

CLIL Project – Physics in English
Anno scolastico 2013-2014

Newton's Laws
Force and Motion
Lecture 1

Classe 3^a A Linguistico
Istituto Superiore "Marini-Gioia" - AMALFI

Mathematical English terms

Objective - To translate English words and phrases into mathematical symbols and expressions.

- + plus, add, increased by, sum, total
more than, added to
- minus, subtract, decreased by, diminished by, difference, less
less than, subtracted from
- × times, multiply, product, ... of ..., twice (x2)
- : divided, quotient

Mathematical English terms

CALCULATIONS:

$3+x$

“3 plus x”

$3+x$

“add 3 and x”

$3+x$

“the sum of 3 and x”

$3+x$

“3 increased by x”

$x+3$

“3 more than x”

$x+3$

“3 added to x”

Mathematical English terms

CALCULATIONS:

$3-x$ “3 minus x ”

$3-x$ “3 less x ”

$3-x$ “the difference of 3 and x ”

$3-x$ “3 decreased by x ”

$x-3$ “3 less than x ”

$x-3$ “3 subtracted from x ”

Mathematical English terms

Translate each phrase into a mathematical expression

1) 3 subtract x → $3 - x$

2) the product of 7 and y → $7 \cdot y$

3) 12 decreased by a number t → $12 - t$

4) 6 added to the product of 11 and m → $11 \cdot m + 6$

5) the quotient of y and 9 → $y : 9$

6) 8 less than 7 times k → $7 \cdot k - 8$

Mathematical English terms

A special word in each column does not refer to the operation itself but to the outcome of the operation.

- + plus, add, increased by, **sum**, total
more than, added to
- minus, subtract, decreased by, diminished
by, **difference**, less
less than, subtracted from
- × times, multiply, **product** ... of ..., twice (x2)
- : divide, **quotient**

Mathematical English terms

Translate each phrase into a mathematical expression

1) six less than twice a number x → $2x - 6$

2) five times the sum of y and 4 → $5 \cdot (y + 4)$

3) twice the difference of m and 3 → $2 \cdot (m - 3)$

4) the quotient of 7 and a number x less 2 → $7 / (x - 2)$

5) the difference of 6 and k divided by 9 → $6 - k/9$

6) 4 times the sum of 12 and y → $4 \cdot (y + 12)$

Mathematical English terms

Match each phrase with its variable expression

d. Twice the sum of x and 3

e. Two less than the product of 3 and x

b. Three times the difference of x and 2

a. Twice a number x less 3

c. Two more than 3 times a number x

a. $2x - 3$

b. $3 \cdot (x - 2)$

c. $3x + 2$

d. $2 \cdot (x + 3)$

e. $3x - 2$

Mathematical English terms

Define a variable to represent the unknown and write the phrase as a variable expression.

1) 10 Km/h faster than the Honda

Let $x =$ the speed of the Honda $\longrightarrow x + 10$

2) 7 centimeters shorter than Jill's brother

Let $b =$ the height of Jill's brother $\longrightarrow b - 7$

3) 5 square meters larger than twice the size of my lot

Let $k =$ the size of my lot $\longrightarrow 2k + 5$

4) €7.50 times the number of people plus a €20 group registration

Let $y =$ the number of people $\longrightarrow 7.5y + 20$

Physical English terms

Vocabulary:

- **Action:** the state or process of doing something or being active; operation, activity, force, or energy.
- **Force:** the push or pull upon an object resulting from the object's *interaction* with another object. Whenever there is an *interaction* between two objects, there is a force upon each of the objects. When the *interaction* ceases, the two objects no longer experience the force. Forces only exist as a result of an interaction.
- **Net Force:** The combination of all the forces that act on an object.
- **Equilibrium:** a state of rest or balance due to the equal action of opposing forces.
- **Reaction:** A reverse movement or tendency; an action in a reverse direction or manner

Physical English terms

Vocabulary:

- **Static:** the physical state in which all components of a system are at rest and the net force is equal to zero throughout the system
- **Dynamics:** changeable; active; in motion usually as the result of an external force.
- **Inertia:** the property of a body that resists any change to its uniform motion; equivalent to its mass.
- **Physical Law:** It is a theoretical principle deduced from particular facts, applicable to a defined group or class of phenomena, and expressible by the statement that a particular phenomenon always occurs if certain conditions be present.