

# Outside Knowledge Cheat Sheet

## TJHSST Entrance Exam

There may occasionally be some questions on the exam that will require some outside knowledge from general science. You do not need to be an expert in any science field to do well on this exam, but there are certain topics in science that are beneficial to know in preparation for this exam. Knowing the basic terminology of these topics will help you to move through the passages with more confidence.

### Biology

Prokaryotes – cells that lack a nucleus; DNA is free-floating

Eukaryotes – cells that have a nucleus that contains the DNA

Gametes – Sex cells (eggs and sperm)

ATP – primary source of energy for cells, produced by mitochondria

Amino Acids – building blocks of proteins; contain nitrogen (N)

Vertebrates – organisms that have backbones

Invertebrates – organisms that lack backbones

Endotherms – warm-blooded

Ectotherms – cold-blooded

### Genetics

Gene - a unit of heredity that is transferred from a parent to offspring and is held to determine some characteristic of the offspring

Alleles – variations of a gene

Dominant Alleles – represented by capital letters

Recessive Alleles – represented by lower case

Heterozygous – different alleles (Rr)

Homozygous – similar/same alleles (RR, or rr)

### Physical Science

Energy – the capacity or power to do work, such as the capacity to move an object; can exist in a variety of forms, such as electrical, mechanical, chemical, thermal, or nuclear, and can be transformed from one form to another

Potential Energy – energy at rest

Kinetic Energy – energy in motion

Radiation – energy leaves an object through a material medium

Convection – energy leaves an object via circulation in fluids

Conduction – energy leaves an object via direct contact with another object

### Chemistry

Atom – basic unit of an element that still retains the properties of that element

Molecule – two or more atoms chemically bonded together

Compound – two or more atoms of different elements chemically bonded to each other

Solubility – the ability of a solute to dissolve in a solvent to form a solution (like dissolves like)

Freezing point of H<sub>2</sub>O = 0 °C

Boiling point of H<sub>2</sub>O = 100 °C

### Physics

Total mechanical energy = potential energy + kinetic energy

Velocity equation:  $d = vt$

Forces:

Gravity pulls down toward Earth

Friction opposes motion

Positive and negative signs denote direction, not magnitude (-5 m/s is faster than 2 m/s)

Circuits:

Voltage (volts, V), current (amps, A), resistance (ohms,  $\Omega$ )

Current and resistance have an inverse relationship

