

# Inquiry

## Question

- Scientific investigations involve asking and answering questions and comparing the answers with evidence from the real world.

## Investigate

- Scientists plan and conduct different kinds of investigations, depending on the questions they are trying to answer. Types of investigations include systematic observations and descriptions, field studies, models, and open-ended explorations as well as experiments.
- An experiment involves a comparison. For an experiment to be valid and fair, all of the things that can possibly change the outcome of the experiment should be kept the same, if possible. (Variables)
- Investigations involve systematic collection and recording of relevant observations and data.
- Repeated trials are necessary for reliability.

## Models

- A scientific model is a simplified representation of an object, event, system, or process created to understand some aspect of the natural world. When learning from a model, it is important to realize that the model is not exactly the same thing being modeled.

## Explain

- Scientific explanations emphasize evidence, have logically consistent arguments, and use known scientific principles, models, and theories.

## Communicate

- Scientists communicate the results of their investigations verbally and in writing. They review and ask questions about the results of other scientists' work.

## Intellectual Honesty

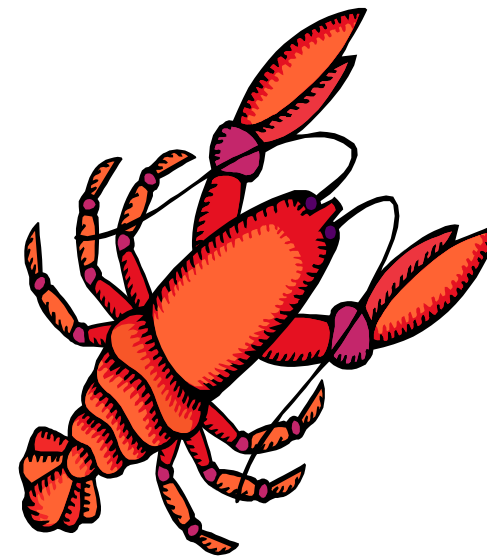
- Scientists report the results of their investigations honestly, even when those results show their predictions were wrong, or when they cannot explain the results.

# Science Vocabulary

- Acid
- Attract
- Battery
- Behavior
- Circuit
- Circumference
- Code
- Compare
- Components
- Conductor
- Cotyledon
- Crystal
- Depth
- Describe
- Decomposers
- Diameter
- Dissolve
- Dormant
- Ecosystems
- Egg
- Electricity
- Embryo
- Energy
- Environment
- Erosion
- Estimate
- Estivate
- Evaporate
- Evidence
- Filament
- Food web
- Flower
- Fruit
- Function
- Gas
- Geologist
- Germination
- Graph
- Gravity
- Growth
- Habitats
- Inputs
- Insulator
- Life Cycle
- Liquid
- Magnet
- Mass
- Matter
- Meter
- Mineral
- Model
- Mold
- Motion
- Nutrient
- Organism
- Observation
- Outputs
- Precipitation
- Predict
- Producers
- Question
- Receiver
- Repel
- Rock
- Root
- Seed
- Solid
- Solution
- Source
- Speed
- Spherical
- Stem
- Structure
- Subsystem
- Switch
- System
- Temperature
- Territory
- Tools
- Transfer
- Transformation
- Variable
- Weathering
- Weight

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## Tacoma Priority Science Standards 2011-12 for Fourth Grade



### Supporting Science at Home

- Keep a science notebook at home for your child to write questions, make observations and record notes.**
- Talk to your child about science that is happening at school.**
- Take advantage of local resources around Tacoma.**

# BIG Picture

The *Tacoma Priority Science Standards* are adapted from The *Washington State Science Standards*.

“The standards are not the curriculum. The standards describe what all students at this grade level are expected to know and be able to do in the area of science.”\* The purpose of this document is to clarify standards taught at each grade level and to provide strong support for students, parents, teachers, and the broader community by guiding the alignment of the school curriculum, instruction and assessment.”

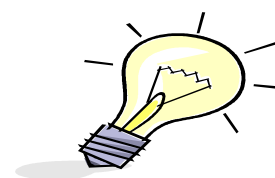
*\*Revised Washington State K-12 Science Standards. Page 1*

# Systems & Application

- ◇ Systems contain subsystems
- ◇ A system can do things that none of its subsystems can do by themselves.
- ◇ Systems have inputs and outputs. Changes in inputs may change the outputs of a system.
- ◇ One defective part can cause a subsystem to malfunction, which in turn will affect the system as a whole.
- ◇ Technology involves changing the natural world to meet human needs or wants.
- ◇ Problems of moderate complexity can be solved using the technological design process. This process begins by defining and researching the problem to be solved.
- ◇ Scientists and engineers often work in teams with other individuals to generate different ideas for solving a problem.
- ◇ Possible solutions should be tested to see if they solve the problem. Building a model or prototype is one way to test a possible solution.
- ◇ Solutions to problems must be communicated, if the problem is to be solved.
- ◇ Science and technology have greatly improved food quality and quantity, transportation, health, sanitation, and communication.

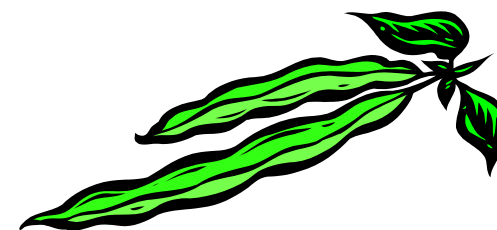
# Physical Science

- ◇ The weight of an object is a measure of how strongly it is pulled down toward the ground by gravity. (Magnetism & Electricity)
- ◇ The total amount of matter is conserved (stays the same) when it undergoes a physical change such as when an object is broken into tiny pieces, when a solid is dissolved in a liquid, or when matter changes state (solid, liquid, gas). (Earth Materials)
- ◇ Energy has many forms, such as heat, light, sound, motion, and electricity. (Magnetism & Electricity)
- ◇ Energy can be transferred from one place to another. (Magnetism & Electricity)
- ◇ Heat energy can be generated a number of ways and can move (transfer) from one place to another. Heat energy is transferred from warmer things to colder things. (Magnetism & Electricity)
- ◇ Objects have properties, including size, weight, hardness, color, shape, texture, and magnetism. Unknown substances can sometimes be identified by their properties. (Earth Materials)



# Life Science

- ◇ Plants and animals can be sorted according to their structures and behaviors. (Structures of Life)
- ◇ Plants and animals have different structures and behaviors that serve different functions. (Structures of Life)
- ◇ An ecosystem includes all of the populations of living organisms and nonliving physical factors in a given area. Living organisms depend on one another and the nonliving physical factors in their ecosystem to help them survive. (Structures of Life)
- ◇ Plants have life cycles that include sprouting, growing to full size, forming fruits and flowers, shedding seeds (which begins a new cycle), and eventually dying. The details of the life cycle are different for different plants. (Structures of Life)
- ◇ Ecosystems support all life on the planet, including human life, by providing food, fresh water, and breathable air. (Structures of Life)
- ◇ There are variations among the same kinds of plants and animals. (Structures of Life)
- ◇ Sometimes differences in characteristics give individual plants or animals an advantage in surviving and reproducing. (Structures of Life)



# Earth & Space Science

- ◇ Earth Materials include solid rocks and soil, water, and gases of the atmosphere. Materials have different physical and chemical properties which make them useful in different ways. Earth materials provide many resource that humans use. (Earth Materials)
- ◇ Weathering is the breaking down of rock into pebbles and sand caused by physical processes such as heating, cooling, and pressure, and chemical processes such as acid rain. (Earth Materials)
- ◇ Erosion is the movement of Earth materials by forces such as wind, moving water, ice forming, and gravity. (Earth Materials)
- ◇ Earth is approximately spherical in shape.
- ◇ Earth's daily spin relative to the Sun causes night and day.

