

# RINGWOOD PUBLIC SCHOOLS

## WHAT EVERY STUDENT SHOULD KNOW BY THE END OF EIGHTH GRADE – SCIENCE

### Scientific Process

- Conduct an experiment using the scientific method.
- Identify and apply safety procedures.

### Science and Society

- Utilize a timeline to record advances in science and technology.
- Name key scientists who have contributed to physics.
- Name key scientists who have contributed to chemistry.

### Mathematical Applications

- Measure quantities by using the metric system.
- Measure distance, time, mass, density, volume, temperature, and area.
- Use formulas to calculate speed, force, acceleration, efficiency and velocity.
- Calculate molecular mass, atomic weight, atomic mass, number of neutrons, electrons and protons.
- Construct a line and bar graph.
- Interpolate and extrapolate information from a line graph.

### Nature and Process of Technology

- Accurate use of metric ruler, graduated cylinder/beaker, double pan balance, Celsius thermometer, force gauge, test tube.
- Identify chemical compounds using litmus paper, pHHydrion paper, and bromethymol blue.
- Distinguish between science and technology.

### Physical Science – Chemistry

- Identify matter and describe matter based on their physical and chemical properties.
- Identify four (4) states of matter and the process of changing states.
- List the characteristics of elements, compounds and mixtures.
- Name the parts of the atom including neutrons, protons, electrons, nucleus and electron cloud.
- Group and arrange elements on the periodic table.
- Identify the process of chemical bonding and define covalent, ionic and metallic bonds and define a chemical reaction.
- Identify that a chemical reaction has taken place.
- Interpret and write chemical equations.
- Balance chemical equations.
- Classify chemical equations as synthesis, decomposition, single or double replacement reactions.
- Compare endothermic and exothermic reactions.

### Physics

- Define and measure motion.
- Identify forces acting on objects.
- Identify the affects of forces and gravity.
- Apply the concepts of Newton's Laws of motion.
- Describe the nature of various forms of energy and trace energy transformation from one form to another.