

Nebraska Customized Science Kindergarten

Table of Contents

Title

Concept

Inquiry, the Nature of Science, and Technology

Inquiry

- 2.1.1 Students will ask questions and conduct investigations that lead to observations and communication findings**
- a. Scientific Questioning: Explore teacher generated questions that relate to a science topic**
 - b. Scientific Investigations: Participate in simple, teacher-facilitated investigations**
 - c. Scientific Tools: Explore the guided use of tools (e.g., hand lens, balance, nonstandard measurement tools)**
 - d. Scientific Observations: Using the five senses, describe objects, organisms, or events through pictures, words, and numbers**
 - e. Scientific Data Collection: Collect and record observations using pictures, words, and symbols (e.g., weather charts, birthdays, lost teeth)**
 - f. Scientific Communication: Use drawings and words to describe and share observations with others**
 - g. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry**

Physical Science

Matter

- 2.2.1 Students will observe and describe properties of objects and their behavior**

- a. Properties and Structure of Matter: Observe physical properties of objects (color, size, shape)**

Really Big Buttons	sort by color, shape and size
--------------------	-------------------------------
- b. Properties and Structure of Matter: Sort objects by physical attributes (color, size, shape)**

Nuts and Bolts	sort by color, shape and size
----------------	-------------------------------
- c. Properties and Structure of Matter: Measure objects using comparative terms (heavier, lighter, longer, shorter) and non-standard units**

Clever Cube	physical properties
Measure Mania	non-standard unit of measure

Force and Motion

- 2.2.2 Students will compare relative position and motion of objects**

- a. Motion: State location and/or motion relative to another object or its surroundings (in front of, behind, between, over, under, up, and down)**

Frog Order	in front of, between, over, up and down
------------	---

Kindergarten Table of Contents (Continued)

Title

Concept

Life Science

Structure and Function of Living Systems

2.3.1 Students will investigate the characteristics of living things

a. Characteristics of Life: Differentiate between living and nonliving things

Alive or Not

living organisms/non-living resources

b. Characteristics of Living Organisms: Identify the basic needs of living things (food, water, air, space, shelter)

Basic Needs

basic needs of plant and animals

Heredity

2.3.2 Students will recognize changes in living things

a. Inherited Traits: Describe how offspring resemble their parents

Look Alikes

offspring/parents resemble

Earth and Space Sciences

Earth in Space

2.4.1 Students will observe and identify objects of the sky

a. Objects in the Sky and Universe: Identify objects in the sky (Sun Moon, stars) and when they are observable

Sky Sites

objects in the sky

Energy in Earth's Systems

2.4.3 Students will observe simple patterns of change on Earth

b. Weather and Climate: Observe and describe simple daily changes in weather

Weather Diary

tracking weather

Nebraska Customized Science

1st Grade

Table of Contents

Title

Concept

Inquiry, the Nature of Science, and Technology

Inquiry

2.1.1 Students will ask questions and conduct investigations that lead to observations and communication of findings

a. Scientific Questioning: Recognize questions that relate to a science topic

b. Scientific Investigations: Conduct simple investigations

c. Scientific Tools: Use simple tools appropriately (e.g., observation and measurement tools)

d. Scientific Observations: Using the five senses, describe objects, organisms, or events through pictures, words, and numbers

e. Scientific Data Collection: Collect and record observations using pictures, words, and symbols

f. Scientific Communication: Use drawings and words to describe and share observations with others

g. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry

Physical Science

Matter

2.2.1 Students will observe and describe properties of objects and their behavior

a. Properties and Structure of Matter: Observe physical properties of objects (texture, weight)

b. Properties and Structure of Matter: Sort objects by physical attributes (texture, weight)

Ball Bonanza

sort by physical attributes

c. Properties and Structure of Matter: Measure objects using non-standard and standard units

Ruler Roundup

standard units of ruler

Measure Mania

non-standard unit of measurement

Force and Motion

2.2.2 Students will compare relative position and motion of objects

b. Motion: Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, and fast and slow)

Let's Move

objects move in many ways

Grade 1 Table of Contents (Continued)

Title

Concept

Life Science

Structure and Function of Living Systems

2.3.1 Students will investigate the characteristics of living things

c. Characteristics of Living Organisms: Identify external parts of plants and animals

Animal Parts

structure/function

Plant Parts

structure/function

Heredity

2.3.2 Students will recognize changes in living things

b. Reproduction: Describe how living things change as they grow

Little Big Bigger

living things change as they grow

Earth and Space Sciences

Earth in Space

2.4.1 Students will observe and identify objects of the sky

b. Motion of Objects in the Solar System: Identify objects that appear to move in the sky (the Sun, the Moon, stars)

Sky Scooters

movement of sky objects

Earth Structures and Processes

2.4.2 Students will observe, identify, and describe characteristics of Earth's materials

a. Properties of Earth Materials: Describe Earth materials (sand, soil, rocks, water)

Ready Resources

earth materials

Wonderful Rocks

rock properties

Natural or Not

earth materials

Energy in Earth's Systems

2.4.3 Students will observe simple patterns of change on Earth

c. Weather and Climate: Describe simple seasonal weather indicators and how they impact students' choices (activities, clothing)

Weather Choices

weather/clothes

Nebraska Customized Science

2nd Grade

Table of Contents

Title

Concept

Inquiry, the Nature of Science, and Technology

Inquiry

2.1.1 Students will ask questions and conduct investigations that lead to observations and communication findings

- a. **Scientific Questioning:** Ask questions that relate to a science topic
- b. **Scientific Investigations:** Conduct simple investigations
- c. **Scientific Tools:** Select and use simple tools appropriately (e.g., observation and measurement tools)
- d. **Scientific Observations:** Describe objects, organisms, or events using pictures, words, and numbers
- e. **Scientific Data Collection:** Collect and record observations
- f. **Scientific Communication:** Use drawings and words to describe and share observations with others
- g. **Mathematics:** Use appropriate mathematics in all aspects of scientific inquiry

Physical Science

Matter

2.2.1 Students will observe and describe properties of objects and their behavior

- a. **Properties and Structure of Matter: Observe physical properties of objects (freezing, melting, sinking, and floating)**

Float Your Boat
Ice is Nice

sort by physical attributes
sort by physical attributes

- b. **Properties and Structure of Matter: Sort objects by physical attributes (freezing, melting, sinking, and floating)**

Discovering Density
Little Lava Lamp

grouping/sorting
density—how it affects matter

- c. **Properties and Structure of Matter: Measure objects using simple tools (ruler, balance, hand lens, thermometer) and standard units to quantify characteristics**

Balancing Act
Temperature Basics

standard units of balance measurement
standard units of thermometer

- d. **States of Matter: Identify solids and liquids and recognize that liquids take the shape of their container**

Lazy Liquids
Stubborn Solids

takes shape of container
takes shape of container

Grade 2 Table of Contents (Continued)

Title

Concept

Life Science

Structure and Function of Living Systems

2.3.1 Students will investigate the characteristics of living things

d. Characteristics of Living Organisms: Observe and match plants and animals to their distinct habitats

Habitat Home

habitats

Find a Fish

camouflage

Fur, Fins and Feathers

adaptation to environment

Biodiversity

2.3.4 Students will recognize changes in organisms

a. Biological Adaptations: Recognize seasonal changes in animals and plants

Plant Calendar

seasonal changes in plants

Animal Calendar

seasonal changes in animals

Create a Creature

adapting to environment/survival

Earth and Space Sciences

Earth Structures and Processes

2.4.2 Students will observe, identify, and describe characteristics of Earth's materials

b. Use of Earth Materials: Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling

Too Much Trash

recycling (tires/landfill)

Acetone Action

recycling

Energy in Earth's Systems

2.4.3 Students will observe simple patterns of change on Earth

a. Energy Sources: Observe that the Sun provides heat and light

Simply Solar

solar energy

Heat and Light

light can be absorbed

Nebraska Customized Science

Grade 3

Table of Contents

Page	Title	Concept
1	Title and Permissions Page	
3-8	Table of Contents	
9	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

5.1.1 Students will plan and conduct investigations that lead to the development of explanations.

a. Scientific Questioning: Identify scientific questions that can be investigated

b. Scientific Investigations: Plan and conduct simple scientific investigations

c. Scientific Tools: Use equipment correctly and accurately

12-21	Water Tower	design and force
22-31	An Impossible Journey	scientific method
32-41	TP Testing Trials	tensile strength
42-51	A Bridge Just Far Enough	force/materials/design

d. Scientific Observations: Make observations and measurements

52-61	Everyday Form and Function	form and function
62-71	Air Bag Teeter-Totter	density and heat

e. Scientific Data Collection: Collect and organize data

72-81	"Bee" a Pollen "Count"	pollen and graphing skills
82-91	As the Ball Bounces	efficiency conservation

f. Scientific Interpretations, Reflections, and Applications: Develop a reasonable explanation based on collected data (teacher guided)

g. Scientific Communication: Share information, procedures, and results with peers and/or adults

h. Scientific Communication: Provide feedback on scientific investigations

i. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry

92-101	Bubble Gum Science	percentage solutions
--------	--------------------	----------------------

Nature of Science

5.1.2 Students will describe how scientists go about their work

a. Scientific Knowledge: Recognize that scientific explanations are based on evidence

104-113	Different Shapes Hot Air Racer	design and form
---------	--------------------------------	-----------------

b. Science and Society: Recognize that new discoveries are always being made which impact scientific knowledge

114-123	Science for You and Me	science and technology use
---------	------------------------	----------------------------

c. Science as a Human Endeavor: Recognize many different people study science

124-133	Scientists; Wanted Dead or Alive	biography of famous scientists
---------	----------------------------------	--------------------------------

Grade 3 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Physical Science

Matter

5.2.1 Students will explore and describe the physical properties of matter and its changes

b. Properties and Structure of Matter: Identify and sort physical properties of matter (color, odor, elasticity, weight, volume)

c. Properties and Structure of Matter: Use appropriate metric measurements to describe physical properties

d. States of Matter: Identify physical properties of solids, liquids, and gasses

136-145	Matter Verbs	physical changes
146-155	The Three Little States	states of matter
156-165	May I Borrow a Cup of Air?	air as matter
166-175	What's My Color?	color and reflection
176-185	Dimension Diary	dimensions with SI/English units
186-195	Matters of Mass	mass and weight
196-205	Volumes' Value	volume measurement
206-215	Defining Density	density calculations

Force and Motion

5.2.2 Students will identify the influence of forces on motion

c. Universal Forces: Describe magnetic behavior in terms of attraction and repulsion

216-225	Magnetic Salad	magnetic field
226-235	Dancing Iron	magnetism and properties
236-245	Stack O' Magnets	magnetism, repulsion and attraction
246-255	Cork on the High Seas	compass and magnetism
256-265	Magnetic Pull Factor	magnetic field and measurement

Energy

5.2.3 Students will observe and identify signs of energy transfer

f. Electricity/Magnetism: Recognize that the transfer of electricity in an electrical circuit requires a closed loop

266-275	Human Dynamo	static electricity
276-285	Dancing Angels	static electricity
286-295	Light Up My Life	electricity and circuits
296-305	Making Connections	insulators and conductors

Life Science

Structure and Function of Living Systems

5.3.1 Students will investigate and compare the characteristics of living things

a. Characteristics of Life: Compare and contrast characteristics of living and nonliving things

308-317	I'm Alive! Or Am I?	characteristics of life
318-327	Get a Life!	life requirements
328-337	What Do I Need?	life requirements and pollution
338-347	How Do You Do That?	life functions

Grade 3 Table of Contents (Continued)

Page	Title	Concept
Life Science (Continued)		
b. Characteristics of Living Organisms: Identify how parts of animals function to meet basic needs (e.g., leg of an insect helps an insect to move)		
348-357	Fangs R Us	venom and structure
358-367	A Duck's Back	feathers and protection
368-377	Eyeballs; Dinner or Diner?	predator and prey
378-387	Animal Parts and Purpose	form and function
<i>Heredity</i>		
5.3.2 Students will identify variations of inherited characteristics and life cycles		
a. Inherited Traits: Identify inherited characteristics of animals		
388-397	Your Fingertip ID	genetics and fingertip structure
398-407	Is it Mom, Dad or Me?	inherited or acquired characteristics
408-417	Family Tree Archaeology	family genetics
418-427	Hidden Danger	genetic defects and mutations
428-437	Your Boss Eye	vision and genetics
438-447	Design a Kid	inherited genetic traits
b. Reproduction: Identify the life cycle of an organism (animals)		
448-457	Yeasty Beasties	fermentation and life cycle
458-467	Basic Butterfly Building	metamorphosis and insects
468-477	Earthworm Antics	earthworm life cycle and habitat
478-487	From One Cell to Me	human life cycle
Earth and Space Sciences		
<i>Earth in Space</i>		
5.4.1 Students will observe and describe characteristics, patterns, and changes in the sky		
a. Objects in the Sky and Universe: Recognize that the observed shape of the Moon changes from day to day during a one month period		
490-499	Moon Tracker	following the Moon
500-509	My Moon Diary	Moon phases
<i>Earth Structures and Processes</i>		
5.4.2 Students will observe and describe Earth's materials, structure, and processes		
a. Properties of Earth Materials: Describe the characteristics of rocks, minerals, soils, water, and the atmosphere		
<i>Rocks/Minerals</i>		
510-519	Mineral Detectives; Case #1	rocks and minerals/rose quartz
520-529	Mineral Detectives; Case #2	rocks and minerals/amethyst
530-539	Mineral Detectives; Case #3	rocks and minerals/calcite
540-549	Mineral Detectives; Case #4	rocks and minerals/magnetite
550-559	Mineral Detectives; Case #5	rocks and minerals/talc
560-569	Mineral Detectives; Case #6	rocks and minerals/pyrite
570-579	Mineral Detectives; Case #7	rocks and minerals/mica
580-589	Mineral Detectives; Case #8	rocks and minerals/jasper

Grade 3 Table of Contents (Continued)

Page	Title	Concept
Earth and Space Science (Continued)		
<i>Soils</i>		
590-599	Dirt Recipe	soils and plants
<i>Water</i>		
600-609	Water Cycle Bag	water cycle
<i>Atmosphere</i>		
610-619	Air Blanket	atmosphere model
620-629	Big Sky Clouds	clouds and weather
630-639	Sky in a Jar	atmosphere and light scattering
Energy in Earth's Systems		
5.4.3 Students will observe and describe the effects of energy		
c. Weather and Climate: Recognize the difference between weather, climate, and seasons		
640-649	Cup by Cup Meteorology	weather maps and patterns
650-659	Climate Countdown	climate and latitudes
660-669	Rain Shadows	deserts and rain shadows

Activity Resources

671	<i>Matter Verbs</i> —duplication sheet
672	<i>Delightful Dimensions</i> —data sheet
673	<i>Mass Madness</i> —data sheet
674	<i>Valuable Volumes</i> —data sheet
675	<i>Density Detectives</i> —data sheet
676-677	<i>I'm Alive! Or Am I?</i> —duplication sheets
678	<i>Your Fingertip ID</i> —data sheet
679	<i>Is it Mom, Dad or Me?</i> —data sheet
680	<i>Hidden Danger</i> —duplication sheet
681	<i>Your Boss Eye</i> —data sheet
682-683	<i>Design a Kid</i> —data sheets
684	<i>From One Cell to Me</i> —duplication sheet
685	<i>My Moon Diary</i> —data sheet

Glossary

687-721

Pages For Notes

723-726

Nebraska Customized Science

Grade 4

Table of Contents

Page	Title	Concept
1	Title and Permissions Page	
3-8	Table of Contents	
9	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

5.1.1 Students will plan and conduct investigations that lead to the development of explanations.

a. Scientific Questioning: Ask scientific questions that can be answered through investigations

12-21	Popsicle Palace	design and forces
22-31	Cool Can Crushing	pressure/heat/forces
32-41	Balloon Gobler	pressure/heat/forces

b. Scientific Investigations: Plan and conduct simple scientific investigations

42-51	Paper Towel Derby	scientific method absorption
52-61	Diaper Derby	scientific method absorption
62-71	Penny and Water Battle	molecular kinetic theory

c. Scientific Tools: Select and use equipment correctly and accurately

72-81	Flying Maple Seed	measurement and energy
-------	-------------------	------------------------

d. Scientific Observations: Differentiate between relevant and non-relevant observations

82-91	Candle Watching Basics	observations
92-101	Heat With Attitude	conduction/convection/radiation

e. Scientific Data Collection: Collect and organize data

f. Scientific Interpretations, Reflections, and Applications: Develop a reasonable explanation based on collected data (teacher guided)

g. Scientific Communication: Share information, procedures, and results with peers and/or adults

h. Scientific Communication: Provide feedback on scientific investigations

i. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry

102-111	Grappling With Graphs	graphs and velocity
112-121	Hot and Cold Balloon	gas volume and temperature

Nature of Science

5.1.2 Students will describe how scientists go about their work

a. Scientific Knowledge: Recognize that scientific explanations are based on evidence and scientific knowledge

124-133	The Going Rate	velocity and conservation of energy
---------	----------------	-------------------------------------

Grade 4 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Nature of Science (Continued)

b. Science and Society: Recognize that new discoveries are always being made which impact scientific knowledge

c. Science as a Human Endeavor: Recognize many different people study science

134-143	Biography Bingo I	scientists of physical science
---------	-------------------	--------------------------------

Technology

5.1.3 Students will solve a simple design problem

a. Abilities to do Technical Design: Identify a simple problem

b. Abilities to do Technical Design: Propose a solution to a simple problem

c. Abilities to do Technical Design: Implement the proposed solution

d. Abilities to do Technical Design: Evaluate the implementation

e. Abilities to do Technical Design: Communicate the problem, design, and solution

144-153	Seat Belt and Fresh Eggs	design and inertia
---------	--------------------------	--------------------

Physical Science

Matter

5.2.1 Students will explore and describe the physical properties of matter and its changes

a. Properties and Structure of Matter: Create simple mixtures and identify the physical properties of the individual substances which make up the mixture

156-165	Mixed Up or Not	physical change and mixtures
166-175	Solution Solutions	solutions
176-185	Stir Crazy	solutions
186-195	Crystal Rope	solids and physical change
196-205	Filter Mania	solutions and separations

c. Properties and Structure of Matter: Use appropriate metric measurements to describe physical properties

206-115	Walk Through Sheet of Paper	matter and space in matter
216-225	Is it Full Yet?	matter and space in matter

Energy

5.2.3 Students will observe and identify signs of energy transfer

a. Sound/Mechanical Waves: Recognize that sound is produced from vibrating objects; the sound can be changed by changing the vibration

226-235	Music to My Ears	frequency and sound
236-245	Ring-a-Ding Coat Hanger	sound and vibration
246-255	Paper Cup Clucker	sound and energy conversion
256-265	Warbling Bird	sound and waves
266-275	Whistle While You Work	sound and frequency

b. Light: Recognize that light travels in a straight line and can be reflected by an object (mirror)

276-285	Ball on a "Light" Rope	waves and reflection
286-295	Milk, Mirrors and Submarines	reflection and periscope

c. Light: Recognize that light can travel through certain materials and not others (transparent, translucent, opaque)

296-305	Light Pipe	fiber optics
306-315	Lost Light	light transmission
316-325	Light Table	wave table

Grade 4 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Life Science

Structure and Function of Living Systems

5.3.1 Students will investigate and compare the characteristics of living things

b. Characteristics of Living Organisms: Identify how parts of plants function to meet basic needs (e.g., root of a plant helps the plant obtain water)

328-337	Flat Green Food Factories	plant structure and photosynthesis
338-347	The Celery Dyed!	plant structure/function
348-357	Split Personality	plant structure/function
358-367	Plant in a Bag	water transport
368-377	Fruit de Jour	reproduction and pollination
378-387	Leaf Umbrella	plant structure/function
388-397	Sprout Science	germination and photosynthesis
398-407	Side Order of Seeds	plant behavior and germination
408-417	Peanut Cutup	seed structure
418-427	Corny Science	seeds and food

Heredity

5.3.2 Students will identify variations of inherited characteristics and life cycles

a. Inherited Traits: Identify inherited characteristics of plants

428-437	Some Disassembly Required	flowers and reproduction
438-447	Perfectly Pleasing Pollination	pollination and pollinators
448-457	Half a Cup of Chromosomes	sexual reproduction and meiosis
458-467	Two Half Cups of Chromosomes	fertilization and gametes
468-477	Double Your Fun	asexual reproduction and mitosis

b. Reproduction: Identify the life cycle of an organism (plants)

478-487	Cylindrical Life	fermentation and life cycle
488-497	Bottled Onion	plant life cycle
498-507	Side Order of Onions	plant behavior
508-517	Banana in a Bag	life cycle and decomposition
518-527	Salt to the Rescue	life cycle and preservatives
528-537	Hop to It!	frog life cycle
538-547	Matching Mammals	old and young comparison

Flow of Matter and Energy in Ecosystems

5.3.3 Students will describe relationships within an ecosystem

a. Flow of Energy: Diagram and explain a simple food chain beginning with the Sun

548-557	Food Chain Gang	food chain
558-567	Spin a Food Web	food web
568-577	Out to Lunch Playground	energy pyramid

Grade 4 Table of Contents (Continued)

Page	Title	Concept
-------------	--------------	----------------

Earth and Space Sciences***Earth Structures and Processes*****5.4.2 Students will observe and describe Earth's materials, structure, and processes****b. Earth's Processes: Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface**

580-589	Ice Power	weathering and erosion
590-599	Glacial Bulldozing	glaciers and erosion
600-609	Glacier Pressure	glaciers and continental uplift
610-619	Supermarket Water Cycle	water cycle
620-629	Slosh and Block	erosion

Energy in Earth's Systems**5.4.3 Students will observe and describe the effects of energy****a. Energy Sources: Describe the sun's warming effect on the land and water**

630-639	Tossed Earth	ocean/land comparison
640-649	Earth's Big Water Bucket	heat and the ocean
650-659	Water in the Bank	forms and location of water on Earth
660-669	Shady Day Earth	volcanoes effect of Earth heating
670-679	Keeping the Ocean "Current"	ocean currents

Earth's History**5.4.4 Students will describe changes in Earth****a. Past/Present Earth: Describe how slow processes (erosion, weathering, deposition) change Earth's surface**

680-689	Erosion Explosion	erosion and weathering
690-699	Tubular Glacier	glaciers
700-709	Two Liter Groundwater	groundwater
710-719	Cave on a String	groundwater and caves

Activity Resources

720-721	<i>Flying Maple Seed</i> —data sheet
722	<i>Candle Watching Basics</i> —reference sheet
723	<i>Grappling With Graphs</i> —data sheet
724-732	<i>Biography Bingo I</i> —duplication and reference sheets
733	<i>Walk Through Sheet of Paper</i> —pattern
734	<i>Half Cup of Chromosomes</i> —data sheet
735	<i>Two Half Cups of Chromosomes</i> —data sheet
736	<i>Double Your Fun</i> —data sheet
737	<i>Hurricane Detectives</i> —duplication sheet
738-739	<i>Keeping the Ocean "Current"</i> —duplication sheets

Glossary

741-775

Pages For Notes

777-780

Nebraska Customized Science

Grade 5

Table of Contents

Page	Title	Concept
1	Title and Permissions Page	
3-9	Table of Contents	
10	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

5.1.1 Students will plan and conduct investigations that lead to the development of explanations.

- a. Scientific Questioning: Ask testable scientific questions**
- b. Scientific Investigations: Plan and conduct investigations and identify factors that have the potential to impact an investigation**
- c. Scientific Tools: Select and use equipment correctly and accurately**
- d. Scientific Observations: Make relevant observations and measurements**
- e. Scientific Data Collection: Collect and organize data**
- f. Scientific Interpretations, Reflections, and Applications: Develop a reasonable explanation based on collected data (teacher guided)**
- g. Scientific Communication: Share information, procedures, and results with peers and/or adults**
- h. Scientific Communication: Provide feedback on scientific investigations**
- i. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry**

Nature of Science

5.1.2 Students will describe how scientists go about their work

- a. Scientific Knowledge: Recognize that scientific explanations are based on evidence and scientific knowledge**

Booster Bag Math and Science

12-13	Construction Instructions	building your rocket
14-15	Water Pipe Angle Finder	building a protractor locator
16-17	Practice, Practice, Practice	flying the rocket
18-19	How High I Fly?	altitude calculations
20-21	Going the Distance	achieving maximum distance
22-23	Location, Location, Location	grid locations
24-25	Rocket Racer	speed and velocity
26-27	Hitting the Mark	accuracy and precision
28-29	Form, Fins, and Flight	improvement modifications
30-31	Rocket Relay	testing modifications

- b. Science and Society: Recognize that new discoveries are always being made which impact scientific knowledge**

32-33	From Then to Now	history and technology
34-35	From Then to Now for Us	how technology affects us
36-37	From Then to Now OOPS	technology's problems

- c. Science as a Human Endeavor: Recognize many different people study science**

38-39	Biography Bingo II	scientists in life/earth science
-------	--------------------	----------------------------------

Grade 5 Table of Contents (Continued)

Page	Title	Concept
Physical Science		
<i>Matter</i>		
5.2.1 Students will explore and describe the physical properties of matter and its changes		
a. Properties and Structure of Matter: Identify pure substances and mixtures		
42-43	Adding Matter	solutions and space in matter
44-45	Atmospheric Cow	air as matter
b. Properties and Structure of Matter: classify and categorize objects by multiple quantitative physical attributes (e.g., dimensions, mass, volume, temperature)		
176-185	Delightful Dimensions	measurements
186-195	Mass Madness	mass and weight
196-205	Valuable Volumes	measurement of volume
206-215	Density Detectives	calculation of density
54-55	Heat or Temperature?	heat or temperature
c. Properties and Structure of Matter: Use appropriate metric measurements to describe physical properties		
56-57	Blue Snow Conversion	conservation of matter
58-59	“Watt’s” the Charge?	power and electricity
60-61	Flex Capacitor	elasticity
62-63	Bag in a Bag Ice Cream	change of state
64-65	Checking the Bounce	energy conversion and efficiency
d. States of Matter: Identify physical properties of solids, liquids, and gasses		
66-67	Recyclers; Magnetic Personalities	properties/magnetism
68-69	Recyclers; Floaters	properties/density
70-71	Recyclers; Strainers	properties/solutions
72-73	Recyclers; How Dry I Am!	properties/ evaporation
74-75	Kinetic Molecular Madness	molecular kinetic theory
<i>Force and Motion</i>		
5.2.2 Students will identify the influence of forces and motion		
a. Motion: Describe motion by tracing and measuring an object’s position over a period of time (speed)		
76-77	Runny Money	inertia and movement
78-79	Racing Bowls	rotary motion and energy conversion
80-81	Balloon to the Moon	force couples
b. Forces/Newton’s 2nd Law: Describe changes in motion due to outside forces (push, pull, gravity)		
82-83	Pushing Pushes	push forces
84-85	Pulling Pulls	pull forces
86-87	Boxed Set of Newton	Newton’s Laws
88-89	Newton’s Traffic Jam	Newton’s Laws
90-91	Little Lung Launch	energy conversion
92-93	Punching Bag Momentum	momentum and forces
94-95	Bob and the Pendulum	gravity and the pendulum
96-97	Anti-Gravity Cup	angular movement and force
98-99	Gravity Stopper?	gravity and forces

Grade 5 Table of Contents (Continued)

Page	Title	Concept
-------------	--------------	----------------

Physical Science (Continued)**Energy****5.2.3 Students will observe and identify signs of energy transfer****d. Heat: Identify ways to generate heat (e.g., friction, burning, incandescent light bulb)**

100-101	Friction Follies	friction as a force
102-103	Friction is Such a Drag	spring scale and friction
104-105	“Cool” Coin Trick	heat and combustion
106-107	Burning a Nail?	surface area and combustion
108-109	Fist of Heat	chemical change and heat
110-111	Rust and Warm Hands`	chemical change and heat

e. Heat: Identify materials that act as thermal conductors or insulators

112-113	A Handful of Heat	heat conduction
114-115	Tempest in a Teapot	convection current
116-117	The R Factor	heat and insulation

Life Science**Flow of Matter and Energy in Ecosystems****5.3.3 Students will describe relationships within an ecosystem****b. Flow of Matter and Energy in Ecosystems: Identify the roles of producers, consumers, and decomposers in an ecosystem**

120-121	Chain of Energy	food chain
122-123	Rotten Links	decomposers
124-125	Makers or Takers	producers or consumers
126-127	Make, Eat, or Rot	classification of life

c. Ecosystems: Recognize the living and nonliving factors that impact the survival of organisms in an ecosystem

128-129	Buggin' Out	survival game
130-131	A Planet's Support System	energy pyramid

d. Impact on Ecosystems: Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live

132-133	Here's the Facts	human effect on the environment
134-135	Natural Changes	life's effect on other life
136-137	Predator, Prey, or Parasite?	how consumers obtain energy

Diversity**5.3.4 Students will describe changes in organisms over time****a. Biological Adaptations: Describe adaptations made by plants or animals to survive environmental changes**

138-139	Survival 101	adaptation and survival
140-141	Toothpick Prey	animal camouflage
142-143	What's My Choices?	adaptation to changes
144-145	Migrate, Hibernate, or Change Clothes	adaptation and change

Grade 5 Table of Contents (Continued)

Page	Title	Concept
Earth and Space Sciences		
<i>Earth in Space</i>		
5.4.1 Students will observe and describe characteristics, patterns, and changes in the sky		
b. Motion of Objects in the Solar System: Recognize the motion of objects in the sky (the Sun, the Moon, stars) change over time in recognizable patterns		
148-149	A Little R and R	revolution and rotation
150-151	Daytime Moon	Moon and lunar phases
152-153	Earth Seasoning	seasons
154-155	Low Tech Sun Clock	sundial
156-157	Sunup and Sundown	day length and revolution
158-159	Star Tracker	star apparent movement
<i>Earth Structures and Processes</i>		
5.4.2 Students will observe and describe Earth's materials, structure, and processes		
c. Use of Earth Materials: Identify how Earth materials are used (fuels, building materials, sustaining plant life)		
160-161	Roasted Coal	coal and energy
162-163	Energy for All	forms of energy we use
164-165	Earth's Top Ten	elements we use in the crust
166-167	Modern Materials Mapping	resources and technology
168-169	Wood Splint 2 x 4	wood materials
170-171	Dirty Soil Basics	soil
172-173	Back to Our Roots	soil use and plants
<i>Energy in Earth's Systems</i>		
5.4.3 Students will observe and describe the effects of energy		
b. Weather and Climate: Observe, measure, and record changes in weather (temperature, wind direction and speed, precipitation)		
174-175	All Weather Up Front	weather and weather fronts
176-177	Teaspoon Anemometer	wind speed instrument
178-179	Gallon Gauge	precipitation amounts
<i>Earth's History</i>		
5.4.4 Students will describe changes in Earth		
a. Past/Present Earth: Describe how slow processes (landslides, volcanic eruptions, earthquakes) change Earth's surface		
180-181	Tubular Volcano	volcano model
182-183	Dusty Old Volcano	volcanoes and climate
184-185	Earth Vibes	earthquake waves
186-187	SUV Seismograph	earthquakes and seismograph
188-189	That Sinking Feeling	liquefaction and earthquakes

Grade 5 Table of Contents (Continued)

Page	Title	Concept
Assessments and Answers		
193-280	Student Assessments	
281-285	Assessment Answers	
The Learning Zones		
287-548	Science Journal For Science Writing Heuristics	
Activity Resources		
549	<i>Booster Bag Safety Concerns</i> —duplication sheet	
550	<i>How High I Fly</i> —data sheet	
551	<i>Going the Distance</i> —data sheet	
552	<i>Tangent Table</i> —reference sheet	
553-554	<i>Location, Location, Location</i> —duplication and data sheets	
555	<i>Rocket Racer</i> —data sheet	
556	<i>Hitting the Mark</i> —data sheet	
557-563	<i>Biography Bingo II</i> —duplication and reference sheets	
564	<i>Dimension Diary</i> —data sheet	
565	<i>Matters of Mass</i> —data sheet	
566	<i>Volume's Value</i> —data sheet	
567	<i>Defining Density</i> —data sheet	
568-569	<i>"Watt's" the Charge</i> —reference and data sheets	
570	<i>Paper Twister</i> —pattern	
571-572	<i>Chain of Energy</i> —duplication sheets	
573-575	<i>Makers or Takers</i> —data and duplication sheets	
576-577	<i>Make, Eat or Rot</i> —duplication and data sheets	
578-582	<i>Buggin' Out</i> —duplication sheets	
583	<i>A Planet's Support System</i> —duplication sheets	
584	<i>Toothpick Prey</i> —data sheet	
585-586	<i>What's My Choices</i> —duplication sheets	
587	<i>Earth's Top Ten</i> —duplication sheet	
588-589	<i>All Weather Up Front</i> —duplication and reference sheet	
Glossary		
591-625		
Pages For Notes		
627-630		

Nebraska Customized Science

Grade 6

Page	Title	Concept
1	Title and Permissions Page	
3-6	Table of Contents	
7	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

8.1.1 Students will design and conduct investigations that will lead to the descriptions of relationships between evidence and explanations.

a. Scientific Questioning: Formulate testable questions that lead to predictions and scientific investigations

10-11	Wild, Wild Waves	waves and characteristics
12-13	Wave Shadows	wave table
14-15	Tubular Ecology	ecology population study
16-17	Water Table ala Tub	percolation rates and water table
18-19	Compass Confusion	electromagnet and compass
20-21	Rivers to Go	simple stream table

b. Scientific Investigations: Design and conduct logical and sequential investigations including repeated trials

Nature of Science

8.1.2 Students will apply the nature of science to their own investigations

<i>Making Waves</i>	ripple tank
<i>Tubular Ecology</i>	ecology population study
<i>Water Table ala Tub</i>	percolation rates and water
<i>Compass Confusion</i>	electromagnet and compass
<i>Rivers to Go</i>	simple stream table

Repeat these activities using suggested ideas for investigations, using the equipment in previous activities.

Technology

8.1.3 Students will solve a design problem that involves one or two science concepts

24-25	Best Boxes Bridging	design and test cardboard bridge
26-27	Wonderful Wooden Walkway	design and test wooden bridge
28-29	Plastic Perfect Pathway	design and test plastic bridge
30-31	Find Me a Force	force identification
32-33	Point to the Force	vectors and force couples
34-35	Spring Scale Survey	energy conversion/elasticity
36-37	Handy Work and Power	work and power calculations

Grade 6 Table of Contents (Continued)

Page	Title	Concept
Physical Science		
<i>Energy</i>		
8.2.3 Students will identify and describe how energy systems and matter interact.		
a. Sound/Mechanical Waves: Recognize that vibrations set up wave-like disturbances that spread away from the source (sound, seismic, water waves)		
b. Sound/Mechanical Waves: Identify that waves move at different speeds in different materials		
40-41	Slinky®	sound and light waves
42-43	Slinky® Laser	sound and waves
44-45	Rings of Sound	Doppler Effect
46-47	Super Sized Soda Pop Phone	sound and technology
48-49	Musical Hands	pitch and music
c. Light: Recognize that light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection)		
d. Light: Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light sources		
50-51	EMS Wave Roundup	electromagnetic spectrum
52-53	CD Rainbow Analyzer	visible light and the EMS
54-55	Solar Sponges	absorption of UV light
56-57	Sunlight Protection Chamber	UV light and technology
58-59	Coins Over the Rim	refraction and the atmosphere
60-61	Laser Roundup	reflection
62-63	“Psycho” Light	wave/particle nature of light
e. Heat: Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature		
64-65	The Great Heat Escape	heat and insulation
66-67	Heat is Black and White	color and heat
68-69	Test Tubes and Warm Clothes	heat flow
f. Conservation: Describe transfer of energy from electrical and magnetic sources to different energy forms (heat, light, sound, and chemical)		
70-71	Noisy Electricity	electricity and sound
72-73	Steam Wheelie	heat and steam engine
74-75	Wrist Chemistry	light by chemical reaction
76-77	Test My Circuit	light/electricity
78-79	Swapping Energy	energy conversion
80-81	Electron Choices	electric circuits/light
82-83	Soda Straw Car Lock	electromagnetism
84-85	Mini-Motor Madness	electric motor and motion
g. Conservation: Recognize all energy is neither created nor destroyed		
86-87	Sunshine Totals	total energy in a system
88-89	A Gallon of Gas	efficiency and energy conversion

Grade 6 Table of Contents (Continued)

Page	Title	Concept
Life Science		
<i>Flow of Matter and Energy in Ecosystems</i>		
8.3.3 Students will describe populations and ecosystems		
a. Flow of Energy : Diagram and explain the flow of energy through a simple food web		
b. Flow of Energy : Compare the roles of producers, consumers, and decomposers in an ecosystem		
92-93	Food Chain Chains	food chains
94-95	Food Chain Webs	food webs
c. Ecosystems: Recognize that producers transform sunlight into chemical energy through photosynthesis		
96-97	Test Tube Terrariums	light and plant growth
98-99	Tabletop Greenhouse	greenhouse effect and light
e. Ecosystems: Recognize a population is all the individuals of a species at a given place and time		
100-101	Billions and the 3 R's	population and resources
102-103	People Math	doubling time and population
104-105	Trees Be Gone	populations and resources
f. Ecosystems: Identify symbiotic relationships among organisms		
106-107	Getting Along Together	symbiotic relationships
Earth and Space Sciences		
<i>Earth in Space</i>		
8.4.1 Students will investigate and describe Earth and the solar system		
a. Objects in the Sky and Universe: Describe the components of the solar system (the Sun, planets, moons, asteroids, comets)		
110-111	Hoopster Planets	solar system model
112-113	Touchdown Solar System	solar system model
114-115	Planetary Fender Bender	asteroids and the food chain
<i>Earth Structures and Processes</i>		
8.4.2 Students will investigate and describe Earth's structure, systems, and processes		
a. Properties of Earth Materials: Describe the layers of Earth (core, mantle, crust, atmosphere)		
116-117	Apple World	Earth model
118-119	The World in Your Hands	Earth model
120-121	Cycling Rock	rock cycle
b. Properties of Earth Materials: Describe the physical composition of soil		
122-123	The Great Dirt Divide	soil composition
d. Properties of Earth Materials: Describe evidence of Earth's magnetic field		
124-125	Dynamo Under My Feet	Earth's magnetic field

Grade 6 Table of Contents (Continued)

Page	Title	Concept
Earth and Space Sciences (Continued)		
e. Earth's Processes: Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, and earthquakes) that impact Earth's surface		
126-127	Construct and Destruct	constructive and destructive forces
128-129	Pan of Pangea	tectonics
130-131	Plate Mapping Mania	tectonics
132-133	Marvelous Mountain Mapping	mountains and tectonics
134-135	Volcano Locater	volcanoes and tectonics
136-137	Earthquake Detectives	earthquakes and tectonics
138-139	Planetary Plate Puzzle	tectonics
140-141	Continental Clay Crashing	isostasy/mountain building
142-143	Continental Float	isostasy
f. Earth's Processes: Describe the rock cycle		
144-145	Making and Baking Rock	rock types and rock cycle
Energy in Earth's Systems		
8.4.3 Students will investigate and describe energy in Earth's systems		
a. Energy Sources: Describe how energy from the sun influences the atmosphere and provides energy for plant growth		
146-147	Planet Circles	Earth's spheres
148-149	Water 101	water cycle/erosion/forms
150-151	Seeds Alive	plants and light
152-153	Bubbling Plants	plants and light
Assessments and Answers		
155-226	Student Assessments	
227-230	Assessment Answers	
The Learning Zones		
231-444	Science Journal For Science Writing Heuristics	
Activity Resources		
445	<i>Musical Hands</i> —duplication sheet	
456-460	<i>EMS Wave Roundup</i> —reference and duplication sheets	
461-463	<i>Billions and the 3 R's</i> —reference and duplication sheets	
464	<i>Pan of Pangea</i> —pattern	
465-466	<i>Plate Mapping Mania</i> —reference and duplication sheets	
467	<i>Marvelous Mountain Mapping</i> —duplication sheet	
468	<i>Earthquake Detectives</i> —duplication sheet	
469-472	<i>Planet Circles</i> —duplication sheets	
Glossary		
473-507		
Pages For Notes		
509-512		

Nebraska Customized Science

Grade 7

Page	Title	Concept
1	Title and Permissions Page	
3-6	Table of Contents	
7	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

8.1.1 Students will design and conduct investigations that will lead to the descriptions of relationships between evidence and explanations.

c. Scientific Controls and Variables: Determine controls and use dependent (responding) and independent (manipulated) variables

d. Scientific Tools: Select and use equipment appropriate to the investigation, demonstrate correct techniques, and apply appropriate mathematical concepts

h. Scientific Communication: Share information, procedures, results, and conclusions with appropriate audiences

i. Scientific Communication: Analyze and provide appropriate critique of scientific investigations

Changes of State

10-11	Salt Water Puzzle	melting and freezing points
12-13	Salt Water Puzzle II	boiling temperature

Properties of Matter

14-15	Skid No-More	friction inquiry
-------	--------------	------------------

Chemistry in a Closed System

16-17	Chemistry in a Balloon	temperature effect on reactions
18-19	Conserving Copper	conservation of matter

Heat Transfer

20-21	Paper Twister	convection current
-------	---------------	--------------------

Weather

22-23	It's Not the Heat, It's the Humidity!	psychrometer and humidity
24-25	Weather Maps and Me	mapping weather changes
26-27	Partly Cloudy	clouds and water
28-29	Ocean Breezes	climate and change of state
30-31	Desert Dew	water cycle

Nature of Science

8.1.2 Students will apply the nature of science to their own investigations

a. Scientific Knowledge: Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations

34-35	Is This Really True?	bias/fact verification
-------	----------------------	------------------------

36-37	Science Makes Mistakes	errors in science history
-------	------------------------	---------------------------

c. Science as a Human Endeavor: Recognize scientists from various cultures have made many contributions to explain the natural world

38-39	My Science Hero	careers and people
-------	-----------------	--------------------

Grade 7 Table of Contents (Continued)

Page	Title	Concept
Nature of Science (Continued)		
Technology		
8.1.3 Students will solve a design problem that involves one or two science concepts		
40-41	Water Tower	forces and design
42-43	Magnetic Separation Anxiety	magnetism/mixtures
44-45	Solution Separation Anxiety	solutions/mixtures
46-47	Dehydrated Separation Anxiety	evaporation/mixtures
Physical Science		
Matter		
8.2.1 Students will identify and describe the particulate nature of matter including physical and chemical interactions		
a. Properties and Structures of Matter: Compare and contrast elements, compounds, and mixtures		
50-51	Adopt an Element	properties of elements
52-53	PS COHN and the Element Bunch	elements in life
54-55	Element Soup	periodic table
b. Properties and Structures of Matter: Describe physical and chemical properties of matter		
c. States of Matter: Recognize most substances can exist as a solid, liquid, or gas depending on temperature		
d. States of Matter: Compare and contrast solids, liquids, and gases based on properties of these states of matter		
e. Physical and Chemical Changes: Distinguish between physical and chemical changes (phase changes, dissolving, burning, rusting)		
f. Physical and Chemical Changes: Recognize conservation of matter in physical and chemical changes		
g. Classification of Matter: Classify substances into similar groups based on physical properties		
<i>Matter and Properties</i>		
56-57	Atom on a Stick	atom history and model
58-59	Matter That Matters	states of matter
60-61	Monster Tissue	matter and forces
62-63	Bad Attitude Balloon	air as matter
<i>Physical Properties</i>		
64-65	Gravity Confusion	adhesion and cohesion
66-67	Needle on the Bubble	surface tension
68-69	Ice Cube in Space	change of state and density
70-71	Cup of Density	density
72-73	What's My Use?	use and physical properties
<i>Chemical Properties</i>		
74-75	Sudden Blue Snow	chemical change
76-77	Explosive Kitchen Capers	flammability
78-79	Oxygen Antics	oxygen production
80-81	Raining Copper	chemical change

Grade 7 Table of Contents (Continued)

Page	Title	Concept
Life Science		
<i>Structure and Function of Living Systems</i>		
8.3.1 Students will investigate and describe the structure and function of living organisms		
a. Characteristics of Life: Recognize the levels of organization in living organisms (cells, tissues, organs, organ systems, and organisms)		
84-85	Organizing Life	biological organization
b. Cellular Composition of Organisms: Recognize that all organisms are composed of one or many cells; that these cells must grow, divide, and use energy; and that all cells function similarly		
86-87	See Through Animal	animal cell
88-89	See Through Plant	plant cell
90-91	Am I One or Many?	unicellular or multi-cellular
92-93	Inflate and Sniff Cell	osmosis and diffusion
94-95	Making More of Me	mitosis
c. Cellular Composition of Organisms: Recognize specialized cells perform specialized function in multi-cellular organisms		
96-97	A Cell's Work is Never Done	cell theory
d. Cellular Composition of Organisms: Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other		
98-99	It's in the System	biological organization and system
100-101	Parts and Pieces	organs and systems
102-103	Cardboard Backbone	backbone
104-105	Bend Me-Shape Me	ball and socket joint
106-107	Blood in a Beaker	blood
108-109	It is Only Skin Deep	skin
110-111	Lend Me Your Ear	senses
112-113	Eyeball in Your Hand	senses
114-115	A Touch of Disease	disease
116-117	What's Making Me Sick?	pathogens and disease
118-119	What's Making Me Better?	immune system
<i>Heredity</i>		
8.3.2 Students will investigate and describe the relationship between reproduction and heredity		
a. Inherited Traits: Recognize that hereditary information is contained in genes within the chromosomes of each cell		
120-121	DNA ala Kiwi	DNA
122-123	Your DNA Ladder	DNA model
124-125	Boss Genes	dominant and recessive
126-127	Boy and Girl Genes	sex determination and fertilization
128-129	Partner Genes	incomplete dominance

Grade 7 Table of Contents (Continued)

Page	Title	Concept
Life Science (Continued)		
b. Reproduction: Compare and contrast sexual and asexual reproduction		
130-131	Ditto	asexual reproduction
132-133	Similar But Different	sexual reproduction
134-135	Duplicate and Shuffle	asexual/sexual reproduction
Earth and Space Sciences		
<i>Earth Structures and Processes</i>		
8.4.2 Students will investigate and describe Earth's structure, systems, and processes		
c. Properties of Earth Materials: Describe the mixture of gasses in Earth's atmosphere and how the atmosphere's properties change at different elevations		
138-139	Bottled Air	model of barometer
140-141	Atmosphere in a Bottle	gases in the atmosphere
142-143	Up and Down Biomes	vertical biomes
g. Earth's Processes: Describe the water cycle (evaporation, condensation, precipitation)		
144-145	Water Use 101	water use and water cycle
146-147	My Friend Water	water properties
<i>Energy in Earth's Systems</i>		
8.4.3 Students will investigate and describe energy in Earth's systems		
b. Weather and Climate: Identify factors that influence daily and seasonal changes on Earth (tilt of Earth, humidity, air pressure, air masses)		
c. Weather and Climate: Describe atmospheric movements that influence weather and climate (air masses, jet stream)		
148-149	Toto, Is This Kansas?	tornadoes and weather
150-151	Hurricane Detectives	hurricanes and mapping
152-153	Air in a Hurry	jet stream and mapping
Assessments and Answers		
155-207	Student Assessments	
209-212	Assessment Answers	
The Learning Zones		
213-399	Science Journal For Science Writing Heuristics	
Activity Resources		
401	<i>It's Not the Heat, It's the Humidity</i> —reference sheet	
402	<i>Weather Maps and Me</i> —data sheet	
403	<i>Science Makes Mistakes</i> —duplication sheet	
404-405	<i>PS COHN and the Element Bunch</i> —data sheets	
406-408	<i>Element Soup</i> —duplication, data and reference sheets	
409	<i>Atom on a Stick</i> —data sheet	

Grade 7 Table of Contents (Continued)

Page	Title	Concept
Activity Resources (Continued)		
410-411	<i>Organizing Life</i> —duplication sheets	
412-413	<i>Am I One or Many?</i> —reference and duplication sheets	
414-415	<i>A Cell's Work is Never Done</i> —duplication sheets	
416-418	<i>Boss Genes</i> —duplication sheets	
419-421	<i>Boy and Girl Genes</i> —duplication sheets	
422-424	<i>Partner Genes</i> —duplication sheets	
425-426	<i>Ditto</i> —data sheets	
427-429	<i>Similar But Different</i> —data sheets	
430-431	<i>Atmosphere in a Bottle</i> —duplication sheets	
432	<i>Hurricane Detectives</i> —duplication sheet	
433-434	<i>Air in a Hurry</i> —duplication sheets	
Glossary		
435-469		
Pages For Notes		
471-474		

Nebraska Customized Science

Grade 8

Table of Contents

Page	Title	Concept
1	Title and Permissions Page	
3-8	Table of Contents	
9	Safety Concerns	

Inquiry, the Nature of Science, and Technology

Inquiry

8.1.1 Students will design and conduct investigations that will lead to the descriptions of relationships between evidence and explanations.

e. Scientific Observations: make qualitative and quantitative observations

f. Scientific Data Collection: Record and represent data appropriately and review for quality, accuracy, and relevancy

g. Scientific Interpretations, Reflections, and Applications: Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information

j. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry

Nature of Science

8.1.2 Students will apply the nature of science to their own investigations

b. Science and Society: Describe how scientific discoveries influence and change society

Science's Influence on Society

12-13	Issues and Outcomes	difficult issues in science
14-15	Take Both Sides	pro/con of technology
16-17	Techno Science World	technology and science
18-19	Catch a Career	careers in science
20-21	Space Blanket Bingo	science and technology
22-23	Food's Fate	food preservation and GMO's
24-25	Biofuel or Not?	biofuel controversy
26-27	Using Our Space	space technology
28-29	Hustling Hubble	Hubble Telescope

Resources

30-31	There is No Away!	resources
32-33	Stirred Not Shaken Paper	recycling paper
34-35	My Pencil My Earth	resources needed
36-37	Raisin Resources	resources and reclamation
38-39	Good Plastic Sense	plastic recycling
40-41	Where Did It Come From?	tracing resources

Grade 8 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Nature of Science (Continued)

Technology

8.1.3 Students will solve a design problem that involves one or two science concepts

a. Abilities to do Technical Design: Identify problems for technological design

b. Abilities to do Technical Design: Design a solution or product

c. Abilities to do Technical Design: Implement the proposed design

d. Abilities to do Technical Design: Evaluate completed technological designs or products

e. Abilities to do Technical Design: Communicate the process of technical design

f. Understanding of Technical Design: Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems)

g. Understanding of Technical Design: Describe how science and technology are reciprocal

h. Understanding of Technical Design: Recognize that solutions have intended and unintended consequences

i. Understanding of Technical Design: Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge

42-43	Concrete Decisions	properties and testing
44-45	Newton's Toothpicks	bridge design
46-47	Pharaoh's Newspaper	design and forces
48-49	Snap Trap Car	design, build and test a car
50-51	Snap Trap Boat	design, build and test a boat
52-53	Snap Trap Plane	design, build and test a plane

Physical Science

Force and Motion

8.2.2 Students will investigate and describe forces and motion

a. Motion: Describe motion of an object by its position and velocity

56-57	Puzzling Nails	center of gravity
58-59	In the Balance	center of gravity
60-61	Two Fingers and a Meter Stick	torque and equilibrium
62-63	Huff and Puff Helicopter	energy conversion and flight
64-65	Winged Trash	forces and flight
66-67	Ramp it Up!	energy conversion and speed
68-69	Trash Bags, Hot Air, and Flight	heat, density and flight
70-71	Meat Tray Jet Boat	design and velocity

b. Inertia/Newton's 1st Law: Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st law)

72-73	Jiggly Hen Fruit	inertia
74-75	Just Stringing Along	Newton's Laws
76-77	Klackers	Newton's Laws
78-79	To Belt or Not to Belt?	inertia and Newton's Laws
80-81	Newton's Jar	Newton's Laws

Grade 8 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Physical Science (Continued)

c. Inertia/Newton's 2nd Law: Compare the motion of objects related to the effects of balanced and unbalanced forces

82-83	Pull a Pulley	pulley and forces
84-85	Basketball Bounce Power	Newton and forces
86-87	Stringalong Science	rotary motion and Newton
88-89	Take a Band to Launch	energy conversion and elasticity

d. Universal Forces: Recognize that everything on or around Earth is pulled toward Earth's center by gravitational force

90-91	Gravity Filter	surface tension
92-93	Weightless Clothespins	gravity and spring scale
94-95	Space Diet	gravity's pull on other planets

Life Science

Structure and Function of Living Systems

8.3.1 Students will investigate and describe the structure and function of living organisms

e. Characteristics of Life: Describe how plants and animals respond to environmental stimuli

98-99	Neurons to Go	neuron model
100-101	A Nervous Reaction	nervous system model
102-103	Seeing With Your Ears	echolocation
104-105	Plants on Good Behavior	geotropism and phototropism
106-107	Extract of Plant	photosynthesis

Flow of Matter and Energy in Ecosystems

8.3.3 Students will describe populations and ecosystems

d. Ecosystems: Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support

108-109	Wheel of Carbon	carbon cycle
110-111	Wheel of Oxygen	oxygen cycle
112-113	Wheel of Nitrogen	nitrogen cycle
114-115	Wheel of Water	water cycle
116-117	What's My Limit?	carrying capacity

g. Impact on Ecosystems: Identify positive and negative effects of natural and human activity on an ecosystem

118-119	Blackboard Acid Rain	acid rain and pollution
120-121	Desktop Water Treatment Plant	groundwater and pollution
122-123	Motor Oil Malady	pollution
124-125	Trees and Me	deforestation
126-127	Dirt Protector	soil conservation
128-129	Vehicular Greenhouse	greenhouse effect

Grade 8 Table of Contents (Continued)

Page	Title	Concept
------	-------	---------

Life Science (Continued)

Biodiversity

8.3.4 Students will identify characteristics of organisms that help them survive

a. Biological Adaptations: Describe how an inherited characteristic enables an organism to improve its survival rate

130-131	Mutation Station	mutation and inheritance
132-133	Critter Changes	natural selection and adaptation
134-135	Moth Mystery	evolution and adaptation
136-137	So, What's Next?	evolution and survival

b. Biological Evolution: Recognize the extinction of a species is caused by the inability to adapt to an environmental change

138-139	Extinction is Forever	extinction and survival
---------	-----------------------	-------------------------

c. Biological Evolution: Use anatomical features of an organism to infer similarities among other organisms

140-141	Soupbean Safari	classification
142-143	My Kingdom for a Kingdom	classification
144-145	Phylum Fun	classification
146-147	Classy Classes	classification
148-149	Mammals in Order	classification
150-151	Impressing Science	classification

Earth and Space Sciences

Earth in Space

8.4.1 Students will investigate and describe Earth and the solar system

b. Motion of Objects in the Solar System: Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons

154-155	Vehicular Solar System	solar system model
156-157	Solar System Buddies	solar system model
158-159	Moon Slices	Moon phases
160-161	Terrestrial Tag	eclipses

c. Gravitational Effects: Describe the effects of gravity on Earth (tides) and the effect of gravity on objects in the solar system

162-163	Gravity Well	gravity and matter
---------	--------------	--------------------

Earth Structures and Processes

8.4.2 Students will investigate and describe Earth's structure, systems, and processes

h. Use of Earth Materials: Classify Earth materials as renewable or nonrenewable

164-165	Rerun Resources or Not?	renewable or nonrenewable
166-167	It's My Resource	renewable or nonrenewable

Grade 8 Table of Contents (Continued)

Page	Title	Concept
Earth and Space Sciences (Continued)		
<i>Earth's History</i>		
8.A.4 Students will use evidence to draw conclusions about changes in Earth		
a. Past/Present Earth: Recognize Earth processes we see today are similar to those that occurred in the past (uniformity of processes)		
168-169	Who's On First?	geological principles
170-171	Time in a Line	Earth time line
b. Describe how environmental conditions have changed through use of the fossil record		
172-173	Radioactive Paper	radioactive dating
174-175	Fresh Cup of Fossils	fossils and Earth materials
176-177	Bones! Dig'em!	fossils and paleontology
Assessments and Answers		
179-244	Student Assessments	
245-248	Assessment Answers	
The Learning Zones		
249-474	Science Journal For Science Writing Heuristics	
Activity Resources		
475	<i>Techno-Science World</i> —duplication sheet	
476	<i>Winged Trash</i> —pattern	
477	<i>Take a Band to Launch</i> —data sheet	
478	<i>Seela Science Wheel Pattern</i> —duplication sheet	
479	<i>Blank Spokes for Wheel Pattern</i> —duplication sheet	
480	<i>Wheel of Carbon</i> —duplication sheets	
481	<i>Wheel of Oxygen</i> —duplication sheets	
482	<i>Wheel of Nitrogen</i> —duplication sheets	
483	<i>Wheel of Water</i> —duplication sheets	
484-486	<i>What's My Limit?</i> —duplication and data sheets	
487-489	<i>Mutation Station</i> —duplication sheets	
490-491	<i>Moth Mystery</i> —duplication sheets	
492-493	<i>So, What's Next?</i> —duplication sheets	
494	<i>My Kingdom for a Kingdom</i> —reference sheet	
495-498	<i>Phylum Fun</i> —duplication and reference sheets	
499-502	<i>Mammals in Order</i> —duplication and reference sheets	
503	<i>Moon Slices</i> —reference sheet	
504-506	<i>Time in a Line</i> —duplication and reference sheets	
507	<i>Radioactive Paper</i> —data sheet	
Glossary		
509-543		
Pages For Notes		
545-548		

