PETERS TOWNSHIP SCHOOL DISTRICT

CORE BODY OF KNOWLEDGE

SCIENCE

GRADE 5

For each of the sections that follow, students may be required to understand, apply, analyze, evaluate or create the particular concepts being taught.

COURSE DESCRIPTION:

Through a process-oriented approach, fifth graders will acquire the scientific principles that will teach them to investigate, solve problems, and apply knowledge to their environment. They will practice the process skills of classifying data, communicating in both written and oral forms, controlling variables, designing experiments, formulating models, hypothesizing, drawing conclusions, interpreting data, measuring, observing, predicting, asking questions, and evaluating data.

STUDY SKILLS:

- Adequately prepare for tests using given study guides.

UNIT THEMES:

1. ENERGY STORAGE AND TRANSFORMATIONS

- Describe potential and kinetic energy.
- Conduct scientific experiments involving kinetic and potential energy.
- Define and identify the parts of the scientific method.
- Use the scientific methods to write up experiments.
- Identify forms of energy.
- Explain energy transformations.
- Design a roller coaster that successfully applies potential and kinetic energy.

2. ELECTRICAL & MAGNETIC ENERGY

- Examine open and closed circuits using wires, bulb, batteries, and switches.
- Predict and test whether items are conductors or insulators.
- Define and explain the importance of resistors.
- Create circuits with bulbs in series and parallel arrangements.
- Investigate voltage, current, and resistance in a circuit.
- Explain Ohm’s Law.

- Recognize the role of electrical engineers in designing and improving technology having to do with electricity.
- Identify the steps in the Engineering Design Process.
- Create schematic diagrams of circuits.
- Identify open and closed circuits in schematic diagrams.
- Build a parallel circuit from a schematic diagram.
- Use the steps of the Engineering Design Process to design an alarm circuit.
- Describe the relationship between electricity and magnetism.
- Explain what makes electromagnets work and what factors affect their strength.
- Describe how moving magnets produce electric current.

3. HEAT / HEAT TRANSFER

- Describe how water changes when heat is added or subtracted.
- Explain the effect of heat on particle motion.
- Conduct an experiment whereby information regarding how heat travels will be extrapolated.
- Recognize heat energy being transferred by conduction, radiation, and convection.
- Differentiate among the three ways heat is transferred.

4. NATURE OF WAVES (LIGHT AND SOUND ENERGY)

- Recognize that the electromagnetic spectrum represents various types of radiant energy.
- Explain the relationship between wavelength and energy potential.
- Explain the relationship between the various colors of visible light and wavelength.
- Explain how light rays behave when they strike a reflective surface.
- Design and build an abstract art museum using reflective light.
- Investigate the reflection patterns produced by two mirrors joined at one edge.
- Apply knowledge of reflective patterns to kaleidoscopes.
- Infer that sound is produced when a force causes matter to vibrate.

5. CLASSIFICATION

- Categorize and analyze attributes of given objects.
- Recognize the system scientist use to classify living things.
- Identify examples of unicellular and multicellular organisms.
- Examine how human bodies can be broken down from systems to cells.
- Identify the structures of a cell.
- Relate the functions of given cell structures.
- Compare and contrast the structures of plant and animal cells.
- Design and construct a food model of a cell.

6. HEALTH / SAFETY

- Explore ways to prevent fire.

- Create a home emergency plan.
- Describe ways to avoid violence and respond to threatening situations.

7. HEALTH / D.A.R.E (Lessons delivered by D.A.R.E. Officer.)

- Identify information about drugs and alcohol that can help one make wise decisions.
- Name some body parts that can be adversely affected by the use of drugs or alcohol.
- Use the D.A.R.E. decision-making model.

8. HEALTH / Human Growth and Reproduction (WOW)

- Define key vocabulary words related to character, growth, and reproduction.
- Recognize that all humans pass through a rapid growth period called puberty, and they do so at their own pace.
- List changes that occur to a male or female during puberty.
- Identify hormones as chemicals that control certain body processes.

MATERIALS:
Fifth Grade Energy Binder, Raintree Steck-Vaughn Birth and Growth book, Harcourt Health and Fitness book, D.A.R.E. activity booklet

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