So, you think you're science literate?

Here are 60 scientific concepts that anyone with a good knowledge of high-school science should recognize.

1) **Read the definitions and try to figure out which scientific concept it describes.**
2) **Perhaps you even know the English terms for it.**
3) **If not, look for the appropriate term in the table.**

You've got fewer than 30 right? Better brush up a bit. More than 50? Congratulations!

Absolute zero..
lowest possible temperature, -273.15 degrees Celsius; the point at which all molecular and atomic motion ceases

acid rain..
contains a high concentration of acidity, resulting from sulfur and nitrogen oxides emitted primarily from motor vehicles and power plants

amino acids..
compounds containing nitrogen, oxygen, carbon and hydrogen which, when linked, are known as proteins

antibody..
naturally produced protein formed by the blood in response to an invading *antigen*, such as a bacterium. After such exposure, the body has *acquired immunity* to this particular pathogen.

Antimatter..
matter identical to the ordinary variety but with an opposite electric charge. A *positron* is the **positive** equivalent of an electron.

astronomy..
study of the motion, size and other traits of heavenly bodies; distinct from *astrology*, a pseudoscience that believes planetary positions influence events on Earth

atom..
the smallest unit of matter that can take part in a chemical reaction; consists of a *nucleus*, which in turn is composed of one or more *protons* and *neutrons* orbited by one or more *electrons*

atomic bomb..
powered by the splitting of an atomic nucleus (*nuclear fission*); a *thermonuclear* or *hydrogen bomb* releases energy when atomic nuclei undergo *nuclear fusion*, or a combination

bacteria..
microscopic organisms larger than viruses that replicate by splitting or forming spores and, unlike viruses, are vulnerable to antibiotics

big bang theory..
the leading idea in *cosmology*, the study of the origin and evolution of the universe, holds that the universe, holds that the universe began in an immense explosion of space-time. The legacy of that action is the *expanding universe*, in which everything races away from everything else like raisins in a rising tea cake.

biomass..
total weight of all organisms in a particular place, such as a swamp

black hole..
collapsed star with such a strong gravitational field that nothing, not even light, can escape it

byte..
unit of 8 binary digits, used as a measure of computer storage capacity

carbon cycle..
circulation of carbon from plants that take in *carbon dioxide* from the air and convert it into *carbohydrates* (any compound made of only carbon, hydrogen and oxygen) by *photosynthesis*, the process in which sunlight is changed into energy; animals eat the plants, respire and decay, returning gaseous carbon to the atmosphere

cell..
the basic unit of life. Within cells, *DNA*, the molecule that encodes heredity, contains the blueprint for producing proteins, which fuel biochemical reactions and comprise the structural components of the organism.

centigrade..
temperature scale, a.k.a. Celsius, in which water boils at 100 degrees C and freezes at zero

cerebellum..
part of the brain that controls muscles

cerebral cortex..
part of the brain that controls higher thought

chemical bond..
attractive force that links atoms into molecules

cholesterol..
fatty substance present in the body, as well as in all animal fats, blood, nervous tissue and bile; strongly linked to hardening of the arteries

chromosome..
a string-like body, usually in a cell nucleus. Along it are strung *genes* that govern heredity.

comet..
a ball of frozen gas and dust that follows a very stretched-out orbit around the Sun

conductor..
any material that transmits heat, light or other energy

Crick and Watson..
Francis and James, British and American biologists who discovered that *DNA* has the shape of a *double helix*

Doppler Effect..
the change in perceived frequency of waves when either the source or receiver moves. For instance, a siren moving toward you increases its pitch, then becomes lower as it speeds away.

$E=mc^2$..
the relationship discovered by *Albert Einstein* between energy and mass and the speed of light, which determines how much energy a given amount of mass can be converted into. A consequence of Einstein's *theory of special relativity*, it is the basis for the *atomic bomb*, in which splitting atoms releases energy equivalent to the mass lost.

Ecological niche..
place and function of an organism in an *ecosystem*, such as living on the savanna and hunting gazelles

electromagnetic radiation..
any wave of energy generated when an electric charge, such as an electron, is accelerated. Includes light, radio waves and X-rays, which differ only in their frequency

elementary particel..
any indivisible unit of matter, such as an *electron or quark*

entropy..
the measure of a disorder of a system. According to the laws of thermodynamics, entropy always increases in a closed system unless energy is added.

enzyme..
protein that causes or accelerates biochemical reactions in cells

evolution..
the central tenet of biology, as first articulated by Charles Darwin in *"The Origin of Species,"* stating that random *mutations*, or changes in genes, are naturally selected, i.e., passed on to the next generation, if they improve the organism's *fitness* or ability to survive and reproduce. The changes in an organism's structure or behavior to fit new conditions are *adaptations*. Contrast with *creationism,* the idea that God formed all organisms in their current form.

Fossil fuel..
any …. derived from decayed organisms, such as oil, gas and coal

genetic engineering..
the altering of *genes* through any technique of molecular biology, such as splicing foreign *DNA* into a host's *chromosomes;* also called *recombinant DNA*

genome..
all the genes in an organism. A multibillion-dollar project to determine the sequence of the human ……. has been finished.

Geological fault..
a fissure in the earth, usually where *tectonic plates*, large masses of the earth's crust, meet. Often the site of earthquakes

geothermal energy..
deriving from the heat of the earth, as evidenced by thermal springs and geysers

gravity..
one of four basic forces of nature, which moves objects toward each other. A very weak force, it was shown by *Einstein* to be a consequence of the shape of space-time. In contrast, the other three basic forces of nature, the strong *nuclear force, the weak nuclear force* and *electromagnetism,* are carried by particles. A primary goal of physics is to unify the four forces into a *unified theory*.

Greenhouse effect..
warming of a planet caused by an accumulation of gases that trap heat in the atmosphere

Heisenberg uncertainty principle..
the principle that certain qualities of an object, such as an electron, cannot be simultaneously known with perfect precision, because the act of measuring one quantity changes the other

Homo Sapiens..
the species to which modern man belongs; arose about 200,000 years ago

hormone..
substance secreted by endocrine glands which affect an organ or tissue elsewhere in the body

infrared..
invisible part of the electromagnetic spectrum, with waves longer than light; heat from sunlight and lamps is …….. radiation

ion..
any electrically charged atom or molecule

ionizing radiation..
high-energy radiation that knocks out electrons of material which it passes through, such as human tissue, causing ions to form. The loose electrons can cause cancer.

Jet stream..
air current, moving west to east about 10 to 15 miles up, that affects weather

Mendel..
Gregor, 1822 – 1884. Austrian monk and botanist who first discovered such principles of inheritance as *dominant* and *recessive traits*

neuron..
nerve cell, of which the human nervous system has some 10 billion

Occam's razor..
a guiding principle of science, stating that the simplest hypothesis accounting for the most facts is likely to be correct

organic..
containing carbon

ozone layer..
a layer of …… gas (composed of three oxygen atoms) 6 to 12 miles above the Earth that screens out most harmful ultraviolet radiation. Currently being damaged by *chlorofluorocarbons (Freons)*, gases used as refrigerants and for other industrial applications

plasma..
a fourth state of matter (distinct from solids, liquids and gases), consisting of a gas of ions; believed to constitute 99 percent of the universe. Also, the

clear, liquid, noncellular component of blood

quasar..
star-like objects at the edge of the universe. They provide clues to its age and origin.

Radio telescope..
collects radio (as opposed to light) waves; used to search for extraterrestrial life

Richter scala..
an open-ended scale indicating the severity of earthquakes. 2.0 is barely felt; 6.0 causes considerable structural damage and anything above 8.0 causes massive destruction.

Scientific method..
identify the problem, gather pertinent (= applicable) data, form a working hypothesis (explanation), do experiments to test the hypothesis, interpret the result, draw a conclusion and modify hypothesis as needed

sex-linked trait..
characteristic carried on either the *X* or *Y chromosome*, such as colorblindness

star..
gaseous celestial body, such as the Sun, located in a *galaxy* (collection of these bodies under mutual gravitational attraction) like our Milky Way

superconductor..
material that conducts energy without resistance

Z-Particle..
recently discovered subatomic particle that carries the weak nuclear force, one of the four basic forces of nature

~~**$E = mc^2$**~~	~~**cell**~~	~~**antibody**~~	~~**organic**~~	~~**greenhouse effect**~~
~~**Z-particle**~~	~~**Mendel**~~	~~**evolution**~~	~~**sex-linked trait**~~	~~**astronomy**~~
~~**neuron**~~	~~**ecological niche**~~	~~**superconductor**~~	~~**enzyme**~~	~~**byte**~~
~~**antimatter**~~	~~**centigrade**~~	~~**absolute zero**~~	~~**comet**~~	~~**Occam's razor**~~
~~**fossil fuel**~~	~~**ion**~~	~~**black hole**~~	~~**biomass**~~	~~**ionizing radiation**~~
~~**Richter scale**~~	~~**star**~~	~~**Doppler effect**~~	~~**acid rain**~~	~~**cerebral cortex**~~
~~**amino acids**~~	~~**entropy**~~	~~**infrared**~~	~~**hormone**~~	~~**atom**~~
~~**bacteria**~~	~~**plasma**~~	~~**gravity**~~	~~**radio telescope**~~	~~**ozone layer**~~
~~**genetic engineering**~~	~~**atomic bomb**~~	~~**conductor**~~	~~**big-bang theory**~~	~~**Crick and Watson**~~
~~**scientific method**~~	~~**elementary particle**~~	~~**genome**~~	~~**quasar**~~	~~**chromosome**~~
~~**carbon cycle**~~	~~**geological fault**~~	~~**cerebellum**~~	~~**Homo sapiens**~~	~~**chemical bond**~~
~~**cholesterol**~~	~~**geothermal energy**~~	~~**jet stream**~~	~~**Heisenberg uncertainty principle**~~	~~**electromagnetic radiation**~~