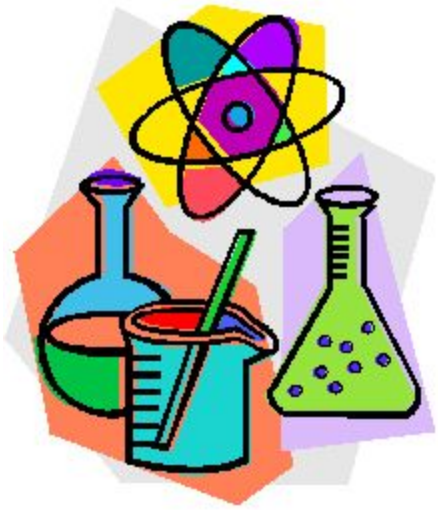


"I Can¨ Mascoma Science Grade 4 Curriculum

I Have Good SCIENTIFIC SKILLS

☐ I can observe and ask questions about scientific topics.

☐ I can explain a simple scientific model.

☐ I can plan a scientific investigation.

☐ I can think about data collected during a scientific investigation.

☐ I can explain the results of a scientific investigation.

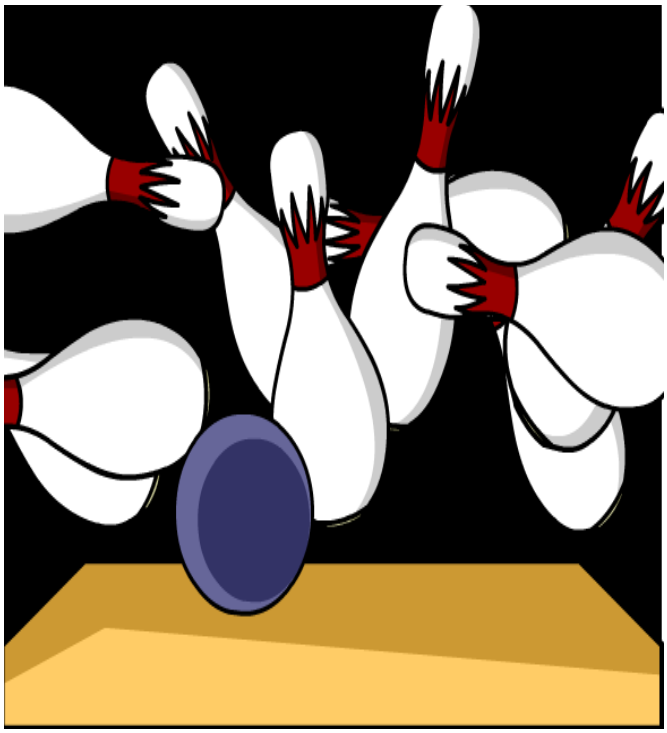
I know about ENERGY

☐ I can use evidence to explain how the faster an object moves, the more energy it has.

☐ I can explain how energy moves through sound waves, light waves, and electric current.

☐ I can explain that energy is present whenever there are moving objects, sound, light, or heat.

☐ I can describe the relationship between energy and force (when objects collide the contact forces transfer energy and change the objects motion).



☐ I can set up an experiment to show that when objects collide, energy can be transferred from one object to another, changing their motion. The experiment will show that some energy is transferred to the surrounding air- heating the air and producing sound.

☐ I can explain that light transfers energy from place to place.

☐ I can observe and represent energy being transferred by electrical currents.

☐ I can explain electric currents can be used to produce motion, sound, heat, or light.

☐ I can explain that light transfers energy from place to place.

☐ I can use the term "produce energy" to refer to the conversion of stored energy into a form for practical use.

☐ I can work in a team to design a solution to a real world energy problem given by my teacher. (Several included in Appendix A)

A little primer for my teacher:

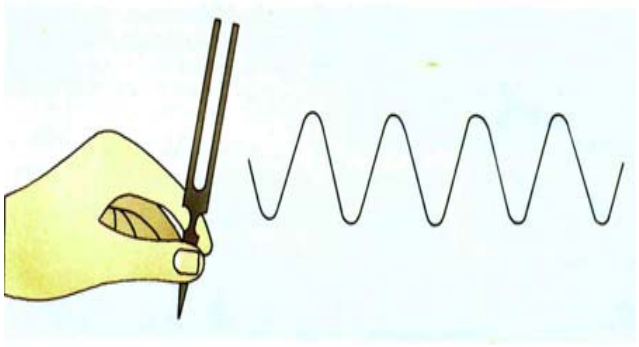
Mascoma Standards	RI.4.1- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	RI.4.3- Explain events, scientific ideas or concepts in a historical, scientific or technical text, including what happened, and why, based on specific information in the text.
	RI.4.9- integrate information from two texts on the same topic in order to write or speak about the subject knowledgably.	W.4.2- Write informative/ explanatory texts to examine a topic and convey ideas and information clearly.
	W.4.7- Conduct short research projects that build knowledge through investigation of different aspects of a topic.	W.4.8- Recall relevant information from experiences or gather relevant information from print and digital sources, take notes and categorize information, and provide a list of sources.

	W.4.9- Draw evidence from literary or informational texts to support analysis, reflection, and research.	OA.A.4.2-Measure and estimate using standard units. Add, subtract, multiply or divide to solve one-step word problems that are given in the same units. Use drawings to represent the problem.
	OA.A.4.2- Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	
Vocabulary	Evidence, energy, observable, sound waves, light waves, electric current, transfers, contact, produce energy,	

I Know About Waves and Their Applications

☐ I can develop a model (diagram, drawing, physical replica, dramatization, or storyboard) to describe the patterns of waves in terms of amplitude and wavelength.

☐ I can describe how waves can cause an object to move.



☐ I can create a model to describe that light reflecting from objects enters the eye so that the object can be seen.

☐ I can describe and compare several patterns that are used to transfer information:

1. Morse Code to send messages
2. Drums to send messages
3. A grid of 1s and 2s representing black and white to send a black & white photo

☐ I can explain that digital information can travel over a long distance without degrading and be converted to text, graphic, or voice by a cell phone or computer.

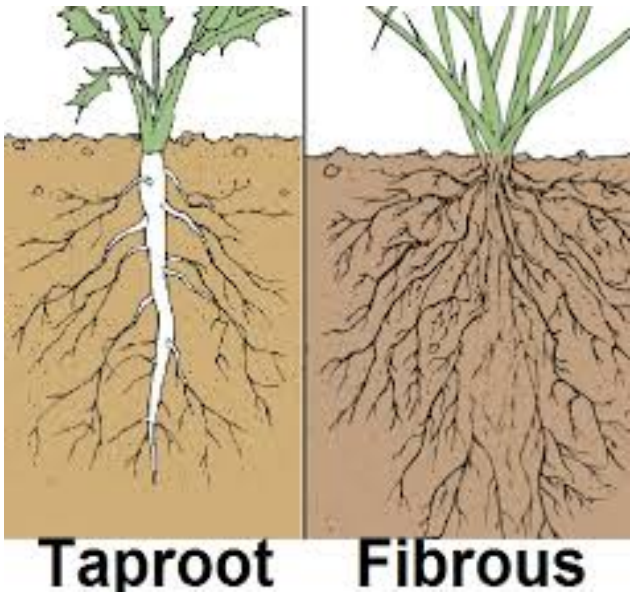
A little primer for my teacher:

Mascoma Standards	RI.4.1- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text	RI.4.9- integrate information from two texts on the same topic in order to write or speak about the subject knowledgably.
	SL.4.5- Add audio recording and visual displays to presentations when appropriate to enhance the development of main ideas or themes.	MP.4.1- Model with mathematics.
	G.4.1- Draw points, lines, segments, rays, angles, and perpendicular &	

	parallel lines. Identify these in two-dimensional figures.	
Vocabulary	Wave, pattern, amplitude, wavelength, reflecting, transfer, degrade	

I Know About MOLECULES and ORGANISMS
Structure and Process

☐ I can describe the components or the following systems, and explain how the components interact: sensory, circulatory, skeletal, digestive, and respiratory.



☐ I can construct an argument that plants and animals have internal and external structures that function to support:

- Growth
- Behavior
- Reproduction
- Survival

☐ I can create a model that shows animals receive different types of information through their senses.

☐ I can explain how animals process information in their brain and respond to that information in different ways.

☐ I can explain how animals use their memories, instincts, and perceptions to guide their actions.

A little primer for my teacher:

Mascoma Standards	W.4.1- Write opinion pieces on topics or texts, supporting a point of view with reasons and information.	SL.4.5- Add audio recording and visual displays to presentations when appropriate to enhance the development of main ideas or themes.

	G.4.3- Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded across the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	
Vocabulary	System, component, interaction, sensory, circulatory, skeletal, digestive, respiratory, structure, function, internal, external, growth, behavior, reproduction, survival, process, respond, instinct, perception	

I Know About EARTH's PLACE IN THE UNIVERSE

☐ I can identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (ie. Rock layers with marine shell fossils above rock layers with plant fossils and no shells indicating a change from land to water over time. A canyon with different rock layers in the walls and a river at the bottom indicating that over time the river cut through the rock.)

☐ I can observe the presence and location of certain types of fossils and indicate the order in which rock layers were formed.

☐ I can use evidence to support the explanation that local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes, or glacial activity.

A little primer for my teacher:

Mascoma Standards	W.4.7- Conduct short research projects that build knowledge through investigation of different aspects of a topic.	W.4.8- Recall relevant information from experiences or gather relevant information from print and digital sources; takes notes and categorizes information, and provides a list of sources.
	W.4.9- Draw evidence from literary or informational texts to support analysis, reflection, and research.	MP.4.2- Reason abstractly and quantitatively.
	MP.4.4- Model with mathematics.	MD.4.1- Know relative sizes of measurement units within one system of units including: km, m, cm; kg, g, mg; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements of a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table
Vocabulary	Rock, formation, fossils, earth forces, glacial	

I Know About EARTH'S SYSTEMS

☐ I can analyze and interpret data from maps to describe patterns of Earth's features (mountain ranges, basins, ocean trenches, volcanoes, plains, deserts, etc.).

☐ I can observe/measure rainfall and explain how it moves rocks, soil, and sediment around.

☐ I can compare and contrast how water, ice, wind, and gravity help to shape the land.

☐ I can construct a model to show that most earthquakes and volcanoes occur in bands that are often found along the boundaries between continents and oceans.

☐ I can provide evidence that major mountain chains form inside continents, or near their edges.

☐ I can provide evidence as to how living things affect the physical characteristics of their region.

A little primer for my teacher:

Mascoma Standards	RI.4.7- Interpret information presented visually, orally, or quantitatively (charts, graphs, diagrams, time lines, live animations, or interactive web pages) and explain how the information contributes to an understanding of the text in which it appears.	W.4.7- Conduct short research projects that build knowledge through investigation of different aspects of a topic.
	W.4.8- Recall relevant information from experiences or gather relevant information from print and digital sources; takes notes and categorizes information, and provides a list of sources.	MP.4.2- Reason abstractly and quantitatively.
	MP.4.4- Model with mathematics.	MD.4.1- Know relative sizes of measurement units within one system of units including: km, m, cm; kg, g, mg; lb, oz; l, ml; hr, min, sec. Within a single system of measurement, express measurements of a larger unit in terms of a smaller unit. Record

		measurement equivalents in a two-column table
	MD.4.2- Use the four operations to solve word problems involving distances, intervals of time, liquid volume, masses of objects, and money, including problems involving simple fractions and decimals, and problems that require expressing measurements of a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	
Vocabulary	Earth features, mountain ranges, ocean trenches, basins, sediment, silt, Continental shelf, boundaries, physical characteristics	

I Know About EARTH and HUMAN ACTIVITY

☐ I can obtain and display information that show how energy is derived from natural resources, and how their use affects the environment.

☐ I can use a timeline to illustrate how people's needs for new and improved energy technology have changed over time.

☐ I can create a presentation that shows how engineers have improved an existing technology or developed a new technology to increase benefits, reduce risks, or meet societal demands.

☐ I can generate and compare multiple solutions to reduce the impact of natural Earth processes on humans (earthquake resistant building, better

monitoring of volcanic activity, housing built above flood plains, farming methods to reduce erosion, etc.).

A little primer for my teacher:

Mascoma Standards	RI.4.1- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	RI.4.9- Integrate information from two texts on the same topic in order to write or speak about the subject knowledgably.
	W.4.7- Conduct short research projects that build knowledge through investigation of different aspects of a topic.	W.4.8- Recall relevant information from experiences or gather relevant information from print and digital sources, take brief notes on sources and sort evidence into provided categories.
	MP.4.2- Reason abstractly and quantitatively	MP.4.4- Model with mathematics
	A.4.1- Interpret a multiplication equation as a comparison. (interpret that 35=5x7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.	
Vocabulary	Energy, resources, environments, technology, engineers, societal demands, benefits, risks, impact	