

3. THE INTERNATIONAL SYSTEM of MEASUREMENTS

3.1. Component Name Abbreviations Widely Used in Industry

3.2. The International System of Measurements

3.3. Mathematical Expressions

3.4. Algebraic Expressions

3.5. Exercises

3.3. Mathematical Expressions ([continuing from the previous lesson...](#))

17.537 seventeen thousand, five hundred **and** thirty-seven

'sevən'tin 'θaʊzənd, faɪv 'hʌndrəd ænd 'θɜrdi-'sevən

When expressing large numbers (more than one hundred) read in groups of hundreds. The order is as follows: billion, million, thousand and hundred. Notice that hundred, thousand, etc. is NOT followed by an 's'.

two hundred NOT two hundreds

wen ɪk'spreɪnɪŋ lɑrdʒ 'nʌmbərz (mɔr ðæn wʌn 'hʌndrəd) rɪd ɪn grʊps ʌv 'hʌndrədz. ði 'ɔrdər ɪz æz 'fəloʊz: 'bɪljən, 'mɪljən, 'θaʊzənd ænd 'hʌndrəd. 'noʊtɪs ðæt 'hʌndrəd, 'θaʊzənd, 'et'setərə. ɪz nɒt 'fəloʊd baɪ ən əs.

Büyük sayıları (yüzden büyük) söylerken yüzlü gruplar halinde oku. Sıra şöyledir:

Milyar, milyon, bin ve yüz. Yüz ve binden sonra 's' gelmez.

In British English, a **billion** used to be equivalent to a million million (i.e. 1.000.000.000.000), while in American English it has always equated to a thousand million (i.e. 1.000.000.000). British English has now adopted the American figure, though, so that **a billion equals a thousand million in both varieties of English**.

ɪn 'brɪtɪʃ 'ɪŋɡlɪʃ, ə 'bɪljən juzd tu bi ɪ'kwɪvələnt tu ə 'mɪljən 'mɪljən (aɪ.i. 1.000.000.000.000), wʌɪn ɪn ə'merəkən 'ɪŋɡlɪʃ ɪt hæz 'ɔl,weɪz ɪ'kwetɪd tu ə 'θaʊzənd 'mɪljən (aɪ.i. 1.000.000.000). 'brɪtɪʃ 'ɪŋɡlɪʃ hæz naʊ ə'dɒptəd ði ə'merəkən 'fɪɡjər, ðoʊ, soʊ ðæt ə 'bɪljən 'ɪkwəlz ə 'θaʊzənd 'mɪljən ɪn bʊθ və'raɪətɪz ʌv 'ɪŋɡlɪʃ.

İngiliz İngilizcesinde, billion trilyona (milyon kere milyon) eşitken Amerikan İngilizcesinde milyara eşitti. Fakat İngiliz İngilizcesi, Amerikan sayısını kabul etti böylelikle billion İngilizcenin her iki çeşidinde milyara eşittir.

The same sort of change has taken place with the meaning of **trillion**. In British English, a trillion used to mean a *million million million* (i.e. 1.000.000.000.000.000.000). **Nowadays, it's generally held to be equivalent to a million million (1.000.000.000.000), as it is in American English.**

Đa seim sōrt av tʃeɪndʒ hæz 'teɪkən pleɪs wɪð ðə 'mɪnɪŋ av 'trɪljən. ɪn 'brɪtɪʃ 'ɪŋɡlɪʃ, ə 'trɪljən juːd tu mɪn ə 'mɪljən 'mɪljən 'mɪljən (a.i. 1.000.000.000.000.000.000). 'naʊədeɪz, ɪts 'dʒenərəli held tu bi ɪ'kwɪvələnt tu ə 'mɪljən 'mɪljən (1.000.000.000.000), æz ɪt ɪz ɪn ə'merəkən 'ɪŋɡlɪʃ.

Aynı tarz deęişiklik, trilyonun anlamında gerçekleşmiştir. İngiliz İngilizcesinde, trilyon milyon kere milyon kere milyon anlamına gelir. Bugünlerde, genelde milyon kere milyona karşılık gelir, Amerikan İngilizcesinde olduğu gibi.

1	million	6 (1,000,000)	'mɪljən	milyon
2	billion	9 (1,000,000,000)	'bɪljən	milyar
3	trillion	12 (1,000,000,000,000)	'trɪljən	trilyon
4	quadrillion	15 (1,000,000,000,000,000)	kwɒ'drɪljən	katrilyon
5	quintillion	18 (1,000,000,000,000,000,000)	kwɪn'tɪljən	kentilyon
6	sextillion	21 (1,000,000,000,000,000,000,000)	sɛks'tɪljən	sektilyon
7	septillion	24 (1,000,000,000,000,000,000,000,000)	sep'tɪljən	septilyon
8	octillion	27 (1,000,000,000,000,000,000,000,000,000)	ɒk'tɪljən	oktilyon
9	nonillion	30 (1,000,000,000,000,000,000,000,000,000,000)	n,ɒnɪljən	10 üssü 30
10	decillion	33 (1,000,000,000,000,000,000,000,000,000,000,000)	dɛs'ɪljən	10 üssü 33

NOTE: British English takes 'and' between 'hundred and ...' American English omits 'and'. In the examples below, this is represented: (AND)

nout: 'brɪtɪʃ 'ɪŋɡlɪʃ teɪks ænd bɪ'twɪn 'hʌndrəd ænd ...' ə'merəkən 'ɪŋɡlɪʃ ʊs'mɪts ænd. ɪn ði ɪg'zæmpəlz bɪ'loʊ, ðɪs ɪz ,reprə'zentəd: (ænd)

Hundreds 'hʌndrədz yüzler

350 three hundred (AND) fifty

425 four hundred (AND) twenty five

Thousands 'θaʊzəndz binler

786.450 seven hundred (AND) six thousand four hundred (AND) fifty

Millions 'mɪljənz milyonlar

2.450.000 two million four hundred (AND) fifty thousand

Decimals 'dɛsəməlz ondalık sayılar

Read decimals as the given number **point** XYZ

2,36 two point three six

Fractions 'frækfənz kesirler

Read the top number as a **cardinal** number, followed by the **ordinal** number + 's'

3/8 three eighths

NOTE: $1/4$ one quarter, $2/3$ two thirds, $1/2$ one half

http://esl.about.com/od/beginningvocabulary/a/ex_numbers.htm (adapted)

Ordinal Numbers

1 st first	11 th eleventh	21 st twenty-first	31 st thirty-first
2 nd second	12 th twelfth	22 nd twenty-second	40 th fortieth
3 rd third	13 th thirteenth	23 rd twenty-third	50 th fiftieth
4 th fourth	14 th fourteenth	24 th twenty-fourth	60 th sixtieth
5 th fifth	15 th fifteenth	25 th twenty-fifth	70 th seventieth
6 th sixth	16 th sixteenth	26 th twenty-sixth	80 th eightieth
7 th seventh	17 th seventeenth	27 th twenty-seventh	90 th ninetieth
8 th eighth	18 th eighteenth	28 th twenty-eighth	100 th one hundredth
9 th ninth	19 th nineteenth	29 th twenty-ninth	1000 th one thousandth
10 th tenth	20 th twentieth	30 th thirtieth	1000000 th one millionth

Spelling of Ordinal Numbers

Just add th to the cardinal number:

four - fourth
eleven - eleventh

Exceptions:

one - first
two - second
three - third
five - fifth
eight - eighth
nine - ninth
twelve - twelfth

In compound ordinal numbers, note that only the last figure is written as an ordinal number:

421st = four hundred and twenty-first

5.111th = five thousand, one hundred and eleventh

Figures

When expressed as figures, the last two letters of the written word are added to the ordinal number:

- first = 1st

- second = 2nd
- third = 3rd
- fourth = 4th
- twenty-sixth = 26th
- hundred and first = 101st

3.4. Algebraic Expressions ,ældʒə'breɪk ɪk'spreʃənz Cebirsel İfadeler

In algebra we use letters as well as numbers. The letters represent numbers. We imitate the rules of arithmetic with letters, because we mean that the rule will be true for any numbers.

ɪn 'ældʒəbrə wi juːz 'letərz æz wəl æz 'nʌmbərz. ðə 'letərz ,reprə'zent 'nʌmbərz. wi 'ɪmə'teɪt ðə rulz ʌv ə'riθmə'tɪk wɪð 'letərz, bɪ'kɔːz wi mɪn ðæt ðə rul wɪl bi tru fɔː 'eni 'nʌmbərz.

Cebirde, sayıların yanı sıra harfleri de kullanırız. Harfler, sayıları temsil eder. Aritmetiğin kurallarını harflerle taklit ederiz çünkü kuralın herhangi bir sayı için geçerli olduğunu kastederiz.

The numbers are the numerical symbols, while the letters are called literal symbols.

ðə 'nʌmbərz ar ðə nu'merəkəl 'sɪmbəlz, waiɪ ðə 'letərz ar kɔːld 'lɪtərəl 'sɪmbəlz.

Rakamlar, nümerik/sayısal sembollerken, harfler sözlü sembollerdir.

The four operations of arithmetic, and their operation signs:

Aritmetiğin dört işlemi ve onların işlem işaretleri:

1. Addition: $a + b$ ə'dɪʃən toplama

The operation sign is +, and is called the *plus sign*. Read $a + b$ as “a plus b”

2. Subtraction: $a - b$ səb'trækʃən çıkarma

The operation sign is -, and is called the *minus sign*. Read $a - b$ as “a minus b”

3. Multiplication: $a \cdot b$,mʌltəplə'keɪʃən çarpma

Read $a \cdot b$ as “a times b” The multiplication sign in algebra is a *centred dot*.

The sign “dot” is omitted when it is used with variables. Example: $3x$ ($3 \cdot x$), $2xyz$ ($2 \cdot x \cdot y \cdot z$)

4. Division: $a:b$ or $\frac{a}{b}$ dɪ'vɪʒən bölme

Read $\frac{a}{b}$ as “a divided by b”

In algebra, we use the horizontal division bar.

<http://www.themathpage.com/alg/algebraic-expressions.htm> (adapted)

Table 3.3 A chart of common phrases used for algebraic operations

ə ʧɑːrt ʌv 'kɑːmən 'freɪzəz juːzd fɔː ,ældʒə'breɪk ,əpə'reɪʃənz

Add	Subtract	Multiply	Divide	Equals
plus	difference	product of	divided by	is
add	subtract	times	quotient	
sum	less than	twice (×2)	split	
more than	take away	factor	share	
increased by			distribute	
greater than				
total				
and				

Table 3.4 Some examples (expression in words)

Expression in Symbols	Expression in Words
$x + 12$	a number increased by twelve
$2x + 6$	the sum of twice a number and six
$x - 80$	eighty less than a number
$28 \div 2$	twenty-eight split in half
$7x$	the product of a number and seven
$x \div 4$	the quotient of a number and four
$3x + 5$	five greater than three times a number
$x \div 6$	a number distributed evenly among six
$40 + x$	the total of forty and a number
$3(x + 5)$	three times the total of a number and five

Table 3.5 Some examples (equation in words)

Equation in Symbols	Equation in Words
$x = -10$	A number is negative ten.
$x + 2 = 8$	A number plus two is eight.
$x - 7 = -3$	The difference between a number and seven is negative three.
$2x - 1 = 17$	One less than twice a number is seventeen.
$12 = 3x$	Twelve is the product of a number and three.
$\frac{1}{2}x = 20$	Half of a number is twenty.
$x = 2x + (-3)$	A number is equal to the sum of twice the number and negative three.

NOTE: Be very careful with “less than.”

Three less than a number is translated as “ $x - 3$ ”.

The reverse of that,

“ $3 - x$ ” would be a number less than 3.

<https://www.shmoop.com/basic-algebra/algebraic-expressions.html> (adapted)

3.5. Exercises

Circle the correct answer:

1. The newton is a unit of:

- a) mass b) **force** c) pressure d) energy

2. What is the SI base unit for the amount of substance?

- a) Kelvin b) kilogram c) **mole** d) candela

3. Which of the following is not a unit of mass?

- a) gram b) pound c) **pinti** d) ton

4. Which SI prefix stands for “million”?

- a) giga b) centi c) milli d) **mega**

5. A square meter is a unit of:

- a) volume b) length c) **area** d) energy

6. A unit of electric resistance is the:

- a) **ohm** b) weber c) tesla d) henry

7. Which SI prefix stands for “thousand”?

- a) milli b) deci c) micro d) **kilo**

8. What is the SI base unit for temperature?

- a) Celsius b) Fahrenheit c) Centigrade d) **Kelvin**

9. Which SI prefix stands for “hundredth”?

- a) nano b) micro c) deci d) **centi**

10. What is the SI base unit for Electric current?

- a) mole b) **ampere** c) ohm d) volt

Circle the correct answer.

1. Which expression means the product of 8 and a number b?

a) $8/b$

b) $8-b$

c) $8+b$

d) **$8b$**

2. Choose the expression that means the difference between 11 and the number b.

a) **$11-b$**

b) $11/b$

c) $b-11$

d) $11+b$

3. $2x + 3x + x$ is same as:

a) $7x$

b) **$6x$**

c) $5x$

d) $4x$

4. What does $(x + y)$ mean?

a) the product of x and y

b) **the sum of x and y**

c) the difference between x and y

d) x is greater than y

5. In the expression, $t + 10$, the letter t is called a:

a) **variable**

b) algebraic letter

c) expression

d) mystery letter