

Science Olympiad: Division C Events

QCC Listed By Events

Event Name QCC Content Standard



Astronomy

13.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

13.25.2 Estimates the number of stars that can be seen by the unaided eye and identifies factors that affect this number.

13.25.4 Describes methods of measuring distances and obtaining information about the composition of stars.

13.25.5 Plots and interprets a Hertzsprung-Russell diagram.

13.26.2 Compares and contrasts the Milky Way to other galaxies.

Bottle Rocket

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

9.1.2 Evaluates procedures, data and conclusions to determine scientific validity of research.

9.2.0 Uses traditional reference materials to explore background and historical information regarding a scientific concept.

9.2.1 Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.

9.3.0 Learns and uses on a regular basic standard safety practices for laboratory or field investigations.

9.3.1 Learns and uses safety procedures specific to an investigation or research activity.

9.13.0 Identifies gravity as a force that is dependent upon mass and the distance between objects.

9.13.2 Identifies and measures everyday forces such as gravity, rolling and sliding, frictions, and other mechanical forces using common laboratory devices.

9.14.0 Measures and compares relationships among speed, velocity and acceleration.

9.14.1 Describes experimentally the effect of unbalanced forces in overcoming inertia, including the effect of sliding, static and rolling friction.

12.1.0 Demonstrates proficiency in use of science process skills in laboratory and/or field activities that involve observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting

qualitative and quantitative data, constructing data tables, graphing, analyzing and interpreting data and/or drawing conclusions.

12.1.1 Produces written reports of laboratory and/or field activities in accepted formats and uses precise language for presentations of procedure, tables of data, graphs, analytical methods, results and analyses.

12.1.2 Conducts safe and accurate laboratory work.

12.1.3 Demonstrates proficiency in the proper use of laboratory equipment.

12.1.4 Identifies safety equipment and demonstrates its proper use.

12.2.0 Collects time and distance data on objects in motion such as toy cars, air track, ball rolling down an incline,

12.2.2 Investigates experimentally and solves problems that relate to time, distance, displacement, speed, velocity, and acceleration.

12.2.4 Performs laboratory investigations of free-fall motion..

12.3.0 Explains and apply Newton's three laws of motion.

12.3.1 States and demonstrates the relationship between unbalanced forces and acceleration.

12.3.2 Explains Newton's Law of Universal Gravitation.

12.3.3 Investigates experimentally and solves problems that relate gravitational forces, mass, distance, the Universal Gravitation constant and acceleration due to gravity.

12.24.0 Analyzes a scientific question to determine specific topic, subtopics, and amount of information needed.

12.24.2 Identifies criteria and alternative approaches to solving the problem.

12.24.3 Identifies multiples types of sources (e.g., scientific journals, newspapers, directories, audiovisuals, government publications and yearbooks, computer data bases, online resources, and other electronic media) for information on a specific topic.

12.24.4 Uses appropriate and available retrieval systems (e.g., periodical index, computer resources, glossary, appendix, bibliography, and graphic data) to locate sources.

12.24.5 Distinguishes between essential and nonessential information on a topic.

12.24.10 Compares and synthesizes information obtained from multiple types of sources.

Cell Biology

10.4.0 Explains the cellular basis of life.

10.4.1 Distinguishes between living and nonliving things (e.g., characteristics of living things).

10.4.2 States the cell theory.

10.4.3 Differentiates between prokaryotes and eukaryotes.

10.4.4 Identifies common cell organelles and describe the function of each (e.g. diagrams and microscope examinations).

10.4.5 Distinguishes between unicellular and multicellular organisms.

- 10.5.0 Explains homeostasis and describes the transport of materials through cell membranes.
- 10.5.1 Explains the role of homeostasis in maintaining life.
- 10.5.2 Cites examples of homeostatic mechanisms in unicellular and multicellular organisms.
- 10.5.3 Describes processes whereby substances enter and leave the cell (passive and active transport mechanisms).
- 10.5.4 Compare the reaction of plant and animal cells in solutions of different solute concentrations, (e.g., isotonic, hypotonic, and hypertonic solutions).
- 10.7.0 Explains the processes of photosynthesis and respiration.
- 10.7.1 Diagrams and explains ATP-ADP cycle.
- 10.7.2 Lists the reactants, products, and other requirements of photosynthesis.
- 10.7.3 Lists the reactants, products, and other requirements of respiration.
- 10.8.0 Explains the structure of DNA and RNA and their role in protein synthesis.
- 10.8.1 Describes the double-helix model.
- 10.8.2 Summarizes the processes of replication, transcription, and translations.
- 10.9.0 Describes the process of cell division.
- 10.9.1 Identifies the phases of mitosis.
- 10.9.2 Describes the process of cytokinesis.
- 10.9.3 States the significance of mitosis to unicellular and multicellular organisms.
- 10.9.4 Compares meiosis in sperm and egg formation, (e.g., cell number, cell size, and chromosome number).
- 10.14.0 Explains the structure and function of viruses.
- 10.14.1 Describes the structure of viruses and the manner in which they infect living cells.

Chemistry Lab

- 11.1.0 Uses science process skills in laboratory of field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.
- 11.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding, and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.
- 11.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.
- 11.3.0 Learns and uses on a regular basis standard safety practices for laboratory or field investigations.
- 11.3.1 Learns and uses safety procedures specific to an investigation or research activity.
- 11.9.0 Classifies four types of chemical reactions.
- 11.9.1 Uses the law of conservation of matter and provides standard rules for writing and balancing equations.

11.9.2 Predicts products of replacement reactions based on relative reactivity of reactants in terms of ionization energy, electronegativity and location in the periodic table.

11.9.3 Classifies products of a reaction as heterogeneous or homogeneous and demonstrates how they may be separated.

11.9.4 Defines the term mole and uses this concept to determine relative amounts of reactants and products in a given equation.

11.9.5 Determines empirical formula of a compound from experimental data.

11.9.6 Provides evidence from an experiment that a chemical reaction has occurred.

11.9.7 Determines experimentally the percentage by weight or volume of a compound.

11.12.0 Graphically illustrates activation energy, activated complex, reactant, product and reaction rates by means of a potential energy diagram.

11.12.1 Describes the rate and spontaneity of a reaction in terms of free energy, entropy, and enthalpy.

11.12.2 Uses potential energy diagram to predict the rate and extent of a reaction.

11.12.3 Explains the effect of concentration, temperature, pressure, surface area and catalysts on the rate of a reaction.

11.13.0 Defines oxidation and reduction and describes common reactions of each.

11.13.1 Describes compounds as oxidizing or reducing agents.

Designer Genes

10.1.1 Demonstrate proficiency in the use of science process skills in laboratory and/or field activities involving observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and/or quantitative data, constructing a data table, graphing, analyzing, and interpreting data and/or drawing conclusions.

10.1.2 Produced written reports of laboratory and/or field activities in accepted formats and use precise language for presentations of procedure, tables of data, graphs, analytical methods, results, and analyses of error.

10.1.3 Uses laboratory equipment to conduct safe and accurate laboratory work.

10.2.0 Demonstrates appropriate use of reference sources to access, analyze, evaluate, and present information related to research problems.

10.8.0 Explains the structure of DNA and RNA and their role in protein synthesis.

10.9.4 Compares meiosis in sperm and egg formation, (e.g., cell number, cell size, and chromosome number).

10.10.0 Explains and uses the basic Mendelian genetic principles.

10.10.1 Defines important genetic terms.

10.10.2 Given parental genotypes, predicts the phenotypic, and genotype probabilities of subsequent generations.

10.11.0 Describes patterns of inheritance and genetic engineering.

10.11.1 Relates normal patterns of genetic inheritance to genetic variation (e.g. crossing over).

10.11.2 Relates abnormal patterns of genetic inheritance to genetic disorders and disease (e.g. nondisjunction).

10.11.3 Lists significant contributions of genetic engineering to agricultural and medical practices.

10.21.3 Describes the life processes of common organisms in each class of vertebrates (reproduction, response, nutrition, and behavior).

Disease Detective

10.1.0 Uses terms and processes employed in scientific research.

10.1.1 Demonstrate proficiency in the use of science process skills in laboratory and/or field activities involving observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and/or quantitative data, constructing a data table, graphing, analyzing, and interpreting data and/or drawing conclusions.

10.1.2 Produced written reports of laboratory and/or field activities in accepted formats and use precise language for presentations of procedure, tables of data, graphs, analytical methods, results, and analyses of error.

10.2.0 Demonstrates appropriate use of reference sources to access, analyze, evaluate, and present information related to research problems.

10.3.0 Explains the significance of biology (e.g., impact on daily life).

10.3.1 Defines biology and major divisions (e.g., botany and genetics).

10.3.2 Explains the use of biology in daily life.

10.14.2 Describes transmission, treatment, and possible prevention of specific viral diseases.

10.15.2 Describes common diseases caused by bacteria and their treatments (e.g., streptococcal, infections, pneumonia).

10.16.3 Describes the beneficial and harmful effects of protozoa and algae.

10.17.2 Explains the beneficial and harmful effects of fungi.

Dynamic Planet

13.1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

13.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

13.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

13.5.1 Summarizes the type of formation that can be obtained from a variety of maps.

13.5.4 Demonstrates the use of topographic maps to examine surface features.

13.12.3 Distinguishes among the various types of precipitation with respect to both type and origin.

13.14.1 Analyzes the relationship between slope and velocity of runoff.

13.14.4 Explains the cause of flooding.

13.14.5 Evaluates the economic impact of flooding.

13.16.5 Analyzes the relationship between erosion and gravity.

13.16.6 Evaluates the effectiveness of each of the agents of erosion.

13.16.7 Describes the appearance of topography influenced by each of the agents of erosion.

13.16.8 Investigates the relationships among slope, velocity and load.

13.16.9 Investigates stream development.

13.16.10 Evaluates the economic impact of weathering and erosion.

Experimental Design

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

9.1.2 Evaluates procedures, data and conclusions to determine scientific validity of research.

9.3.0 Learns and uses on a regular basic standard safety practices for laboratory or field investigations.

9.3.1 Learns and uses safety procedures specific to an investigation or research activity.

10.1.0 Uses terms and processes employed in scientific research.

10.1.1 Demonstrate proficiency in the use of science process skills in laboratory and/or field activities involving observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and/or quantitative data, constructing a data table, graphing, analyzing, and interpreting data and/or drawing conclusions.

10.1.2 Produced written reports of laboratory and/or field activities in accepted formats and use precise language for presentations of procedure, tables of data, graphs, analytical methods, results, and analyses of error.

10.1.3 Uses laboratory equipment to conduct safe and accurate laboratory work.

11.1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

11.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding, and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

11.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

11.3.0 Learns and uses on a regular basis standard safety practices for laboratory or field investigations.

11.3.1 Learns and uses safety procedures specific to an investigation or research activity.

12.1.0 Demonstrates proficiency in use of science process skills in laboratory and/or field activities that involve observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and quantitative data, constructing data tables, graphing, analyzing and interpreting data and/or drawing conclusions.

12.1.1 Produces written reports of laboratory and/or field activities in accepted formats and uses precise language for presentations of procedure, tables of data, graphs, analytical methods, results and analyses .

12.1.2 Conducts safe and accurate laboratory work.

12.1.3 Demonstrates proficiency in the proper use of laboratory equipment.

12.1.4 Identifies safety equipment and demonstrates its proper use.

Forestry

10.2.1 Uses media resources such as print, audiovisual, and online services to find information.

10.13.0 Discriminates relationships when using a classification model to group living things.

10.13.1 Recognizes and uses the Linnean system of nomenclature as an accepted system of classification.

10.13.2 Uses a dichotomous key to classify a variety of living things based on structural similarities and differences in a laboratory.

10.19.2 Describes the structure and function of roots, stems, leaves, and flowers.

10.19.3 Explains the process of sexual and asexual plant reproduction (e.g., pollination, fertilization, germination).

10.19.4 Describes the importance of seed plants for food, medicine, and other products

Fossils

13.22.1 Analyzes the ways that fossil form.

13.22.2 Models and interprets fossil casts.

13.22.3 Explains how fossils are used to classify sedimentary rocks.

13.22.4 Describes how rock strata are matched by fossil and rock types.

13.22.5. Infers past conditions of an area by interpreting the fossil history of that area.

13.22.6 Observes species variation in fossil records as an explanation of the changes in organisms over time.

13.22.7 Evaluates the economic impact of the technology of fossil correlation on the coal, petroleum and other mineral industries.

Mission Possible

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

9.2.0 Uses traditional reference materials to explore background and historical information regarding a scientific concept.

9.3.0 Learns and uses on a regular basic standard safety practices for laboratory or field investigations.

9.3.1 Learns and uses safety procedures specific to an investigation or research activity.

- 9.12.0 Analyze different types of energy in terms of sources, limits and uses, and environmental impact.
- 9.12.1 Describes some sources and uses of energy such as chemical, thermonuclear, photoelectric, and electromagnetic. etc.
- 9.12.2 Describes the law of conservation of energy.
- 9.12.4 Identifies and analyzes the nature of heat transfer in the learner's environment and describes and classifies heat transfer as conduction, convection and radiation.
- 9.13.0 Identifies gravity as a force that is dependent upon mass and the distance between objects.
- 9.13.1 Distinguishes among mechanical, atomic, gravitational, and electromagnetic forces.
- 9.13.2 Identifies and measures everyday forces such as gravity, rolling and sliding, frictions, and other mechanical forces using common laboratory devices.
- 9.14.0 Measures and compares relationships among speed, velocity and acceleration.
- 9.14.1 Describes experimentally the effect of unbalanced forces in overcoming inertia, including the effect of sliding, static and rolling friction.
- 9.16.0 Relates frequency and energy of the electromagnetic spectrum.
- 9.16.1 Uses wave and particle theory to describe transmission, absorption, reflection, and refraction of the light in the visible spectrum.
- 9.16.2 Experimentally develops how light interacts with lenses, mirrors, prisms, lasers and optical fibers.
- 9.16.3 Relates color to frequency of light.
- 9.16.4 Relates frequencies of the electromagnetic spectrum outside the visible range to technological advances (e.g. microwave, radiowave).
- 9.17.0 Generates an imbalance of electrical charge and experiment with attraction and repulsion of objects.
- 9.17.2 Demonstrates production of electrical charge in a chemical reaction (e.g. simple cell).
- 9.17.3 Evaluates different methods of generating electricity such as electric induction or a simple, piezoelectric, thermoelectric or photoelectric cell.
- 9.17.4 Builds series and parallel circuits to perform specific tasks.
- 9.17.7 Describes the interplay of electric forces as the basis for electric motors, generators, radio, television, computers, and other modern technologies.
- 11.1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.
- 11.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding, and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.
- 11.2.0 Uses traditional reference materials to explore background and historical information regarding a scientific concept.
- 11.2.1 Uses current technologies such as CD-ROM, Internet and online data searches to explore current research related to a science concept.
- 11.3.0 Learns and uses on a regular basis standard safety practices for laboratory or field investigations.

11.3.1 Learns and uses safety procedures specific to an investigation or research activity.

11.13.1 Describes compounds as oxidizing or reducing agents.

12.1.0 Demonstrates proficiency in use of science process skills in laboratory and/or field activities that involve observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and quantitative data, constructing data tables, graphing, analyzing and interpreting data and/or drawing conclusions.

12.1.2 Conducts safe and accurate laboratory work.

12.1.4 Identifies safety equipment and demonstrates its proper use.

12.3.0 Explains and apply Newton's three laws of motion.

12.3.1 States and demonstrates the relationship between unbalanced forces and acceleration.

12.4.1 Investigates experimentally and solves problems that involve friction forces and the coefficients of static/sliding friction.

12.4.2 Investigates experimentally and solves problems that involve a system of torque-producing forces acting on an object in equilibrium.

12.5.1 Demonstrates the relationship among and solves problems that involve time, angular displacement, torque, rotational inertia, angular velocity, and angular acceleration for bodies in circular and rotary motion.

12.5.2 Investigates experimentally and solves problems involving the motion of a simple pendulum.

12.6.0 Investigates experimentally and solves problems relating to work, power, momentum, and impulse.

12.6.3 Differentiates between potential and kinetic energy.

12.10.1 Distinguished between heat and temperature.

12.10.2 Investigates experimentally and calculate the quantity of heat needed to produce a specified temperature change in a given substance.

12.11.3 Relates potential and kinetic energy to their heat equivalents (measures the heat produced by an object falling a given distance).

12.14.3 Investigates with laboratory activities and calculations the inverse square relationship between light intensity and distance from the light source.

12.14.7 Investigates refraction of light in relation to the speed of light in a medium, index of refraction, and angles of incidence and refraction (Snell's Law).

12.14.8 Constructs ray diagrams and makes calculations relating to focal length, image distance, object distance, and image magnification for curved mirrors and lenses.

12.16.0 Investigates electrostatic attraction/repulsion and charge transfer in the laboratory.

12.21.2 Calculates the relationship between frequency and energy of light waves.

12.24.0 Analyzes a scientific question to determine specific topic, subtopics, and amount of information needed.

12.24.1 Formulates a precise problem.

12.24.5 Distinguishes between essential and nonessential information on a topic.

12.24.10 Compares and synthesizes information obtained from multiple types of sources.

Physics Lab

9.16.2 Experimentally develops how light interacts with lenses, mirrors, prisms, lasers and optical fibers.

12.1.0 Demonstrates proficiency in use of science process skills in laboratory and/or field activities that involve observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and quantitative data, constructing data tables, graphing analyzing and interpreting data and/or drawing conclusions.

12.1.1 Produces written reports of laboratory and/or field activities in accepted formats and uses precise language for presentations of procedure, tables of data, graphs, analytical methods, results and analyses or error.

12.1.3 Demonstrates proficiency in the proper use of laboratory equipment.

12.1.4 Identifies safety equipment and demonstrates its proper use.

12.14.6 investigates reflection with plane and spherical (concave and convex) mirrors in the laboratory.

12.14.7 Investigates refraction of light in relation to the speed of light in a medium, index of refraction, and angles of incidence and refraction (Snell's Law).

12.14.8 Constructs ray diagrams and makes calculations relating to focal length, image distance, object distance, and image magnification for curved mirrors and lenses.

12.14.9 Conducts laboratory investigations and calculations of the wavelength of light using a diffraction grating and light source.

12.14.10 Investigates polarized light using various polarizing filters and substances.

12.14.11 Demonstrates dispersion of white light into a color spectrum and the addition of primary colors to form white light.

Polmer Detective

9.11.1 Describes the importance of organic and biochemical compounds in everyday life.

11.3.0 Learns and uses on a regular basis standard safety practices for laboratory or field investigations.

11.3.1 Learns and uses safety procedures specific to an investigation or research activity.

11.8.0 Writes formulas for and names a variety of compounds.

11.17.0 Uses the structure of methane as a model structure to draw configurations of and name, representative classes of organic compounds. Discusses the solubility properties of such compounds.

11.17.1 Describes the applications of organic compounds to modern industry, such as pharmaceuticals and plastics industries.

Practical Data Gathering

11.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

12.1.1 Produces written reports of laboratory and/or field activities in accepted formats and uses precise language for presentations of procedure, tables of data, graphs, analytical methods, results and analysis or error.

13..1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

13.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

13.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

13.2.0 Uses traditional reference materials to explore background and historical information regarding a scientific concept.

13.2.1 Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.

Qualitative Analysis

9.6.0 Identifies chemical or physical changes conceptually in a laboratory setting.

9.6.1 Differentiates chemical from physical changes in the following laboratory investigations: combustion, fermentation, melting, dissolving, metabolism, boiling, and electrolysis.

9.10.0 Classifies common chemical reaction types as syntheses, decomposition, or single or double displacement.

9.10.1 Distinguishes chemical reactions as endothermic and exothermic.

9.10.2 Writes balanced chemical equations giving names of reactants.

11.1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

11.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

11.8.0 Writes formulas for and names a variety of compounds.

11.9.0 Classifies four types of chemical reactions.

11.9.1 Uses the law of conservation of matter and provides standard rules for writing and balancing equations.

11.9.6 Provides evidence from an experiment that a chemical reaction has occurred.

11.11.0 Writes formulas for and names a variety of acids, bases and salts.

Remote Sensing

13..1.0 Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

13.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

13.1.2 Evaluates procedures, data and conclusions to determine the scientific validity of research.

13.5.1 Summarizes the type of information that can be obtained from a variety of maps.

13.5.3 Demonstrates the use of models of the earth to locate points on the earth's surface.

13.5.4 Demonstrates the use of topographic maps to examine surface features.

13.5.5 Describes how topographic maps are made from aerial and satellite photographs.

13.5.6 Identifies mean sea level as the point to which all topographic heights and oceanic depths are referenced.

13.5.7 Relates the importance of accurate, current, geological and topographical information to urban planning.

13.14.6 Analyzes the impact people have on the existence of fresh water bodies.

Robot Ramble

12.7.0 Analyzes development of the science and technology of mechanics that affect the quality of life, such as weather satellites, the space program, robots, etc.

Science of Fitness

10.22.0 Analyzes the overall organization of the human body.

10.22.1 Describes the basic function of each body system.

10.22.2 Explains how the organ systems interact to maintain homeostasis.

10.23.0 Describes the anatomy of each system.

10.23.1 Identifies the organs and structural parts present in each system (e.g., circulatory: heart, arteries, veins, and capillaries).

10.24.0 Describes the physiology of each system.

10.24.1 Identifies the function of each structural part in the human body system.

10.24.2 Explains how the parts interrelate in a functioning system.

Sounds of Music

12.13.4 Demonstrates the descriptive terms that can be applied to sound waves on a musical instrument such as pitch, amplitude, loudness, and quality.

12.13.6 Makes drawings to illustrate interference of sound waves to produce harmonics and resonance in various types musical instruments (stringed, open and closed pipes and percussion).

Storm The Castle

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.3.0 Learns and uses on a regular basic standard safety practices for laboratory or field investigations.

9.3.1 Learns and uses procedures specific to an investigation or research activity.

12.1.2 Conducts safe and accurate laboratory work.

12.3.1 States and demonstrates the relationship between unbalanced forces and acceleration.

12.4.2 Investigates experimentally and solves problems that involve a system of torque producing forces acting on an object in equilibrium.

Tower Building

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.3.0 Learns and uses on a regular basic standard safety practices for laboratory or field investigations.

9.3.1 Learns and uses procedures specific to an investigation or research activity.

12.1.2 Conducts safe and accurate laboratory work.

Wright Stuff

9.1.0 Uses science process skills in laboratory or field investigations including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.

9.1.1 Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.

9.2.0 Uses traditional reference materials to explore background and historical information regarding a scientific concept.

9.2.1 Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.

9.13.2 Identifies and measures everyday forces such as gravity, rolling and sliding frictions, and other mechanical forces using common laboratory devices.

9.14.0 Measures and compares relationships among speed, velocity and acceleration.

9.14.1 Describes experimentally the effect of unbalanced forces in overcoming inertia, including the effect of sliding, static and rolling friction.

9.15.1 Calculates the work done by simple machines and compares the force or direction of the force applied.

12.1.0 Demonstrates proficiency in use of science process skills in laboratory and/or field activities that involve observation, classification, communication, metric measurement, prediction, inference, identifying variables, formulating hypotheses, controlling variables, making operational definitions, designing investigations, experimenting, collecting qualitative and quantitative data, constructing data tables, graphing, analyzing and interpreting data and/or drawing conclusions.

12.1.2 Conducts safe and accurate laboratory work.

12.2.0 Collects time and distance data on objects in motion such as toy cars, air track, ball rolling down an incline,

12.2.2 Investigates experimentally and solves problems that relate to time, distance, displacement, speed, velocity, and acceleration.

12.3.0 Explains and apply Newton's three laws of motion.

12.3.1 States and demonstrates the relationship between unbalanced forces and acceleration.

Write It Do It

12.1.1 Produces written reports of laboratory and/or field activities in accepted formats and uses precise language for presentations of procedure, tables of data, graphs, analytical methods, results and analysis or error.