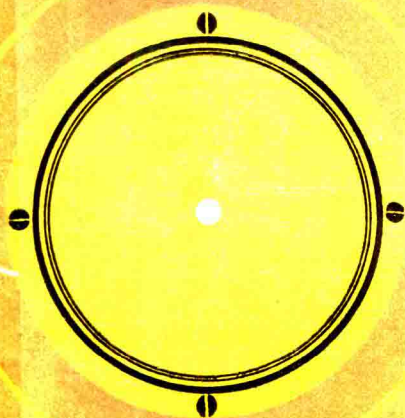


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# 科技英语

下册



湖南科学技术出版社

湖南省业余外语广播讲座

**科 技 英 语**  
ENGLISH FOR SCIENCE  
AND TECHNOLOGY

下 册

曾自立 主编

湖南科学技术出版社

一九八〇年·长沙

## 内 容 提 要

《科技英语》下册有课文十二篇，阅读材料四篇，包括八百多个新词汇和词组。每课除正文外，还有词汇、词组、课文注释、同义词辨析、语法和练习，并附有参考译文、练习答案和科技英语翻译技巧等。

本书为湖南省业余英语广播讲座教材，也可作为具有一定英语基础的同志的自学课本。

### 湖南省业余外语广播讲座 科 技 英 语 下 册

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语法: As的用法

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# Lesson One

## Numbers and Mathematics

数和数学

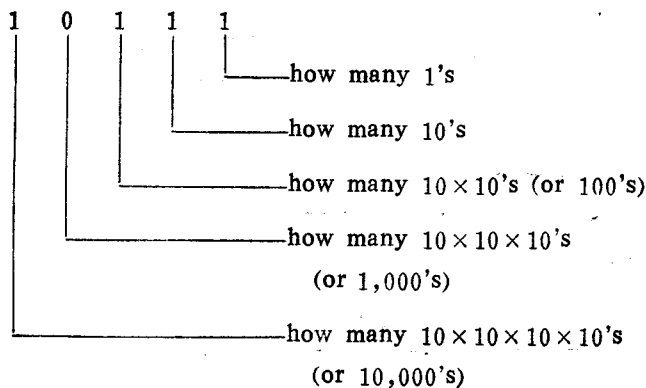
It is said that mathematics is the base of all other sciences, and that arithmetic, the science of numbers, is the base of mathematics. Numbers consist of whole numbers (integers) which are formed by the digits 0, 1, 2, 3, 4,

5, 6, 7, 8 and 9 and by combinations of them. For example, 247 — two hundred and forty seven — is a number formed by three digits. Parts of numbers smaller than 1 are sometimes expressed in terms of fractions, but in scientific usage they are given as decimals. This is because it is easier to perform the various mathematical operations if decimals are used instead of fractions. The main operations are: to add, subtract, multiply and divide; to square, cube or raise to any other power; to take a square, cube or any other root and to find a ratio or proportion between pairs of numbers or a series of numbers. Thus, the decimal, or ten-scale, system is used for scientific purposes throughout the world, even in countries whose national systems of weights and measurements are based upon other scales. The

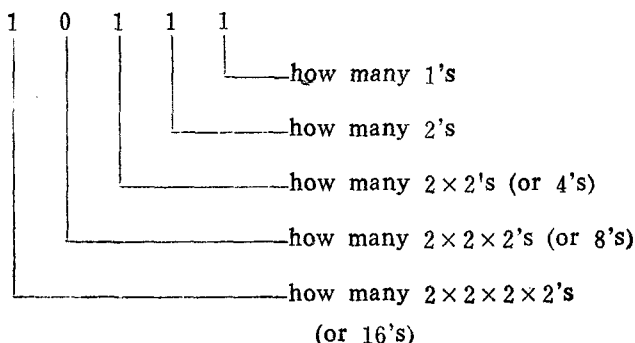
定以十为基础 1.



other scale in general use nowadays is the binary, or two-scale, in which numbers are expressed by combinations of only two digits, 0 and 1. You know well about the decimal system. It has a base of ten. In the decimal system, every time we shift a symbol one place to the left, we multiply its value by the base 10. The number 10111 in the decimal system means:



The binary system has a base of two. Just as in the decimal system, every time we shift a symbol one place to the left, we multiply its value by the base 2. So in the binary system, the number 10111 means:



$$1 \quad 0 \quad 1 \quad 1 \quad 1$$

$$16 + 0 + 4 + 2 + 1 = 23$$

*Handwritten:* 230

Thus, in the binary scale, 2 is expressed as 010, 3 is given as 011, 4 is represented as 100. This scale is perfectly adapted to the "off-on" pulses of electricity, so it is widely used in electronic computers.

Other branches<sup>of</sup> mathematics such as algebra and geometry are also extensively used in many sciences. More specialized extensions, such as probability theory and group theory, are now applied to an increasing range of activities. Finally, a knowledge of statistics is required by every type of scientist for the analysis of data.

*Handwritten:* [Yi' Kwai]

*Handwritten:* Vt. Kwai

## New Words

- |  |   |
|--|---|
| <p>1. mathematics<br/>[ˌmæθi'mætiks] <i>n.</i><br/>数学</p>      | <p><i>a.</i> 十进位的, 小数的</p>                                      |
| <p>2. arithmetic [ə'riθmətik]<br/><i>n.</i> 算术</p>             | <p>10. perform [pə'fɔ:m] <i>v.</i><br/>履行, 执行, 完成</p>           |
| <p>3. integer ['intidʒə] <i>n.</i><br/>整数</p>                  | <p>11. mathematical<br/>[ˌmæθi'mætikl] <i>a.</i><br/>数学(上)的</p> |
| <p>4. digit ['didʒit] <i>n.</i> 数目字<br/>(指从0到9的任何一个数字)</p>     | <p>12. operation ['ɒpə'reiʃən]<br/><i>n.</i> 运算, 操作</p>         |
| <p>5. combination<br/>[ˌkɒmbi'neiʃən] <i>n.</i><br/>组合, 结合</p> | <p>13. subtract [səb'trækt] <i>v.</i><br/>减, 减去</p>             |
| <p>6. term [tɜ:m] <i>n.</i><br/>字眼, 用语, 术语</p>                 | <p>14. multiply ['mʌltiplai] <i>v.</i><br/>乘</p>                |
| <p>7. fraction ['frækʃən] <i>n.</i><br/>分数</p>                 | <p>15. divide [di'vaɪd] <i>v.</i><br/>除, 分, 分配</p>              |
| <p>8. usage ['ju:ʒidʒ] <i>n.</i><br/>惯用法, 用语</p>               | <p>16. square [skwɛə] <i>n.</i><br/>正方(形), 平方,<br/>二次幂;</p>     |
| <p>9. decimal ['desiməl] <i>n.</i><br/>小数;</p>                 | <p><i>v.</i> 弄方, 自乘,<br/>求……的面积</p>                             |
|  | <p>17. cube [kju:b] <i>n.</i><br/>立方形, 立方, 三次幂;</p>             |

- v.* (使)自乘至三次幂,  
求……的体积(或容  
积)
18. power ['paʊə] *n.* 幂, 乘方
19. root [ru:t] *n.* 根(数)
20. ratio ['reɪʃiʊ] *n.* 比, 比率
21. proportion [prə'pɔ:ʃən]  
*n.* 比例
22. pair [peə] *n.*  
(一)对, (一)双
23. series ['siəri:z] *n.*  
系列, 级数, 数列
24. scale [skeɪl] *n.*  
进位制, 大小; 尺度
25. throughout [θru:(t)'aʊt]  
*prep.* 贯穿, 遍
26. measurement  
['meʒəmənt] *n.*  
量度, 测量
27. base [beɪs] *n.*  
底, 基础, 根据;  
*vt.* 基于, 以……作  
根据
28. upon [ə'pɒn, əpən]  
*prep.* = on (upon 带有  
文言腔)
29. general ['dʒenərəl] *a.*  
一般的, 普遍的, 通用的
30. nowadays ['naʊədeɪz]  
*adv.* 目下, 现在, 现今
31. binary ['bainəri] *n.*  
*a.* 二进制;  
二进制的
32. shift [ʃɪft] *vt.* 移动
33. place [pleɪs] *n.* [数]位
34. value ['vælju:] *n.* 价值
35. thus [ðʌs] *adv.*  
因而, 从而
36. etc. [ɪt'setərə]  
[缩] 等等, 以及其他
37. perfectly ['pɜ:fɪktli] *adv.*  
完美地, 完全地
38. adapt [ə'dæpt] *vt.*  
使……适应
39. off-on ['ɒf-ɒn] *a.*  
开关的, 断连的
40. pulse [pʌls] *n.*  
脉冲, 脉动, 脉搏

41. widely ['waɪdli] <i>adv.</i>	伸长部分, 延长部分
广, 远, 大大	47. probability
42. algebra ['ældʒɪbrə] <i>n.</i>	[ˌprɒbə'bɪlɪti] <i>n.</i> 概率
代数(学)	48. theory ['θiəri] <i>n.</i> 理论
43. geometry [dʒi'ɒmitri]	49. range [reɪndʒ] <i>n.</i>
<i>n.</i> 几何(学)	范围, 区域
44. extensively [ɪks'tensɪvli]	50. activity [æk'tɪvɪti] <i>n.</i>
<i>adv.</i> 广阔地, 广泛地	活动
45. specialize ['speʃəlaɪz]	51. finally ['faɪnəli] <i>adv.</i>
<i>v.</i> 专门化	最后, 末了
46. extension [ɪks'tenʃən]	52. statistics [stə'tɪstɪks] <i>n.</i>
<i>n.</i> 伸长, 延长,	统计(学)

## Useful Expressions

1. It is said that...	以……为基准, 根据
大家都说……,	6. in use 在使用着
据说……	7. just as 好像, 宛如
2. in terms of 用, 依, 据	8. adapt...to 使适合, 使适应
3. square root 平方根	9. apply...to 把……应用于
4. cube root 立方根	把……施加于
5. be based (up)on...	

## Notes

### 1. It is said that...

这个句型是“据说”、“有人说”的意思。that 引导的名词从句是真实主语，it 作形式主语。这种结构在科技英语中是常见的。类似的句型有：It is known that... (众所周知)；It is believed that... (大家相信……)；It is generally agreed that... (人们通常认为……)等。

### 2. Numbers consist of whole numbers...

动词consist后可接不同的介词，构成意思不同的短语动词。

consist of 是“由……组成”，“由……构成”的意思。例如：

Water consists of hydrogen and oxygen. 水由氢和氧组成。

consist in 是“在于”、“存在于”的意思。例如：

The difference between the two machines consists in power. 这两台机器的差别在于功率不同。

consist with 是“并存”、“一致”的意思。例如：

Health does not consist with intemperance. 健康是同放纵不相容的。

### 3. Parts of numbers smaller than 1...

smaller than 1 是形容词短语作定语，修饰parts of

numbers.

4. ..., every time we shift a symbol one place to the left, we multiply its value by the base 10.

every time 在这里相当于一个连词, 作“每当……时”解, 引导时间状语从句, 类似的连词还有:

each time 每当……时

the moment 一……就……

the instant 一……就……

the minute 一……就……

- 1) The machine starts the moment (or the instant, or the minute) the button is pressed.

一按电钮, 机器就开动。

- 2) Every time (or each time) a telephone bell rings, a permanent magnet has played its part in controlling the motion of the clapper.

每当电话铃响时, 总有一个永久磁铁起了控制铃舌运动的作用。

5. 2 is expressed as 010, 3 is given as 011, 4 is represented as 100.

句中的三个as均为介词, 作“如同”、“作为”、“以”讲。express、give和represent三个动词在这儿表示同一意义。英语中为了避免文字上的单调, 常常在一段文字中采用同义词或词意相近的词来代替与前面相同的部分。科技文献汉译时, 则应尽量求得统一, 不应使同一事物或概念有好

几种不同的说法，以免含混不清或引起误解。本课的参考译文就对express, give 和 represent 三个动词采取了统一的译法，都译成了汉语的“表示”。

## Synonym Discrimination

### 同义词辨析

1. Parts of numbers smaller than 1 are sometimes expressed in terms of fractions...

little 和 small 都含有“小”的意思。但用 little 一词时往往带着感情色彩，含有主观成分在内。例如：a pretty little house (一所漂亮的小房子)，that poor little girl (那个可怜的小女孩)。small 比较客观，不伴有感情的意味，通常指“比平常标准小些”，也就是说，small 含有比较的意味。例如：a small house (小屋，比较其它的“大屋”而言)，a small girl (小女孩，指就年龄而言，身体矮小的女孩，或较其他大点的女孩而言。)

little 的反义词是 big，small 的反义词是 large，因此说 big and little, large and small。但两词都可以是 great 的反意语，故也可说 great and little, great and small。

2. Finally, a knowledge of statistics is required by every type of scientist for the analysis of data.

finally, at last 和 in the end 都有“最后”的意思，常可以互相通用。但它们之间也有些区别。finally 只指一系



列事物或论点的顺序，一般不带感情色彩。如课文中的这句就属这种情况。at last虽可与finally通用，但往往表示经过一番拖延或曲折之后的意思，因而常带有较浓厚的感情色彩，如不耐烦、放心、如愿等。例如：

He has finished speaking at last!

他终于说完了。

He swam two good hours and reached the opposite bank at last.

他足足游了两个小时，最后到达对岸。

At last I have obtained my wish!

我的愿望终于实现了。

in the end除可与finally和at last互相通用外，还可用来预卜将来。例如：

The aggressors will be wiped out in the end.

侵略者最终将会被灭消的。

在这个例句中，不能用finally或at last来代替in the end，finally和at last均不可用来预卜将来。

## Grammar

### The Numeral

#### 数 词

科技英语中数词用得较多。数词可分为基数词和序数词两种。