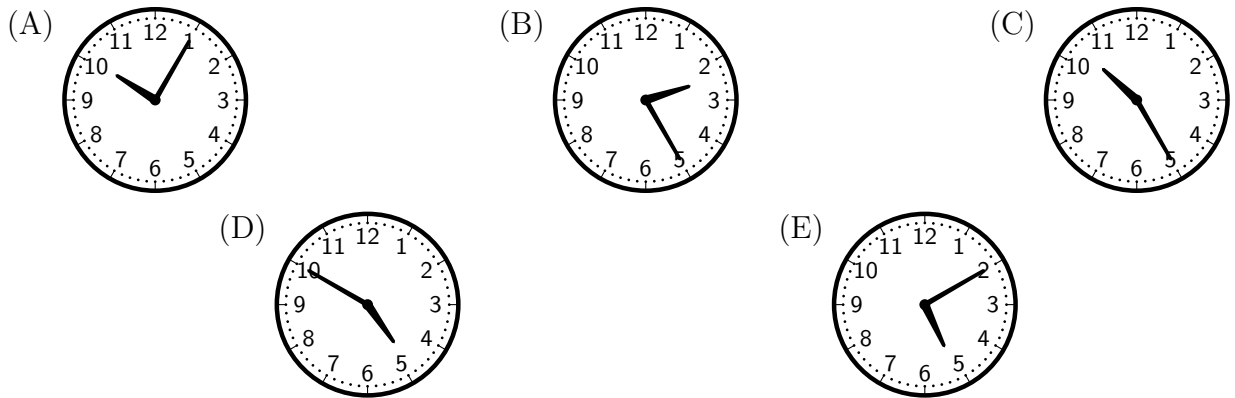
7. In the word MATHS, which letter has the most lines of symmetry?

请问在单词 MATHS 中，哪个字母的对称轴最多？

- (A) A (B) H (C) M (D) S (E) T

8. Which one of these clock faces shows 10 minutes past 5?

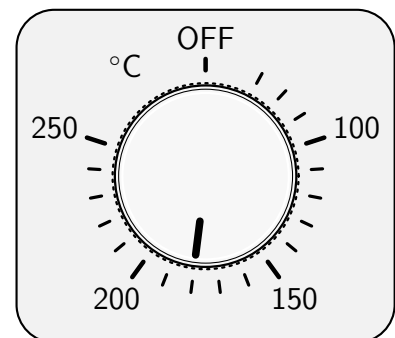
请问下列哪一个钟面显示的是 5 点过 10 分？



9. Evan set the temperature dial on his oven as shown.

What temperature is it set to?

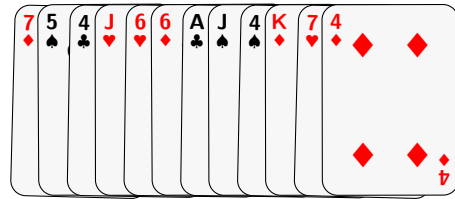
小伊将烤箱温度调到如图所示的位置。请问他设定的温度是多少？



- (A) 155 °C (B) 170 °C (C) 180 °C (D) 220 °C (E) 230 °C

10. If I choose one of these cards at random, which of the following am I least likely to get?
 如果我从这些卡牌中随机抽取一张，请问抽到下列哪一张牌的概率最小？

- (A) A four 一张 4
 (B) A seven 一张 7
 (C) A spade ♠ 一张黑桃 ♠
 (D) A heart ♥ 一张红心 ♥
 (E) A diamond ♦ 一张方块 ♦



Questions 11 to 20, 4 marks each

11-20 题，每题 4 分

11. In this puzzle, every row and every column must contain the numbers 1, 3 and 5, once each. If I solve the puzzle then multiply the numbers in the two shaded boxes, what is the answer?

3		
	5	

在这道谜题中，每一行和每一列都必须包含数字 1、3、5，且每个数字在每行每列只出现一次。解开这道谜题后，请问两个阴影方框内数字的乘积是多少？

- (A) 1 (B) 3 (C) 5 (D) 15 (E) 25

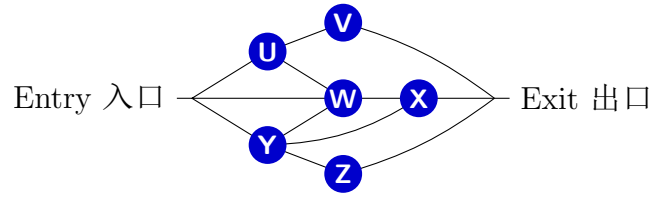
12. Gabe has this birthday chart on his classroom wall. It shows how many people in the class were born in each season. The number for Summer has been rubbed off but Gabe knows that more people were born in Summer than in any other season. What is the smallest possible number of people in the class?

Summer 夏季	
Autumn 秋季	5
Winter 冬季	8
Spring 春季	7

小布的教室墙上贴了一张生日统计表，记录了班级上每个季节的出生人数。虽然夏季的出生人数已被擦去，但小布记得夏季出生的人数比其他任何季节都多。请问小布班级里最少可能有多少人？

- (A) 20 (B) 21 (C) 25 (D) 28 (E) 29

13. Nullah's local park has six fountains and many paths, as this map shows. His run through the park always follows the paths that lead forward and he always passes exactly two fountains. How many

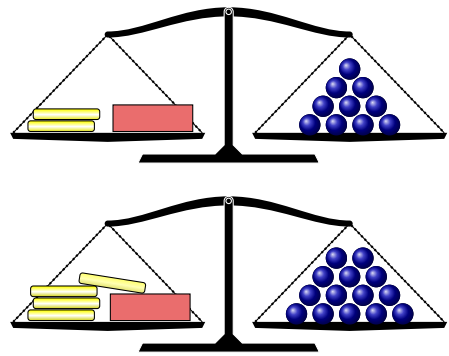


different ways are there for Nullah to pass exactly two fountains in the park?

小纳家当地的公园有六座喷泉和多条小路，如图所示。小纳沿着小路跑步时，总是朝着公园出口的方向，且恰好经过两座喷泉。请问小纳在公园跑步时，有多少条不同的路线可以使他恰好经过两座喷泉？

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

14. Justine has some balls, rods and bricks. Two rods and one brick weigh the same as 10 balls. Four rods and one brick weigh the same as 14 balls. How many balls weigh the same as one brick?

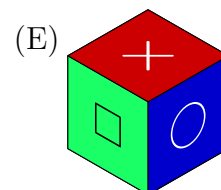
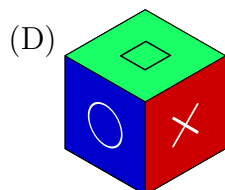
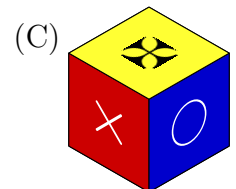
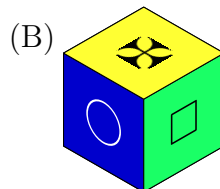
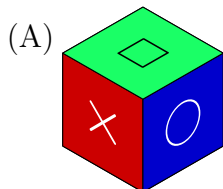
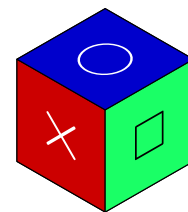


小贾拥有若干球、圆棍和砖块。两根圆棍和一块砖的重量等于 10 个球的重量，四根圆棍和一块砖的重量等于 14 个球的重量。请问多少个球的重量等于一块砖的重量？

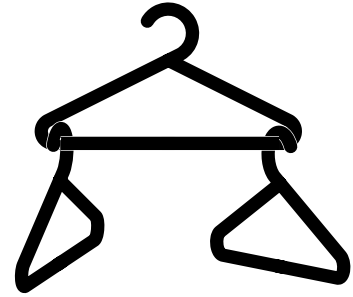
- (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

15. The cube pictured has six different faces. Which of the following is **not** a possible picture of this cube?

如图所示，该立方体拥有六个不同的面。请问在下列选项中，哪一个不可能是这个立方体的视图？



16. Coco is making a hanging mobile from coathangers. Starting with 1 coathanger in the first layer, she hangs 2 coathangers in the second layer, 1 at each end of the first, as shown. She works along each layer following the same pattern, so that every coathanger has 2 new coathangers hanging from it. Coco stops when she has finished 6 layers. How many coathangers are in her mobile?



可可正在用衣架制作一个悬挂活动装置。装置第一层用一个衣架，接着在第一层衣架的两端各悬挂 1 个衣架，作为第二层，如图所示。此后，可可按此规律制作该装置的每一层，使得每个衣架上都挂有 2 个新衣架。可可一共制作了六层，请问这个悬挂活动装置一共用了多少个衣架？

- (A) Between 20 and 30 20 至 30 之间
(B) Between 30 and 40 30 至 40 之间
(C) Between 40 and 50 40 至 50 之间
(D) Between 50 and 60 50 至 60 之间
(E) Between 60 and 70 60 至 70 之间

17. A shop has a special deal where you can buy two different items and get the cheaper item at half price. Roberta bought two of these items, and paid \$16. Which two items did she buy?

商店推出了一项优惠活动：若选购两件不同的商品，其中价格较低的商品可半价购买。小罗买了以下两件商品，并支付了 16 美元。请问她买了哪两件商品？

				
Magazines \$6 each	Gift cards \$12 each	Books \$10 each	Birthday cards \$4 each	Wrapping paper \$8 each
每本杂志 6 美元	每张礼品卡 12 美元	每本书 10 美元	每张生日贺卡 4 美元	每卷包装纸 8 美元

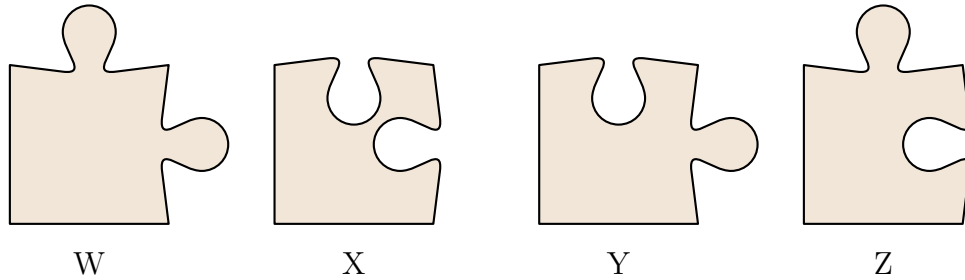
- (A) A birthday card and a magazine 一张生日贺卡和一本杂志
 (B) A gift card and a birthday card 一张礼品卡和一张生日贺卡
 (C) A book and a roll of wrapping paper 一本书和一卷包装纸
 (D) A gift card and a roll of wrapping paper 一张礼品卡和一卷包装纸
 (E) A magazine and a roll of wrapping paper 一本杂志和一卷包装纸

18. Lubna likes oranges and apples, but not bananas. Bhavna likes apples and bananas, but not oranges. Preeti likes oranges and bananas, but not apples. Their father has 6 oranges, 4 apples and 2 bananas and gives each girl 4 pieces of fruit that she likes. What is the **smallest** number of oranges that he can give to Lubna?

小陆喜欢橙子和苹果，但不喜欢香蕉。小巴喜欢苹果和香蕉，但不喜欢橙子。小普喜欢橙子和香蕉，但不喜欢苹果。她们的父亲有 6 个橙子，4 个苹果和 2 个香蕉。父亲打算给每个女儿分 4 个她们喜欢的水果。请问他最少可以给小陆几个橙子？

- (A) 0 (B) 1 (C) 2 (D) 3 (E) 4

19. A simple jigsaw puzzle has four pieces labelled W, X, Y and Z, shown here face up.
一个简易拼图由 4 个分别标记为 W、X、Y、Z 的图块组成。这 4 个图块正面朝上，如图所示。



When the puzzle is completed, which of the following pieces are **not** next to each other?
完成拼图后，请问下列哪两块拼图不相邻？

- (A) W and Y (B) W and Z (C) X and Y (D) X and Z (E) Y and Z
W 和 Y W 和 Z X 和 Y X 和 Z Y 和 Z

20. Minnie and Max each have a set of 4 cards numbered 1 to 4. Minnie arranges her cards into two 2-digit numbers and adds the 2-digit numbers to get a total. She chooses her numbers to make her total as small as possible. Max does the same, except that his total is as large as possible. What is the difference between Minnie's total and Max's total?



小米和小麦各有 4 张编号为 1 到 4 的卡片。小米用这些卡片组成两个 2 位数，并将这两个数字相加得到一个尽可能小的总和。小麦也采取了相同的做法，唯一的区别在于小麦想得到一个尽可能大的总和。请问小米和小麦各自得出的总和相差多少？

- (A) 18 (B) 29 (C) 32 (D) 36 (E) 55

Questions 21 to 25, 5 marks each

21-25 题，每题 5 分

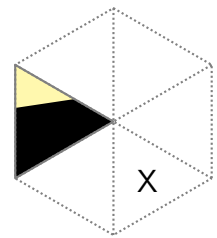
21. A box of chocolates weighs 416 g. The box contains 13 identical chocolates. After 4 chocolates are eaten, the box weighs 332 g. What is the weight of the empty box?
一盒巧克力重 416 g，盒中装有 13 块完全相同的巧克力。吃掉其中 4 块巧克力后，这盒巧克力的重量变为 332 g。请问空盒子的重量是多少？
- (A) 128 g (B) 143 g (C) 204 g (D) 248 g (E) 288 g

22. Troy makes a list of 6 numbers by writing down a starting number then writing the next 5 counting numbers, going up in steps of 1. When he adds them, the total is less than 100. He increases each number by 1, and the new total is greater than 100. What is this new total?

小特写下 6 个数，从第一个数开始写，后面每个数都比前一个数大 1。这些数的总和原本小于 100，但当他将每个数都加上 1 之后，新的总和超过了 100。请问这个新的总和是多少？

- (A) 101 (B) 102 (C) 103 (D) 104 (E) 105

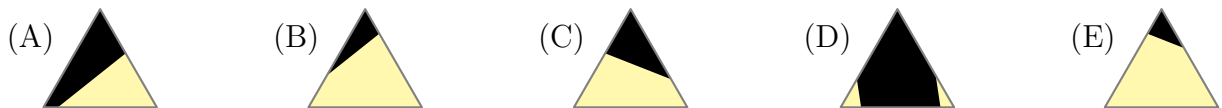
23. A regular hexagon made from yellow cardboard has a thick black stripe painted across it. The hexagon is cut up into six equilateral triangles and the pieces are mixed up. This diagram shows one of the pieces in its original position.



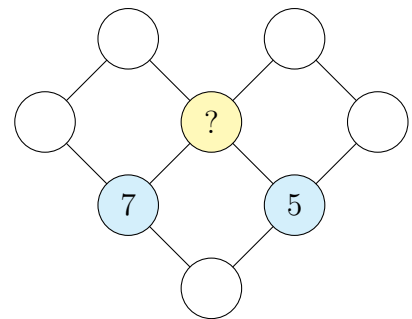
一条粗黑条纹横穿一个由黄色纸板制成的正六边形。将该正六边形切割成 6 个等边三角形碎片，然后打乱顺序。图中显示了其中一个三角形的原始位置。

The other five pieces are shown in options (A) to (E). Which piece was in the position marked with the X?

选项 (A) 到 (E) 中展示了其余 5 个三角形。请问下列哪个三角形原本处于标记为 X 的位置上？



24. In this puzzle, the numbers from 1 to 8 are to be placed in the 8 circles. For each of the 3 squares, the sum of the 4 numbers on the corners must be 20. With 5 and 7 placed as in the diagram, what number goes in the middle circle?

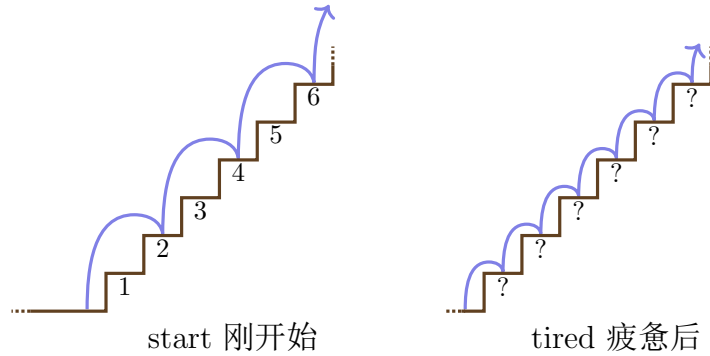


这道谜题中，你需要将数字 1 到 8 放置在 8 个圆圈里。图中有 3 个正方形，每个正方形 4 个角上的数字之和必须是 20。数字 5 和 7 的位置如图所示，请问中间的圆圈应该填入什么数字？

- (A) 1 (B) 2 (C) 3 (D) 4 (E) 6

25. The stairs in Bernard's building are numbered 1, 2, 3, ... When he climbs them, he always starts by taking them two at a time, as shown below on the left. After doing this 10 times, he is tired and he takes the next 10 stairs one at a time. Then he goes back to 10 double steps, then 10 single steps, and so on.

在小德居住的大楼里，楼梯编号为 1、2、3 每当他爬楼梯时，总是先一次跨两级台阶，如下左图所示。连续跨步 10 次后，小德感到疲惫，于是改为一次上一个台阶的方式继续爬 10 个台阶。紧接着他又恢复为一次跨两级台阶的方式连续跨步 10 次，然后又改为一次上一个台阶的方式连爬 10 个台阶，以此类推，交替进行。



Which of the following numbers will Bernard **not** step on?

请问小德不会踩到下列哪个编号的台阶？

- (A) 27 (B) 51 (C) 66 (D) 79 (E) 87

For questions 26 to 30, shade the answer as a whole number from 0 to 999 in the space provided on the answer sheet.

问题 26-30 的答案为 0-999 之间的整数，请将答案填涂在答题卡对应区域。

Questions 26–30 are worth 6, 7, 8, 9 and 10 marks, respectively.


第 26-30 题分别为 6, 7, 8, 9, 10 分。


26. Alex, Brady, Casey and Drew all share the same birthday, but are different ages. Their dad makes them a cake each, and on each cake puts birthday candles matching their ages. 小亚、小布、小凯和小鲁的生日在同一天，但他们的年龄并不相同。他们的父亲为每个人制作了一个蛋糕，并根据他们的年龄在蛋糕上插上相应数量的蜡烛。

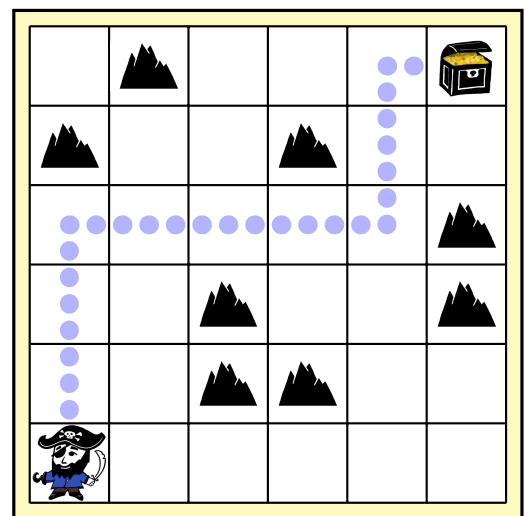
- Alex's cake has 6 times as many candles as Brady's cake.
小亚蛋糕上的蜡烛数量是小布的六倍。
- Alex's cake has 3 times as many candles as Casey's cake.
小亚蛋糕上的蜡烛数量是小凯的三倍。
- Alex's cake has 4 times as many candles as Drew's cake.
小亚蛋糕上的蜡烛数量是小鲁的四倍。

After the cakes are eaten, the candles are gathered up and counted. What is the smallest the total number of candles could be?

吃完蛋糕后，对蜡烛数量进行汇总。请问最少可能有多少根蜡烛？

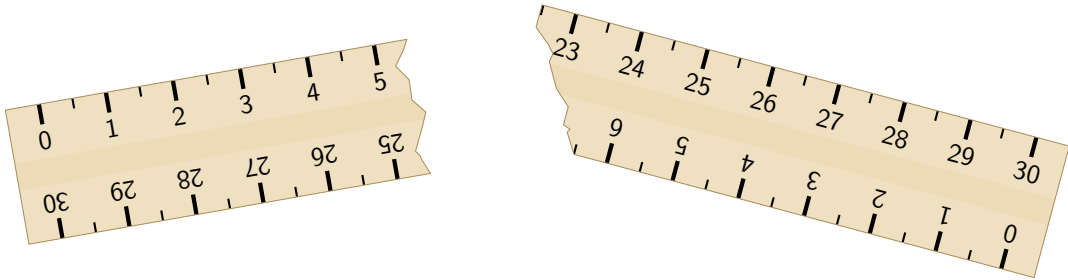
27. The Dread Pirate Alistair uses this map to find some buried treasure. On the map, the symbol  shows dangerous territory that he must avoid. Each move Alistair makes is either 1 square up or 1 square to the right. One of the ways to the treasure is shown. In how many different ways can he get to the treasure?

海盗阿利依靠一张地图来寻找隐藏的宝藏。地图上用符号  标记了他必须绕开的危险区域。阿利每次都只能向上或向右移动 1 格。地图上已经标出了其中一条寻宝路线。请问阿利有多少条不同的寻宝路线？



28. Sami dropped his schoolbag and his ruler broke into three pieces. The two end pieces are shown.

小萨的书包不慎掉落，书包里的直尺摔成了三段。其中两端碎片如图所示。

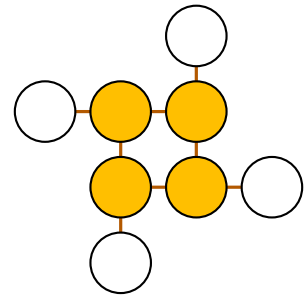


What do all the numbers on the middle piece add up to?

请问直尺中段碎片上的所有数字之和是多少？

29. The numbers 2 to 9 are to be placed in these 8 circles so that each row and each column adds to the same total. The numbers in the 4 shaded circles are then added. What is the largest possible total of these 4 numbers?

将数字 2 至 9 填入 8 个圆圈中，使得每一行和每一列中的数字总和相等。将 4 个阴影圆圈中的数字相加。请问这 4 个数字之和的最大可能值是多少？



30. Skip counting by 5, I write a list of 400 numbers that starts 5, 10, 15 and ends 1990, 1995, 2000. How many times do I write the digit '0'?
- 我写下了 400 个数，从 5、10、15 开始写，后一个数字总比前一个数字大 5，最后以 1990、1995、2000 结尾。请问数字 '0' 一共出现了多少次？