

Nom :

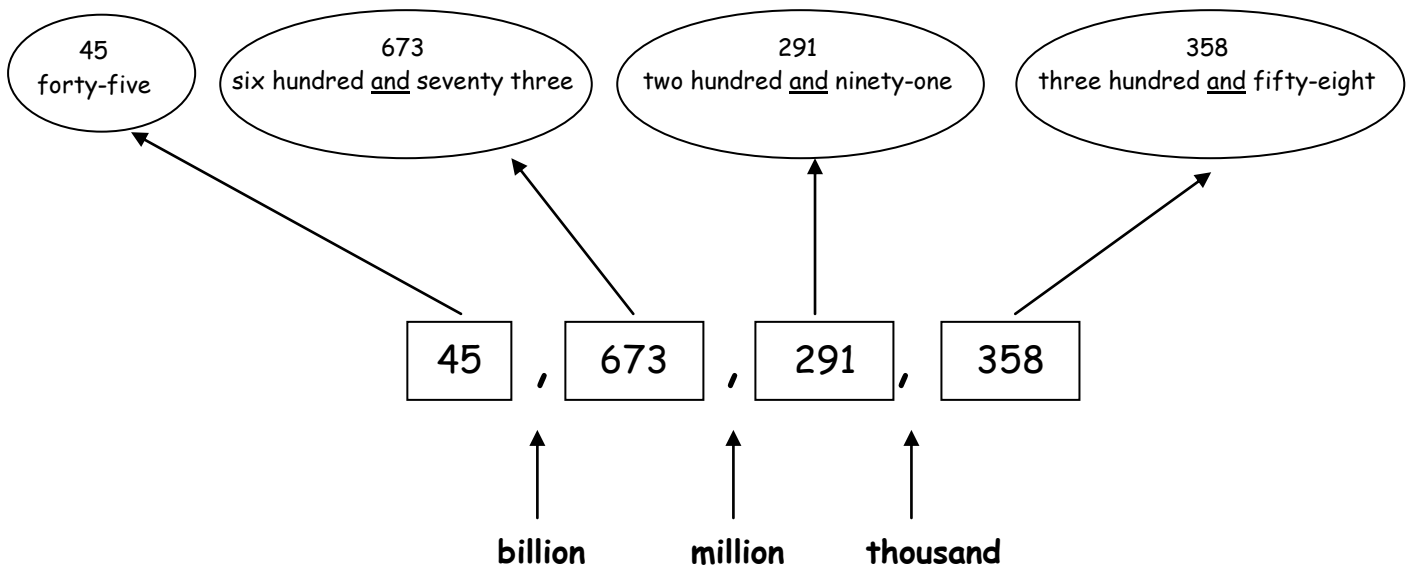


BTEC National in public works
European section
Classe : 2nde bac pro TP



Lire les nombres en anglais

1- Les nombres en entiers EX : 45,673,291,358



- En anglais, la virgule sert à marquer les milliers, les millions, les milliards.
- On emploie « and » devant les dizaines et les unités.
- Hundred, thousand, million et billion sont invariables sauf dans les expressions « hundreds of... », « thousands of... » [pour traduire "des centaines de...", "desmilliers de..."]

2- Les nombres décimaux

En anglais, on met un point (au lieu d'une virgule en français). On appelle *decimal point* et on lit :

35.7
Thirty-five point seven

Les chiffres après la virgule se prononcent chiffre par chiffre.

COMMON UNITS

Physical quantity	S.I. unit	English unit
Length (l)	US : Meter (m) UK : Metre (m)	Inch (in or ") 1 in = $2.54 \cdot 10^{-2}$ m = 2.54 cm Foot (ft or ') 1 ft = 12 in = 0.305 m Yard (yd) 1 yd = 3 ft = 0.914 m Statute (or land) Mile (mi) 1 mi = 1,609 m = 1.609 km
Area (A)	Square meter (m ²)	Square inch (in ²) 1 in ² = $6.45 \cdot 10^{-4}$ m ² Square foot (ft ²) 1 ft ² = 144 in ²
Volume (V)	Cubic meter (m ³) (Remember : Liter (or litre) (L) 1 L = 10^{-3} m ³ = 1 dm ³)	Cubic inch (in ³) 1 in ³ = 16.387 mL US Liquid ounce (liq oz) or fluid oz (flox) 1 floz = 29.574 mL US Gallon (gal) 1 gal = 3.795 mL UK fluid ounce (fl.oz) 1 floz = 28.413 mL UK (or Imperial) Gallon (UKgal) 1 UKgal = 4.546 mL
Velocity (v)	US : Meter per second (m.s ⁻¹) UK : Metre per second (m.s ⁻¹)	Mile per hour (mph) 1 mph = 0.447 m/s
Angular velocity (ω) Rotational frequency (f)	Radian per second (rad.s ⁻¹) Revolution per minute (rpm) or Round per minute 1 rpm = $\frac{2\pi}{60}$ rad.s ⁻¹	
Mass (m)	Kilogram (kg)	Pound mass (lbm) 1 lbm = 0.454 kg
Force (F)	Newton (N)	Pound (lb) 1 lb = 4.448 N
Torque (T)	Newton-meter (N.m)	Pound-foot (lb-ft) 1 lb-ft = 1.356 N.m Pound-inch (lb-in) 1 lb-in = 0.113 N.m
Pressure (p)	Pascal (Pa) 1 Pa = 1 N.m ⁻² Bar (bar) 1 bar = 10 ⁵ Pa	Pound-force per square inch (lbf/in ²) Also called : Pound per square inch (psi) 1 psi = $6.895 \cdot 10^3$ Pa
Power (P)	Watt (W)	Horse-power (HP) 1 HP = 745.7 W

Scale Factor	°C	°F	K
Boiling point of water at 1 atmosphere	100	212	373.15
Freezing point of water at 1 atmosphere	0	32	273.15

Main vocabulary used in mathematics

Ordinal numbers

1 st	first	10 th	tenth	20 th	twentieth	100 th	hundredth
2 nd	second	11 th	eleventh	21 st	twenty-first	101 st	hundred and first
3 rd	third	12 th	twelfth	22 nd	twenty-second	200 th	two hundredth
4 th	fourth	13 th	thirteenth	30 th	thirtieth	1,000 th	thousandth
5 th	fifth	14 th	fourteenth	40 th	fortieth	1,345 th	one thousand three hundred and forty-fifth
6 th	sixth	15 th	fifteenth	50 th	fiftieth	1,000,000 th	millionth
7 th	seventh	16 th	sixteenth	60 th	sixtieth	1,000,000,000 th	billionth
8 th	eighth	17 th	seventeenth	70 th	seventieth		
9 th	ninth	18 th	eighteenth	80 th	eightieth		
		19 th	nineteenth	90 th	ninetieth		

How to read fractions

1/2	one half	1/4	one quarter / one fourth	3/2	three halves	6/8	six eighths
1/3	one third	1/5	one fifth	3/4	three quarters	4/9	four ninths

Basic arithmetic

Operation	Example	Say it like this
Addition	5+3=8	five plus three equals eight five added to three equals eight
Subtraction	10-6=4	ten minus six equals four ten minus six is four six subtracted from ten equals four
Multiplication	2x9=18	two multiplied by nine equals eighteen two times nine is eighteen two times nine equals eighteen
	2(a+b)	two times the sum of a plus b
Division	16÷2=8	sixteen divided by two equals eight sixteen divided by two is eight
	10/20	ten over twenty

Useful symbols

i.e.	Abréviation de "id est" → "c-à-d" c'est à dire Ne pas dire "i.e" mais "that is"	e.g.	abréviation de "exempli gratia" → "ex" exemple Ne pas dire "e.g" mais "for example" "for instance"
@	At	.	Point or dot (internet) or full stop
()	Bracket or parenthesis	&	Ampersand
[]	Square bracket	#	Number
{}	Curly bracket	%	Percent
-	Hyphen	:	Colon
_	Underscore or underline	'	Apostrophe
>	Greater than	,	Comma
<	Less than	“	Inverted commas or quotation mark or quotes
≠	Does not equal or different from	~	Swung dash
?	Question mark	!	Exclamation mark

Some examples

Examples	Say it like this
10^4	ten exponent four, ten exp four, ten to the exponent four, ten to the power four, ten to the four, four is the exponent of ten
68.10^3	sixty eight times ten exponent three
$0.92.10^{-5}$	nought point nine two times ten exponent minus five (We replace "." by a "...")
10^{-4}	ten to the negative four
$R = \frac{V}{I}$	R equals V over I R equals V divided by I
$V = IR$	V equals I R ; V equals I by R V equals I multiplied by R
$V(t) = V_M \cdot \cos(\omega t - \Phi)$	V of t equals V sub M by cosine open brackets ωt minus Φ close brackets
$\Delta = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - m)^2}$	Δ equals root of 1 over N by the summation from one to N of x sub i minus m all to the square
$y = f(x)$	y equals f of x
$\frac{T^2}{a^3} = const$	T squared over a cubed equals constant
$\alpha = \tan^{-1}\left(\frac{y}{x}\right)$	α equals inverse tangent open brackets y over x close brackets
$\sinh x = \frac{e^x - e^{-x}}{2}$	Hyperbolic sine x equals e to the power x minus e to the power minus x, all over 2

Leagth Conversion

kilometer (km) -----= miles (mi)
 kilometer (km) -----= feet (ft)
 meter (m) -----= feet (ft)
 centimeter (cm) -----= inches (in)
 millimeter (mm) -----= inches (in)
 inches (in) -----= centimeter (cm)
 inches (in) -----= millimeter (mm)
 feet (ft) -----= meters (m)
 yards (yd) -----= meters (m)
 yards (yd) -----= kilometers (km)
 miles (mi) -----= kilometers (km)

Definitions

Equation → e.g. $3y^2 - 4y + 3 = 8$

Variable → A letter representing, or standing in place of, an unknown amount

Formula → e.g. $U = R.I$

Coefficient → A number placed in front of a variable or brackets, e.g. $3y$ or $4(y+x)$

Term → An element in an equation. In the following equation $3y^2 - 4y + 3 = 8$, $3y^2$ or $4y$ or 3 or 8 are terms

Numerator → The upper number of a fraction, e.g. in $\frac{3}{4}$ the numerator is 3

Denominator → The lower number of a fraction, e.g. in $\frac{3}{4}$ the denominator is 4

Fraction → An expression showing one number divided by another e.g. $\frac{3}{4}$

Integer → A whole number, e.g. 2

Decimal number → A decimal number contains a decimal point separating the whole number from the decimal part

Common factor → A common number or variable that divides into another number, e.g. $y = 3x + 6x$, x is a common factor

Powers → The power of a number tells you how many times to multiply the number by itself, e.g. 3^2 , 2 is the power

Square → A number multiplied by itself (a power of two) e.g. $3^2 = 9$ (square of three is nine)

Square root → The opposite to finding the square of a number, if $x^2 = y$ then $x = \sqrt{y}$ (x equal square root of y)

Cube → A number multiplied by itself three times (a power of three) e.g. $2^3 = 8$

Cube root → If $x^3 = y$, then x is the cube root of y , i.e. $x = \sqrt[3]{y}$

Negative number → A number or variable whose value is less than 0, e.g. -2

Positive number → A number or variable whose value is greater than 0, e.g. $+2$

Calculation → When we add, subtract, multiply, and divide numbers we make a calculation

Result → e.g. When we add 6 and 5 the result is 11

Percentage → Out of 100. Also a fraction with 100 in the denominator

even → e.g. 2, 4, 6, 8, 10, 12, 14, ...

odd or uneven → e.g. 1, 3, 5, 7, 9, 11, 13, 15, ...

Subscript → e.g. U_1, U_2, U_3 (1, 2 and 3 are the subscript)

Subject → e.g. $y = x - 2$ (y is the subject). Make x the subject of this equation becomes $x = y + 2$

Expressions

Solve an equation → Find value of the variable that satisfy an equation

Simplify → e.g. $\frac{5}{12} - \frac{2}{3}$

Cancel → e.g. $y + 5 = x + k + 5$

Invert → Turn upside down, e.g. inverting $\frac{5}{3}$ becomes $\frac{3}{5}$

Approximating → Giving a number near to its true value when an exact value of that number is not required

Estimate → Round the numbers into easy, convenient numbers, for use in a calculation

Rounding → A way of approximating numbers when an exact value is not required

Rearranging or Changing the subject → e.g. rearrange the following equation $y = x - 2$ in terms of x becomes $x = y + 2$

e.g. change the subject of $y = x - 2$ to x becomes $x = y + 2$

Expanding brackets or Multiplying out → Multiplying terms by the contents of the brackets e.g. $4(x+2) = 4x + 8$

Increase → e.g. Increasing a value of 100 by 20 is 120

Decrease → e.g. Decreasing a value of 100 by 20 is 80

Reciprocal → The reciprocal of x is $\frac{1}{x}$

Cross-multiplying → e.g. $\frac{a}{b} = \frac{c}{d}$ giving $ad = cb$

Factorising → e.g. Extracting the factor of $7x + xy = x(7+y)$

Correct → Right, true

Incorrect → False, not true, wrong, when you make mistakes or errors

Greater than → e.g. 36 is greater than 35

Greater than or equal to → e.g. You have success in exam when your result is greater than or equal to ten.

Less than → e.g. 34 is less than 35

Calculate or Compute → We calculate when we add, subtract, multiply, and divide numbers

Add → e.g. When we add 2 and 3 the result is 5, when we add 2 to 3 the result is 5

Subtract → e.g. When we subtract 2 of 3 the result is 1, when we subtract 2 from 3 the result is 1

Multiply → e.g. When we multiply 2 by 3 the result is 6

Divide → e.g. When we divide 2 by 3 the result is 0.666

Substituting → e.g. Replacing a term in an equation by an other equation