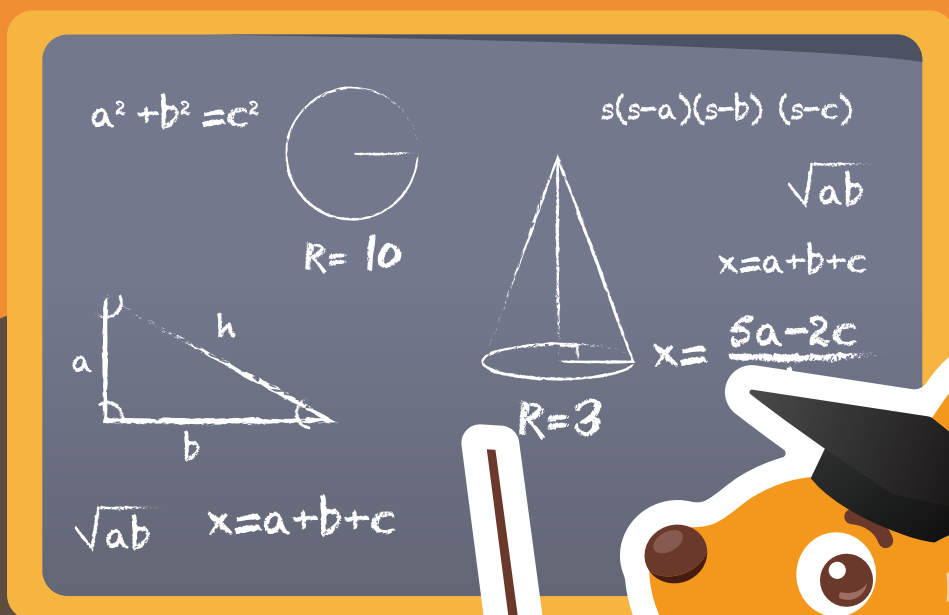


袋鼠数学 Math Kangaroo

样题 (按照等级)

Sample Questions (By Level)



$$x = \frac{5a-2c}{b}$$



Catalog 目录

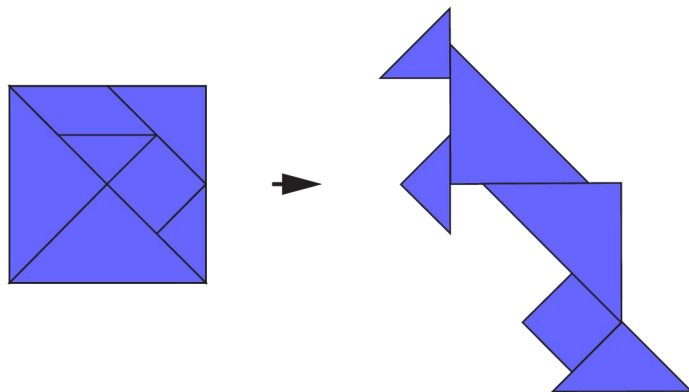
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Level D 等级D	12
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Level A / Pre-Ecolier 等级 A

1. 2023 Q4 Geometry 3 points

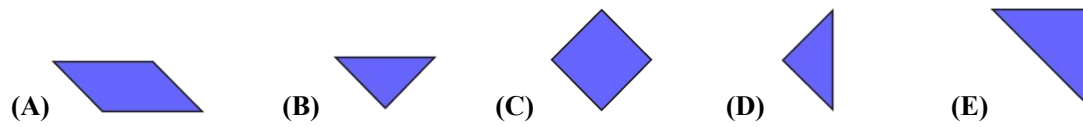
Mr Beaver rearranges the pieces to make a kangaroo figure.

xiǎo wēi yòng qī qiǎo bǎn pīn yī zhī dài shǔ 。
小 威 用 七 巧 板 拼 一 只 袋 鼠 。



Which piece is missing?

hái quē xià miàn nǎ yí kuài ?
还 缺 下 面 哪 一 块 ？



2. 2022 Q10 Geometry 4 points

One animal sleeps in each of the baskets. The koala and the fox are sleeping in baskets with the same pattern and shape. The kangaroo and the ostrich have the same pattern on their baskets.

Which basket is the puppy sleeping in?

měi gè lán zi lǐ dōu yǒu yī zhī dòng wù zài shuì jiào. kǎo lā hé hú lí shuì zài tú àn
每个篮子里都有一只动物在睡觉。考拉和狐狸睡在图案

hé xíng zhuàng dōu xiāng tóng de lán zi lǐ dài shǔ hé tuó niǎo shuì zài tú àn xiāng
和形状都相同的篮子里。袋鼠和鸵鸟睡在图案相

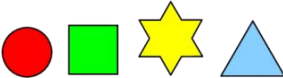
tóng de lán zi lǐ nà me xiǎo gǒu shuì zài nǎ ge lán zi lǐ
同的篮子里。那么小狗睡在哪个篮子里?

				
basket 1	basket 2	basket 3	basket 4	basket 5
1号篮子	2号篮子	3号篮子	4号篮子	5号篮子

(A) basket 1 1号篮子 (B) basket 2 2号篮子 (C) basket 3 3号篮子

(D) basket 4 4号篮子 (E) basket 5 5号篮子

3. 2022 Q16 Logic 4 points

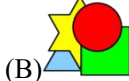
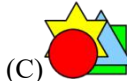
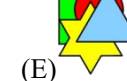
Ann has 4 stickers as shown. 

She sticks down the star after she sticks down the square. She sticks down the star before she sticks down the triangle. Which picture could she end up with?

ān ān yǒu zhāng rú tú suǒ shì de tiē zhǐ. 

tā zài tiē wán zhèng fāng xíng zhī hòu tiē le xīng xíng zài tiē sān jiǎo xíng zhī qián xiān
她在贴完正方形之后贴了星形，在贴三角形之前先

tiē le xīng xíng tā zuì zhōng kě néng huì dé dào xià miàn nǎ zhāng tú piàn
贴了星形。她最终可能会得到下面哪张图片?

(A) 	(B) 	(C) 	(D) 	(E) 
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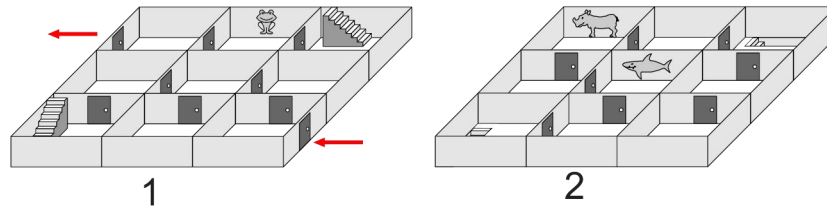
(易错题，正答率 32.70%)

4. 2023 Q20 Logic 5 points

Sam walks through a two-storey maze from the entrance to the exit, both located at floor 1. In what order will she find the wall stickers?

xiǎo sà cóng lóu rù kǒu zǒu dào lóu chū kǒu xū yào chuān guò yí gè liǎng céng lóu
小萨从1楼入口走到1楼出口,需要穿过一个两层楼

de mí gōng tā huì àn zhào shén me shùn xù kàn dào qiáng shàng de tiē zhǐ
的迷宫。她会按照什么顺序看到墙上的贴纸?



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

5. 2023 Q22 Algebra 5 points

Malik places one of the five pieces on the grid. He cannot rotate or flip the pieces.

Which piece should he use to cover the numbers with the largest sum?

xiǎo mǎ xiǎng jiāng wǔ gè xuǎn xiàng zhōng de yí gè pīn tú kuài fàng zài yòu
小马想将五个选项中 的一个拼图块放在右

cè wǎng gé shàng tā bù néng xuán zhuǎn huò fān zhuǎn zhè xiē pīn tú kuài
侧网格上,他不能旋转或翻转这些拼图块。

tā yòng nǎ gè pīn tú kuài fù gài de shù zì zǒng hé zuì dà
他用哪个拼图块覆盖的数字总和最大?

1	6	7
9	5	4
2	8	3

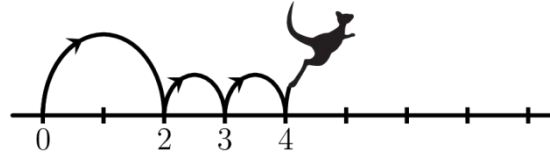
- (A) (B) (C) (D) (E)

Level B / Ecolier 等级 B

1. 2022 Q5 Number 3 points

Kengu always makes one large jump followed by two small jumps on the number line, as shown in the picture. Kengu starts at 0 and ends on 16. What is the number of jumps that Kengu makes?

如图所示，袋鼠总是按照先一大跳再两小跳的规律在一条数轴上跳跃。它从数字0开始，一直跳到数字16。请问袋鼠一共跳跃了多少次？

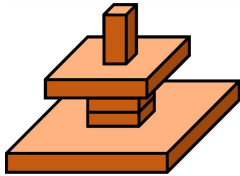


- (A) 4 (B) 7 (C) 8 (D) 9 (E) 12

2. 2022 Q8 Geometry 3 points

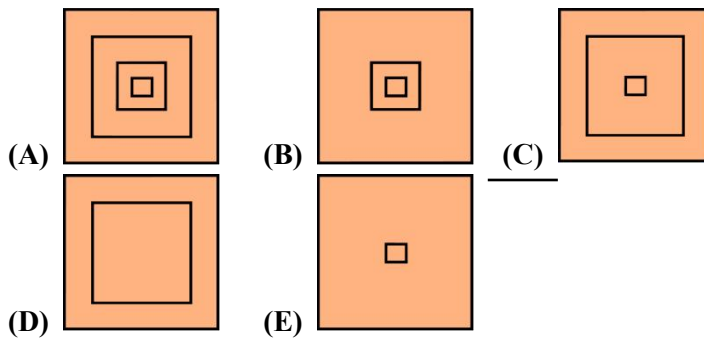
John builds the tower shown.

小吉搭了一座塔，如图所示。



What will he see if he looks at his tower from above?

如果从上方看这座塔，可以看到下面哪个图案？

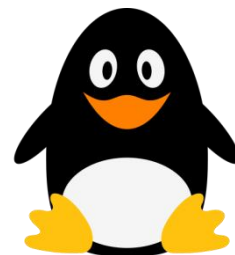


3. 2024 Q12 Algebra 4 points

Peter the penguin goes fishing every day and brings back 9 fish for his 2 chicks. Each day, he gives 5 fish to the first chick he sees and 4 fish to the second chick, which they eat. Over the last few days, 1 chick has eaten 26 fish. How many fish has the other chick eaten?

企鹅小皮每天都去钓鱼，并为他的 2 只小企鹅带回 9 条鱼。每天，他给自己看到的第一只小企鹅喂 5 条鱼，给第二只喂 4 条鱼。在过去的几天里，有 1 只小企鹅吃了 26 条鱼。请问另一只小企鹅吃了多少条鱼？

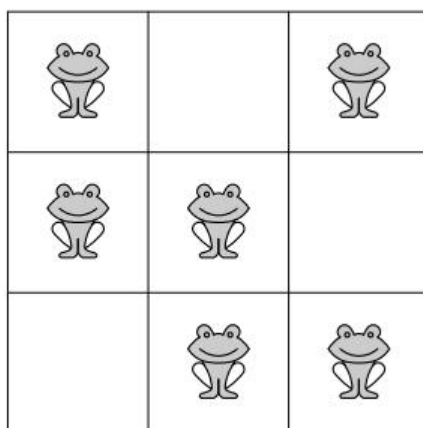
- (A) 19 (B) 22 (C) 25 (D) 28 (E) 31



4. 2024 Q21 Logic 5 points

There are exactly 2 frogs in each row and each column. The frogs decide that 2 of them will jump to a neighbouring empty cell at the same time. Neighbouring cells have a side in common. After that, there still are exactly 2 frogs in each row and in each column. In how many ways can the frogs do this?

下方每行每列都恰好有两只青蛙。青蛙们决定，它们中的两只将同时跳到一个与自己相邻的空白方格中。相邻方格是指共用一条边的方格。完成跳跃后，每行和每列中依然恰好有两只青蛙。请问这些青蛙有几种跳跃方式？



- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
(易错题, 26.10%)

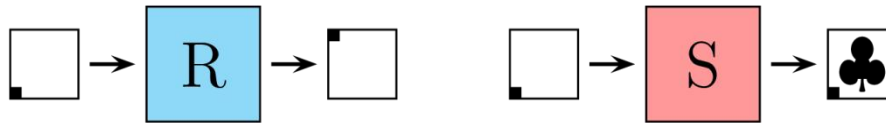
5. 2023 Q22 Logic 5 points

Else has two machines. When she puts a square sheet of paper in machine R, it turns the paper 90° clockwise, as shown in the picture. When she puts the paper in machine S, it stamps the

paper with a

小艾有两台机器。如图所示，当她把一张方形纸放进机器 R 时，它会把纸张顺时针旋转 90° ；当把

方形纸放进机器 S 时，它会在纸张上打印出图案



In which order are the machines used to produce the result 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？

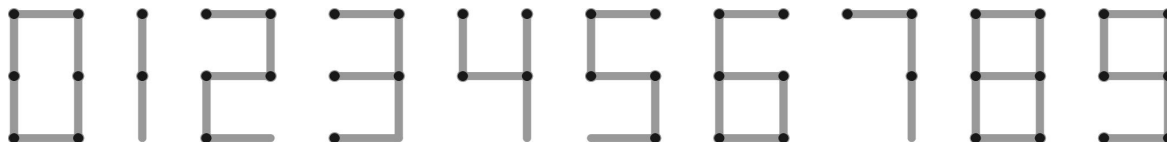


- (A) SRR (B) RSR (C) RSS (D) RRS (E) SRS

Level C / Benjamin 等级 C

1. 2023 Q2 Number 3 points

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. What is the largest positive number that can be built with seven matchsticks?



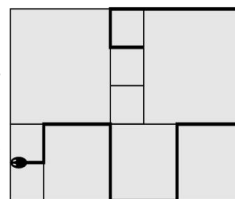
如图所示，可以用火柴棍拼成数字。例如，要拼成数字 15，需要 7 根火柴棍，拼成数字 8 需要相同数量的火柴棍。七根火柴棍可以拼成的最大正数是多少？

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

2. 2023 Q12 Geometry 4 points

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？

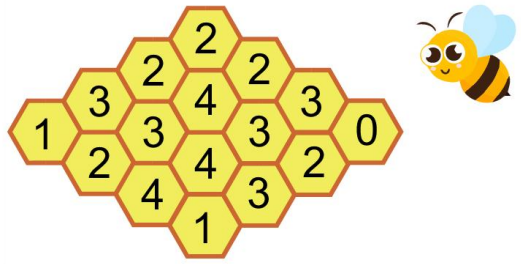


- (A) 380 cm 380 厘米
 (B) 400 cm 400 厘米
(C) 420 cm 420 厘米
 (D) 440 cm 440 厘米
 (E) 1680 cm 1680 厘米
 (易错题，正答率 50.68%)

3. 2024 Q17 Logic 4 points

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？

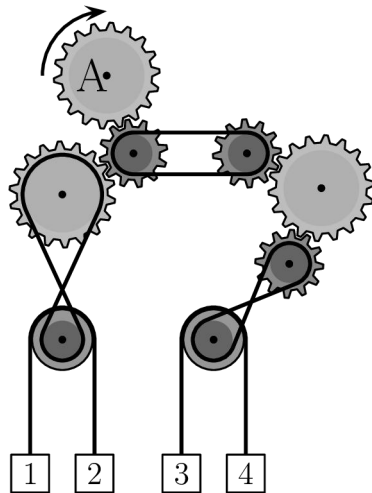


- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11

4. 2023 Q20 Logic 4 points

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？

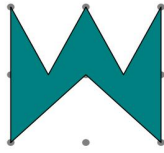


- (A) 1 and 4 1 和 4 (B) 2 and 3 2 和 3 (C) 1 and 3 1 和 3
(D) 2 and 4 2 和 4 (E) It cannot be determined 无法确定

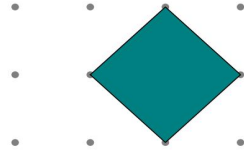
5. 2023 Q29 Geometry 5 points

Which of the following four shapes has the greatest area?

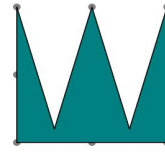
以下四个形状中，哪个面积最大？



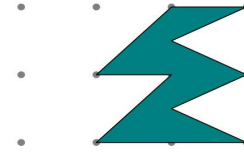
W W形



diamond 菱形



the crown 皇冠形



lightning 闪电形

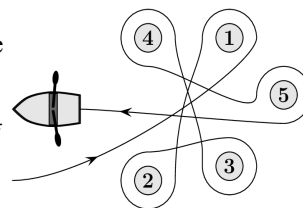
- (A) W W形 (B) diamond 菱形 (C) the crown 皇冠形 (D) lightning 闪电形
(E) they all have the same area 四个形状的面积都相同

Level D / Cadet 等级 D

1. 2022 Q1 Logic 3 points

Meike paddled around five buoys, as shown. Around which of the buoys did Meike paddle in a clockwise direction?

如图所示，Meike 绕着五个浮标划船。请问他绕着哪几个浮标划船时是顺时针方向？

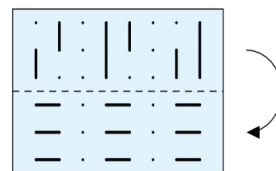


- (A) 2, 3 and 4 2, 3 和 4
(B) 1, 2 and 3 1, 2 和 3
(C) 1, 3 and 5 1, 3 和 5
(D) 2, 4 and 5 2, 4 和 5
(E) 2, 3 and 5 2, 3 和 5

2. 2023 Q5 Geometry 3 points

Kristina has a piece of transparent paper with some lines marked on it. She folds it along the dashed line. What can she now see?

Kristina 有一张透明纸，上面画有一些线，她沿着虚线将纸对折。此时她能看到什么图案？



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

3. 2023 Q11 Number 4 points

Theodorika wrote down three consecutive whole numbers in order, but instead of digits she used symbols so wrote $\square\diamond\diamond$, $\heartsuit\triangle\triangle$, $\heartsuit\triangle\square$. What would she write next?

Theodorika 按顺序写下三个连续的整数，但是她用符号代替了数字： $\square\diamond\diamond$ ， $\heartsuit\triangle\triangle$ ， $\heartsuit\triangle\square$ 。请问下一个数字是什么？

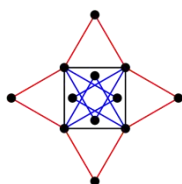
- (A) $\heartsuit\heartsuit\diamond$ (B) $\square\heartsuit\square$ (C) $\heartsuit\triangle\diamond$ (D) $\heartsuit\diamond\square$ (E) $\heartsuit\triangle\heartsuit$

4. 2023 Q15 Geometry 4 points

The edges of a square are 1 cm long. How many points on the plane are exactly 1 cm away from two of the vertices of this square?

一个正方形的边长为 1 厘米。平面上有多少个点距离这个正方形的两个顶点都恰好为 1 厘米？

- (A) 4 (B) 6 (C) 8 (D) 10 (E) 12

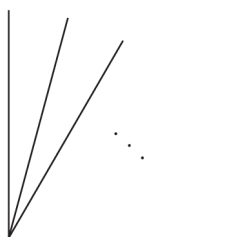


(易错题, 正答率 23.66%)

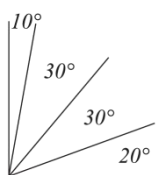
5. 2023 Q19 Geometry 4 points

Angelo drew two lines meeting at a right-angle. What is the smallest number of extra lines he could draw inside his right-angle, as shown, so that for any of the values 10° , 20° , 30° , 40° , 50° , 60° , 70° and 80° , a pair of lines can be chosen with the angle between them equal to that value?

Angelo 绘制了两条相交成直角的线。如图所示, 他最少需要在直角内绘制多少条直线, 使得度数为 10° 、 20° 、 30° 、 40° 、 50° 、 60° 、 70° 和 80° 的角都可以从其中两条直线的夹角中找到?



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



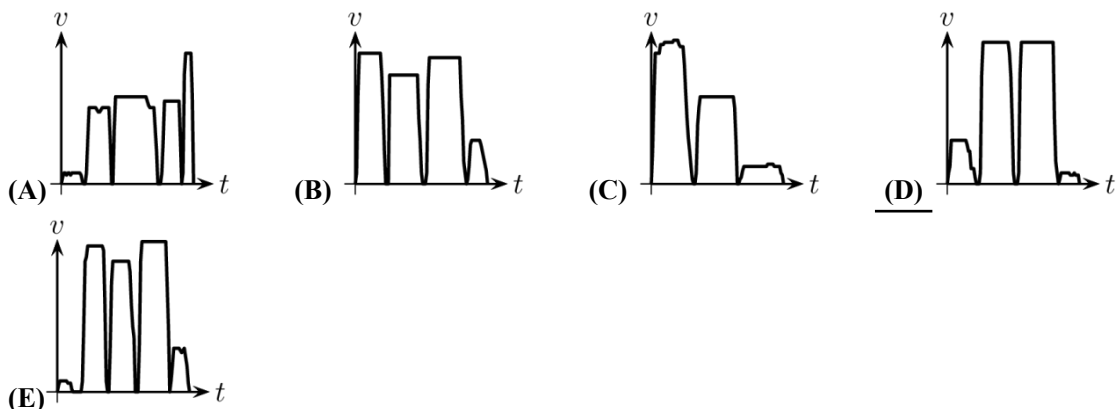
(易错题, 正答率 23.25%)

Level E / Junior 等级 E

1. 2023 Q2 Logic 3 points

Maria had to run to catch the subway, got off two stops later and then walked to school. Which of the following speed-time graphs would best represent her journey?

Maria 必须跑着去乘坐地铁，两站后下车，然后步行去学校。以下哪个速度和时间的关系图像最符合 Maria 的行程？



2. 2023 Q9 Algebra 3 points

The letters a and b are to be replaced by positive integers so that the equation is correct. $\frac{a}{5} = \frac{7}{b}$

In how many different ways can this be done?

有多少种不同的方式用正整数代替字母 a 和 b，使得等式成立？

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

(易错题，正答率 40.90%)

3. 2023 Q16 Logic 4 points

On the table there is a tower made of blocks numbered from 1 to 90. Bob takes blocks from the top of the tower, three at a time, to build a new tower, as shown. When he has finished building the new tower, how many blocks will be between the blocks numbered 39 and 40?

桌子上有一个由编号 1 到 90 的积木组成的塔。如图所示，Bob 从塔顶一次取三块积木，建造一个新塔。当建造完成后，编号为 39 和 40 的积木之间有多少块积木？

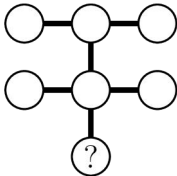
90	3
89	2
88	1
⋮	⋮
4	85
3	90
2	89
1	88

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

4. 2023 Q25 Algebra 5 points

Seven different single-digit numbers are written in the circles of the diagram shown with one number in each circle. The product of the three numbers in each of the three lines of three numbers is the same. Which number is written in the circle containing the question mark?

将 7 个不同的一位数填入右图圆圈中，每个圆圈中填入一个数字。位于三条直线上的三个数字之积是相同的。问号圆圈中填写的是哪个数字？

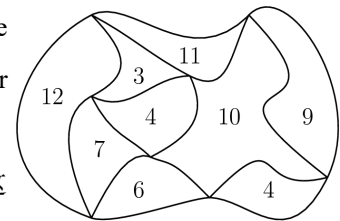


- (A) 2 (B) 3 (C) 4 (D) 6 (E) 8

5. 2023 Q29 Geometry 5 points

The diagram shows a map of a park. The park is divided into regions. The number inside each region gives its perimeter, in km. What is the outer perimeter of the park?

右图是一张公园地图。公园分为多个区域，每个区域内的数字表示这个区域的周长，单位为千米。公园的外围周长是多少千米？



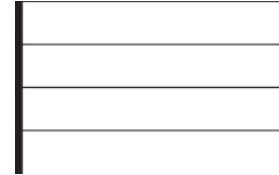
- (A) 22 km 22 千米 (B) 26 km 26 千米 (C) 28 km 28 千米
(D) 32 km 32 千米 (E) none of the previous 以上都不正确

Level F / Student 等级 F

1. 2023 Q4 Logic 3 points

Emma has four different coloured pens. She wants to colour the three-striped rectangular flag shown in the diagram so that each stripe is a single colour and no two adjacent stripes are the same colour. In how many ways can she do this?

Emma 有四支不同颜色的笔。她想给图中所示的三横条长方形旗帜涂色，每个横条都涂上一种颜色，且相邻条纹的颜色不同。她能用多少种方式给旗帜涂色？

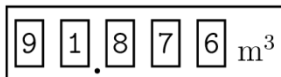


- (A) 24 (B) 27 (C) 32 (D) 36 (E) 64
(易错题，正答率 49.72%)

2. 2022 Q11 Number 4 points

When he looks at the water meter in his bathroom, Tony notices that all the digits on the meter are different.

Tony 查看浴室的水表时发现水表上每个数位上的数字都不一样。



How much water will be used until the next time all the digits on the meter are different?

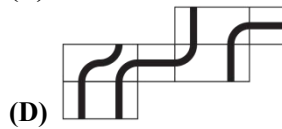
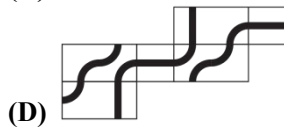
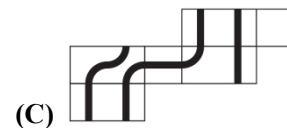
请问水表上各个数位上的数字再次不一样时，已经用完了多少体积的水？

- (A) $0.006m^3$ (B) $0.034m^3$ (C) $0.086m^3$ (D) $0.137m^3$
(E) $1.048m^3$

3. 2023 Q18 Geometry 4 points

Leon has drawn a closed path on a rectangular prism. Which net could show his path?

Leon 在长方体上画了一条闭合路径。下面哪张展开图可能是他画的路径？



4. 2023 Q25 Algebra 5 points

Part of the fifth degree polynomial shown cannot be seen because of an inkblot. It is known that all five roots of the polynomial are integers. What is the highest power of $x - 1$ that divides the polynomial?

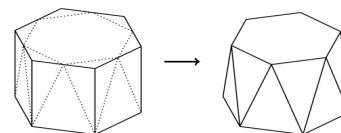
$$x^5 - 11x^4 + \text{[inkblot]} - 7$$

如图所示，一个五次多项式有一部分被墨水遮挡了。已知多项式的五个根都是整数，将该多项式进行分解后得到的 $x - 1$ 的最高次项是什么？

- (A) $(x - 1)^1$ (B) $(x - 1)^2$ (C) $(x - 1)^3$ (D) $(x - 1)^4$ (E) $(x - 1)^5$

5. 2022 Q29 Geometry 5 points

A regular hexagonal prism has its top corners shaved off, as shown. The top face becomes a smaller regular hexagon and the 6 rectangular faces around the middle become 12 isosceles triangles of two different sizes. What fraction of the volume of the original prism has been lost?



如图所示，将一个正六棱柱上底面的各个角剃掉后，上底面变成一个更小的正六边形，围绕中心的 6 个矩形侧面变成两种大小不同的 12 个等腰三角形。请问被剃掉的体积占正六棱柱原体积的比例是多少？

- (A) $\frac{1}{12}$ (B) $\frac{1}{6}$ (C) $\frac{1}{4\sqrt{3}}$ (D) $\frac{1}{6\sqrt{2}}$ (E) $\frac{1}{6\sqrt{3}}$