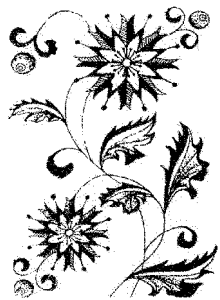
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英汉平行对照趣味科普知识

文明的脚步

北京师联教育科学研究所　编译



学苑音像出版社

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注 :带‘☆’内容有录音



Culture and Civilization 文化与文明

①Bricks are the oldest manufactured building material still in use. Egyptians used them *7,000* years ago .

砖头是至今仍在使用的最古老的人造建筑材料。埃及人在 *7,000* 年前就使用砖头了。

②All the world 's main alphabets have developed from an alphabet invented *3,600* years ago in the Middle East and known as the North Semitic Alphabet.

全世界主要文字的字母都是由 *3,600* 年前在中东地区发明的、一种被称作北方闪语的字母发展而成的。

③The Greeks considered the number *6* to be the first" ***perfect number*** "because it is the sum of all its divisors except itself. That is, *6* is divisible by *1*, *2*, or *3*, and *1 + 2 + 3 = 6*. In the more than *2,000* years that elapsed

古希腊人认为 *6* 是第一个"完全数",因为它是其本身之外所有约数之和,即 *6* 可被 *1* 或 *2* 或 *3* 整除,而 *1 + 2 + 3 = 6*。从古希腊人作出

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between the time the Greeks made their determination and *1952*, when computers were first used for this purpose, mathematicians discovered only eleven more perfect numbers. We now know twenty-four. (The highest has *12*, *003* digits.)

这一判断直到 *1952* 年首次用计算机来寻找完全数的这 *2*, *000* 多年里,数学家们只发现了另外 *11* 个完全数。现在我们知道有 *24* 个。(最大的一个有 *12*, *003* 位。)

④The number *10* is used as a convenient base to count with, but the Gauls of ancient France, the Mayas of Central America, and other peoples used a base of *20*. The Sumerians, the Babylonians, and others after them used a base of *60*—convenient because *60* can be evenly divided by *2*, *3*, *4*, *5*, *6*, *10*, *12*, *15*, *20*, and *30*. This *60* survives in the divisions of hours into minutes and

以 *10* 为单位进位的计数法计算很方便,但是古代法国的高卢人、中美洲的玛雅人,还有另外一些民族用的却是 *20* 进位制。苏美尔人、巴比伦人及后来的一些民族则用 *60* 进位制。因为 *60* 可以被 *2*、*3*、*4*、*5*、*6*、*10*、*12*、*15*、*20* 和 *30* 整除,所以计算也很方便。*60* 进位制保留



minutes into seconds, and in the division of the circle into *360* degrees.

⑤ When Arabic numerals were invented, they did not win immediate acceptance. In the year *1300*, their use was forbidden in European commercial dealings because they could be forged more easily than Roman numerals. (Changing "*1979*" seems to be simpler than changing "***MCMLXXIX***.") Arabic numerals were not completely accepted throughout Europe until *1800*.

⑥ The number *37*, which cannot be wholly divided by any number (except by *1* and itself), has the property that it will wholly divide the following numbers: *111*, *222*, *333*, *444*, *555*, *666*,

下来的有 *1* 小时 *60* 分钟、*1* 分钟 *60* 秒，一个圆周分为 *360* 度等。

阿拉伯数字被发明出来后没有马上为人们所接受。*1300* 年时欧洲商业往来中禁止用阿拉伯数字，因为阿拉伯数字比罗马记数法容易篡改作假。（要涂改 *1979* 显然比要改 MCMLXXIX 容易。）直到 *1800* 年阿拉伯数字才为全欧洲所接受。

37 这个数不能为任何整数整除（除了 *1* 和其本身之外），但却有一个特性，即可整除下列各数：*111*，*222*，*333*，

777, *888*, *999*.

⑦There is, of course, a big difference between addition and multiplication, between subtraction and multiplication, between addition and division, and between subtraction and division. But there are exceptions:

$$\frac{13}{4}+\frac{13}{9}=\frac{13}{4}\times\frac{13}{9}=\frac{169}{36}$$

$$\frac{3}{5}-\frac{3}{8}=\frac{3}{5}\times\frac{3}{8}=\frac{9}{40}$$

$$\frac{169}{30}+\frac{13}{15}=\frac{169}{30}\div\frac{13}{15}=\frac{13}{2}$$

$$\frac{121}{28}-\frac{11}{7}=\frac{121}{28}\div\frac{11}{7}=\frac{11}{4}$$

Also, the numbers *19* and *0.95* give the same result whether you multiply them or deduct the second from the first: *18.05*.

444, *555*, *666*, *777*, *888*, *999*。

当然，加和乘、减和乘、加和除、减和除之间有很大区别，但是也有例外：

$$\frac{13}{4}+\frac{13}{9}=\frac{13}{4}\times\frac{13}{9}=\frac{169}{36}$$

$$\frac{3}{5}-\frac{3}{8}=\frac{3}{5}\times\frac{3}{8}=\frac{9}{40}$$

$$\frac{169}{30}+\frac{13}{15}=\frac{169}{30}\div\frac{13}{15}=\frac{13}{2}$$

$$\frac{121}{28}-\frac{11}{7}=\frac{121}{28}\div\frac{11}{7}=\frac{11}{4}$$

而 *19* 和 *0.95* 这两个数，将第一个数乘第二个数，或减去第二个数，结果都一样：*18.05*。



⑧There is an infinite number of numbers that have the same value whether added or multiplied. They follow this pattern：

$3 + 1\frac{1}{2} = 3 \times 1\frac{1}{2} = 4\frac{1}{2}$

$4 + 1\frac{1}{3} = 4 \times 1\frac{1}{3} = 5\frac{1}{3}$

$5 + 1\frac{1}{4} = 5 \times 1\frac{1}{4} = 6\frac{1}{4}$

…

$1000 + 1\frac{1}{999} = 1000 \times 1\frac{1}{999} = 1001\frac{1}{999}$

etc.

However，there is only one integer that can be added to itself and multiplied with itself with the same result：

有无数对数，它们的和与积同值，这些数成以下的模式：

$3 + 1\frac{1}{2} = 3 \times 1\frac{1}{2} = 4\frac{1}{2}$

$4 + 1\frac{1}{3} = 4 \times 1\frac{1}{3} = 5\frac{1}{3}$

$5 + 1\frac{1}{4} = 5 \times 1\frac{1}{4} = 6\frac{1}{4}$

…

$1000 + 1\frac{1}{999} = 1000 \times 1\frac{1}{999} = 1001\frac{1}{999}$

等等

但是只有一个整数自己相加和相乘的结果一样：

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$2 + 2 = 4$ and $2 \times 2 = 4$

⑨ It may take many steps, but by adding its reverse to any integer (except perhaps one) a palindromic sum can be attained. That is, the sum is the same from right to left as from left to right. Examples:

$2 + 2 = 4$ $2 \times 2 = 4$

将任何一个整数(除了 *1* 以外)与它的相反数相加,可能要进行好几次,可以得到一个回文和数,即从左边开始读和反过来从右边开始读一模一样。例如:


```
  38
+ 83
 121
```

```
  139
+ 931
 1070
+ 0701
 1771
```

```
  139
+ 931
 1070
+ 0701
 1771
```

```
  38
+ 83
 121
```

```
  48017
+ 71084
 119101
+ 101911
 221012
+ 210122
 431134
```

```
  48017
+ 71084
 119101
+ 101911
 221012
+ 210122
 431134
```

From *89* to its palindromic sum—*8*, *813*, *200*, *023*, *188*—

从 *89* 到其回文和数 *8*, *813*, *200*,



takes twenty-four steps. (There may be an exception to the conjecture that every integer will eventually produce a palindrome. Boris A. Kordemsky, a Russian mathematician, has noted that the number *196* has been carried by computers beyond thousands of steps without yet producing a palindrome.)

⑩ The largest number that can be written with three digits is $9^{(9^9)}$, that is, $9^{387420489}$. No one knows exactly its value; it's a number that begins with *428124773*... It would have *369* million digits—and would take years to read.

⑪ A prime number is any number that can be divided only

023, *188* 要加 *24* 次。(任何整数这样加最终都会得出一个回文和数的规律。可能有一个例外,俄罗斯科学家鲍里斯·A·科戴姆斯基注意到,对 *196* 这个数用计算机这样加了几千次仍没有得出一个回文和数来。)

用 *3* 个数目字能写成的最大的数目是 $9^{(9^9)}$, 即 $9^{387420489}$。没有人知道这个数确切是多少,其开始几位是 *428124773*……。它有 *36*, *900* 万位,要花上几年时间才能读完。

质数是只能被本身和 *1* 整除的数。

by itself and *1*. There are an infinite number of primes. Any one of those primes (except for *2* and *3*) will become evenly divisible by *6* if you either subtract *1* from it or add *1* to it. For example, the number *17*, if *1* is added to it, is evenly divisible by *6*; or the number *19*, if *1* is subtracted from it, is evenly divisible by *6*.

质数有无数个。但任何一个质数(除了 *2* 和 *3*)只要加上 *1* 或减去 *1* 皆可被 *6* 整除。如:*17* 加上 *1* 即可被 *6* 整除,*19* 减去 *1* 即可被 *6* 整除。

⑫ Take fifteen books and number them "*1*" to "*15*". If you tried to line them up in all possible arrangements, and if you made a change a minute, it would take you *2*, *487*, *996* years to do it.

取 *15* 本书,编上 *1* 至 *15* 的号码。如果你想用所有不同的办法排列这 *15* 本书,假定每分钟换一种排法,要用 *2*, *487*, *996* 年才能排完。

⑬ A contrivance as simple as the envelope did not come into use until *1839*. Up until then, people usually folded their letters both ways, sealed them with wax, and wrote the address on the back.

人们直到 *1839* 年才开始使用信封这样一件简单的东西。在此之前,人们把写好的信从两面折起来,用蜡封好,



在反面写上地址。

Austria was the first country to use postcards.

奥地利是第一个使用明信片的国家。

⑭ The cigarette lighter was invented before the match. In *1816*, a German chemist, J. W. Dobereiner, devised a way of automatically igniting a jet of hydrogen. The only problem was that it required powdered platinum to act as a catalyst, so it wasn't very practical.

打火机的发明比火柴更早。*1816* 年，一个叫 J·W·德贝赖纳的德国化学家想出了一个能自动点着氢气流的办法，惟一的缺点是它要用铂粉作催化剂，因此不实用。

⑮ The shoe string was invented in England in *1790*. Prior to this time all shoes were fastened with buckles.

鞋带是 *1790* 年在英国发明的。在这以前所有的鞋子都是用扣子扣紧的。

⑯ In photography's pioneer days, sitting for a portrait called for extreme patience. Making a daguerreotype in *1837* required a fifteen-minute exposure. The subject's head was put in a clamp to

在摄影术刚出现的日子里，坐着照一张相必须有极度的耐心。*1837* 年用银板照相法拍一张相片需要曝光 *15* 分



hold it still.

⑰ The average lead pencil will draw a line *35* miles long or write approximately *50*, *000* English words.

⑱ How to manufacture porcelain, or "***china***", was a mystery known only to the Chinese until around *1700*. Although imitation porcelain was made earlier in Italy, it was Johann Friedrich Bottger, of Saxony, who made true porcelain (the Dresden china) for the first time in the Western world.

⑲ It is estimated that a plastic container can resist decomposition for as long as *50*, *000* years.

⑳ Celery has negative calories—it takes more calories to eat

钟。必须用一个大夹子将拍照人的头固定住。

一枝铅笔平均可画一条 *35* 英里长的线,或写大约 *5* 万个英语单词 。

直到公元 *1700* 年左右,如何制造瓷器仍是只有中国人才知道的一个谜。尽管较早时候意大利曾制造过仿瓷器,是萨克森的约翰·弗里德坦里希·柏蒂格首先在西方造出了真 正的瓷器(德累斯顿瓷)。

据估计,塑料容器可以经 *5* 万年而不会腐烂。

芹菜含有的热量是负数——消化



a piece of celery than the celery has in it.

一根芹菜所需的卡路里比它能提供的卡路里要多。

㉑ You won't get a bellyache from eating a green apple, as long as you chew it completely. The stomach doesn't know the difference between ripe and unripe apples.

只要仔细嚼，吃青苹果不会肚子痛，因为胃并不能区别出成熟和不成熟的苹果。

㉒ Tobacco is a food. Though hazardous if smoked, its leaves contain a number of nutritional substances that can sustain life for a time if no other food is available.

烟草是一种食物。尽管烟叶用 以吸烟有害，但却含有各种营养成分，在没有其他食物的情况下，光吃烟叶也可以使生命维持很长时间。

㉓ A scientist at Michigan State University has calculated that the production of a single hen egg requires about *120* gallons of water, a loaf of bread requires *300* gallons, and a pound of

密执安州立大学的一位科学家计算过，母鸡下一只鸡蛋要消耗约 *120* 加仑的水，生产一只面包要 *300* 加仑的水，



beef, *3*, *500*.

而生产一磅牛肉要 *3*,*500* 加仑的水。

㉔ One *75*-watt bulb gives more light than three *25*-watt bulbs.

一只 *75* 瓦的灯泡产生的光比 *3* 只 *25* 瓦的灯泡亮。

㉕ An ordinary TNT bomb involves atomic reaction, and could be called an "***atomic bomb***". What we call an atomic bomb involves nuclear reactions and should be called a "***nuclear bomb***".

普遍的 TNT 炸弹涉及原子反应,可以称作"原子弹"。我们所称的原子弹包含了核反应,应该叫作"核弹"。

㉖ Artists consider the basic colors to be red, yellow and blue, but scientists say they are red, green, and blue. No pigment combination of red, green, and blue will produce yellow, yet, if a beam of red light and green light overlap, the result is yellow. The answer to this riddle lies primarily in the totally different ways colors are achieved with light and with

美术家认为基色是红、黄、蓝;可是科学家却说是红、绿、蓝。用红、绿、蓝三种颜色怎么也调不出黄色来,可是当一束红光和一束绿光重叠时,结果却是黄色。这个谜的答案主要在于光线和颜料构成颜色的方



pigments.

㉗There are odor technicians in the perfume trade with the olfactory skill to distinguish *19*, *000* different odors at twenty levels of intensity each.

㉘The number of possible ways of playing just the first four moves on each side in a game of chess is *318*, *979*, *564*, *000*.

㉙There are fifty-two cards in an ordinary deck. The number of ways in which they can be arranged is just about *80*, *660*, *000*. If you had that many decks of cards, each arranged a different way, and if each deck weighed only as much as a single hydrogen atom (the lightest

香水行业中的气味专家具有了不起的嗅觉，他们能区别出 *19*，*000* 种不同的气味，每一种气味能区别出 *20* 种浓度。

在国际象棋中，双方前四步共有 *318*，*979*，*564*，*000* 种不同的走法。

一副普通的扑克牌有 *52* 张。共有 $80,660 \times 10^{63}$ 种不同的排列方法。如果能有那么多副牌，每副排列出一种不同的方法，假定每副牌只有一个氢原子（最轻的原子）那么重，所有这些牌的总

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