

Science in the Elementary and Middle School Years Checklist:

This is a list of some of the science units and topics we'll cover in elementary and middle school. We will return to these topics more than once, each time going into more depth. We spend as much time as needed (and while interest lasts). I know we'll cover the topic again in a few years.

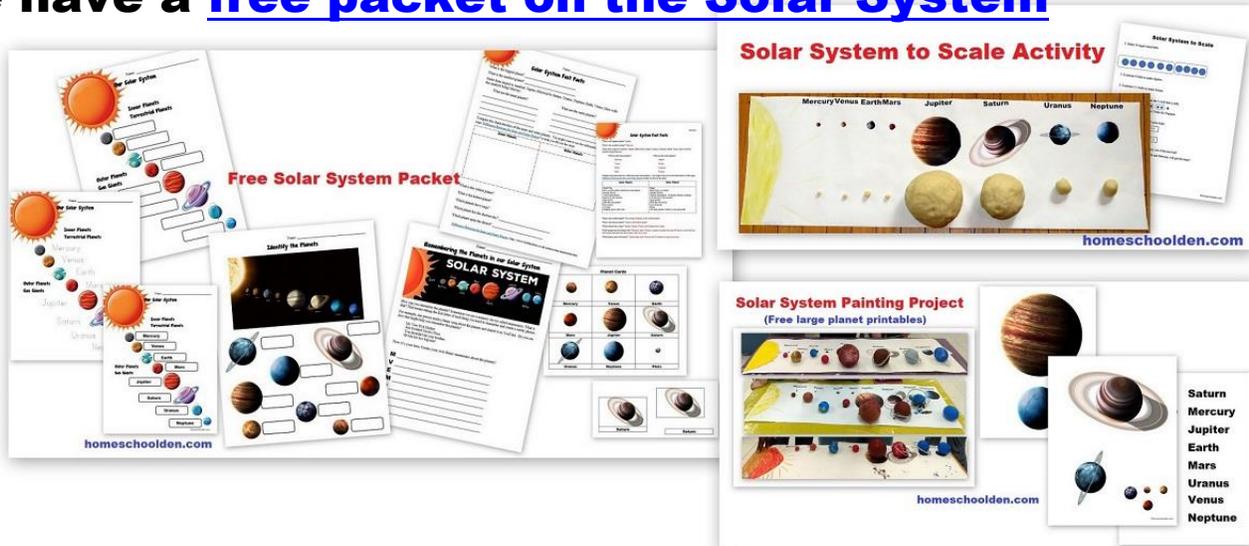
The Human Body	
	Cells
	Tissues
	Nervous System
	Skeletal, Muscular and Integumentary Systems (skin, etc.)
	Circulatory and Respiratory Systems
	Digestive and Excretory Systems
	Endocrine and Reproductive Systems
	Immune System and Disease
Biology	
	Plants and Animal Cells
	Cell structure and Process
	Cell Function (chemical reactions inside cells)
	Prokaryotes vs. Eukaryotes, Plant vs. Animal Cells
	Cell Division DNA-RNA, Genetics
	Life Cycle and Reproduction
	Plants
	Growth
	Photosynthesis
	Genetics
	Animals
	Unit on animal adaptations, animal habitats, animal homes, animal characteristics, migration, camouflage, animals and their young, vertebrates/invertebrates, herbivores/carnivores/omnivores, herbivores/carnivores, conservation - extinct vs. endangered animals, [This is a carryover from the science we covered in the preschool years (ages 4-6) ... and there is a separate checklist for that!]
	Animal anatomy and physiology
	Classification, taxonomy
	Kingdom, phylum, class, order, family, genus, species
	Offspring names
	Group names
	Levels of organization
	Biosphere, ecosystem (biome), community, population, organism, groups of cells, cells, molecules
	Microorganisms - bacteria, viruses, protists, fungi
	Biomes (ecosystems)
	Ocean Life
	Ecology - interdependence of organisms and their environment, food chain
	Population Dynamics
Chemistry	
	Atoms, Molecules
	States of Matter & Changes in the states of matter

	Physical and Chemical Properties of Matter
	Mixtures & Solutions
	Acids & Bases
	Atomic structure - periodic table
	Common elements, chemical bonds, chemical reactions
	Building molecules, Valence Electrons, Bohr diagrams, Lewis Diagrams
	Molecular Chains
Astronomy	
	Solar System Inner and outer planets, asteroid belt
	Moon
	Gravity
	Kinds of Stars
	Galaxies
Earth Science	
	Geology - history of the Earth
	inside Earth – geosphere
	Rocks & Minerals - sedimentary, metamorphic, igneous rocks
	Earth systems (geosphere, biosphere, hydrosphere, atmosphere)
	Atmosphere
	The Magnetosphere - Earth's Magnetic Field
	Earth's movement – changes to Earth's surface
	plate movement
	what changes landforms
	Faults – Waves what causes mountains, volcanoes, earthquakes
	how has Earth's surface changed
	Weather
	Water
	Freshwater
	Underground water
	Oceans, Tides, Currents – The Hydrosphere
	Cycles
	Water Cycle
	Oxygen Cycle
	Nutrient Cycle
	Nitrogen Cycle
	Carbon Cycle – (Coal, Oil, Gas)
	Sulfur Cycle
	Phosphorus Cycle
	Rock Cycle
	Environmental Studies: Trash & Recycling; Renewable and Nonrenewable Energy
Physics	
	Simple Machines
	Magnets, Magnetic Fields, the Magnetosphere
	Speed, force, energy, motion, power, heat, heat transfer, conduction, convection, radiation
	Light and optics
	Electricity
	Sound - vibration, waves, speed, frequency, wavelength, amplitude

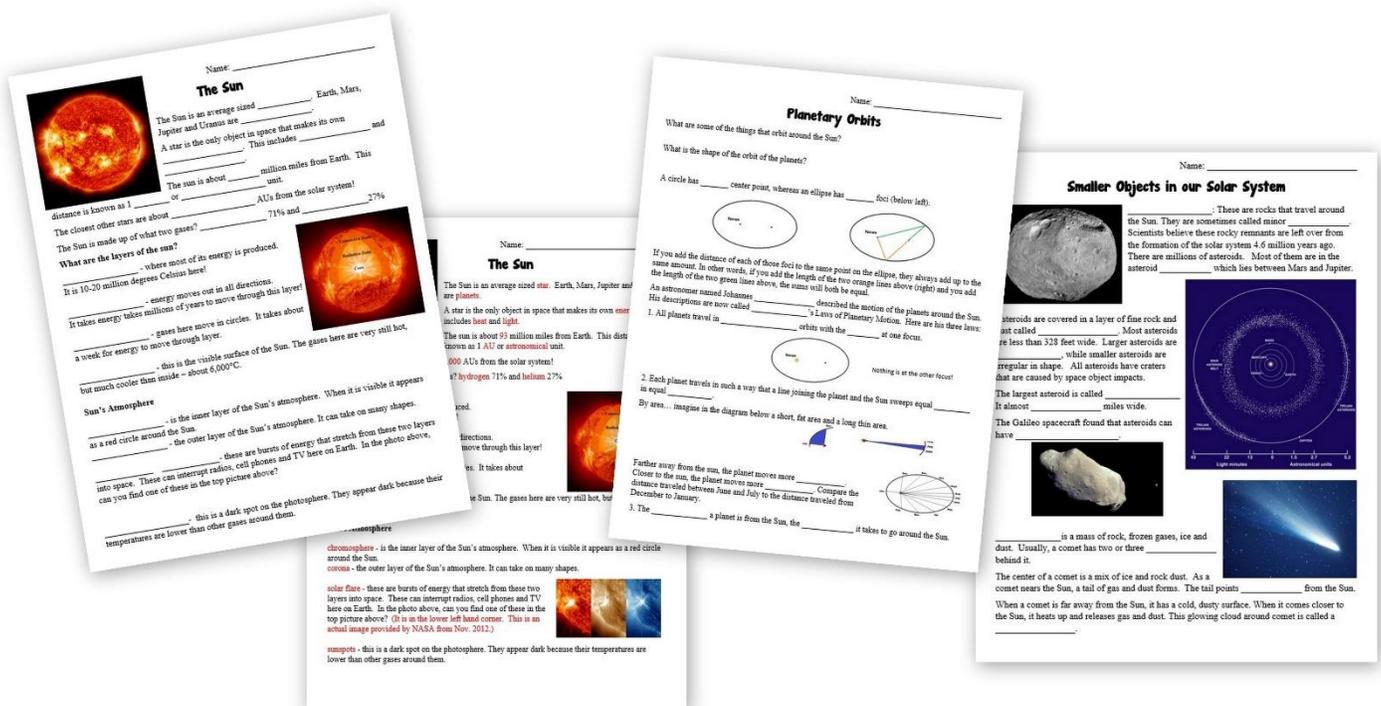
Our Packets – visit our store: HomeschoolDen.com/store

You might want to check out some of the packets we have available. They range in length from 30 to more than 150 pages and include notebook pages, worksheets, interactive notebook activities, hands-on activity ideas (with photographs) and more!

We have a [free packet on the Solar System](#)



Plus we have some free notebook pages on [Astronomy](#) for Middle School Students as well.



You might also be interested in these packets:

Earth Science Packet (150 pages)



Earth Science Packet

150-page packet

*Earth and the Solar System

*Layers of the Earth

*Pangaea, Plate Tectonics

*Faults

*Earthquakes

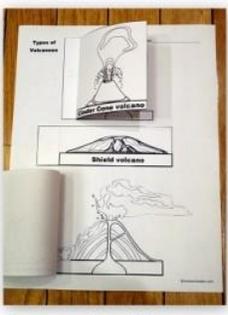
*Mountain Making

*Volcanoes... and more



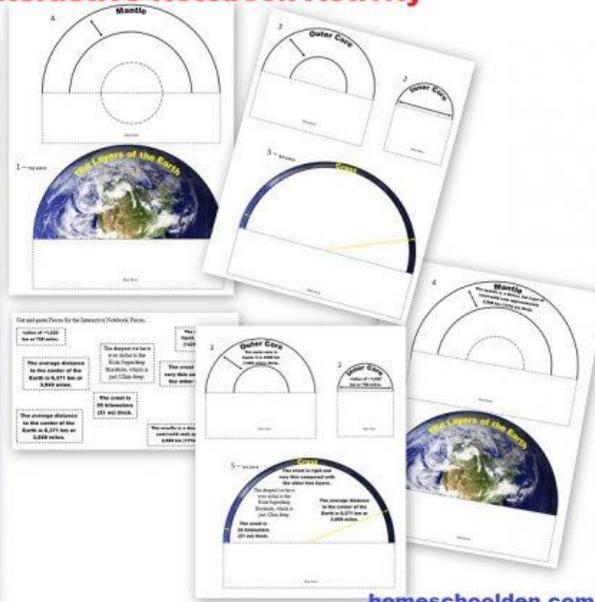
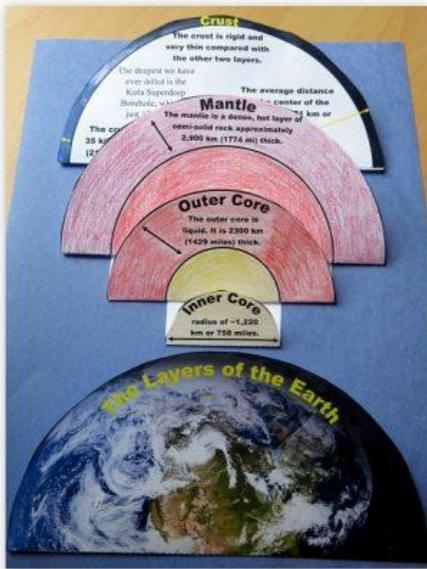
Layers of the Earth Interactive Notebook Pages

Types of Volcanoes Interactive Notebook Pages

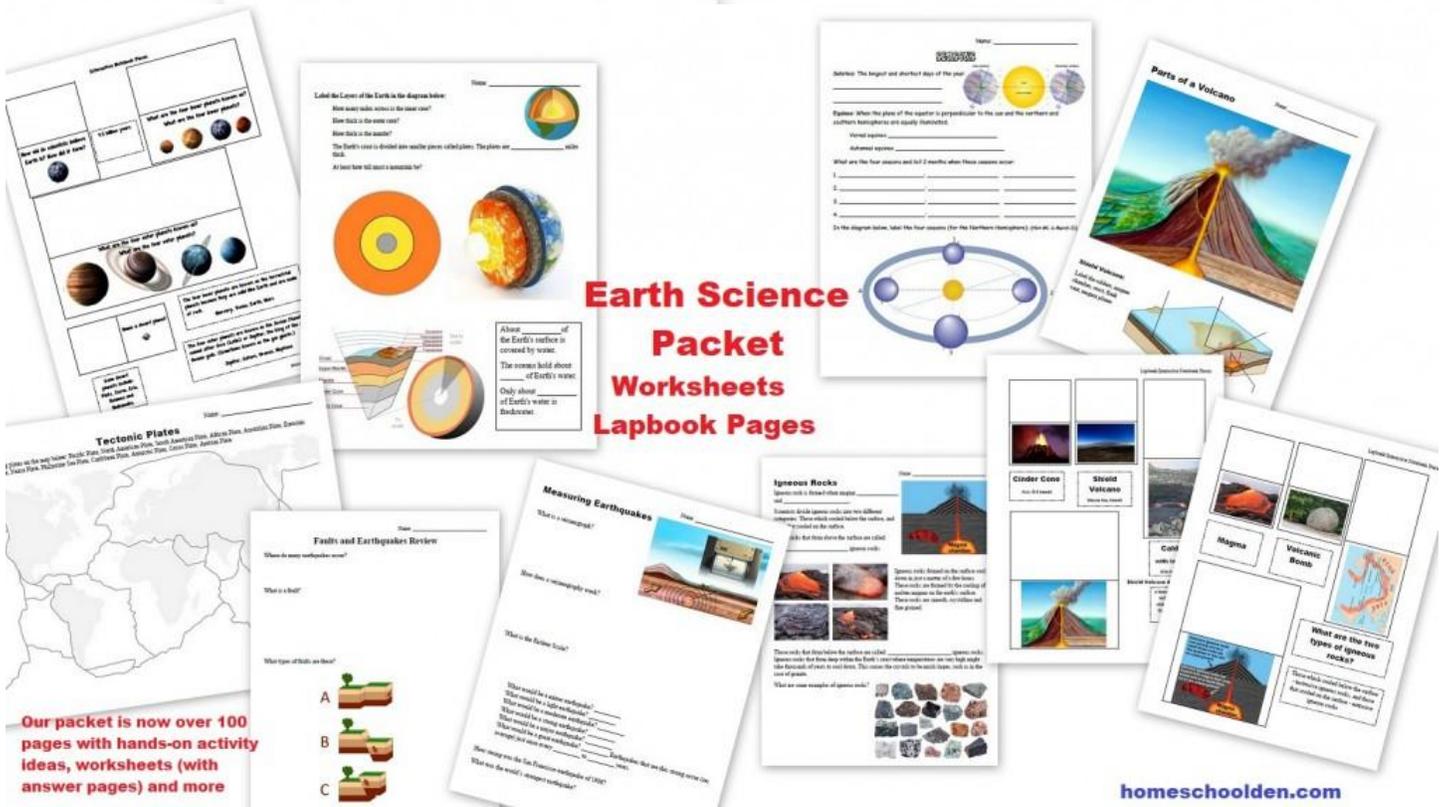


Earth Science Packet (more pictures of what's included...)

Layers of the Earth - Interactive Notebook Activity

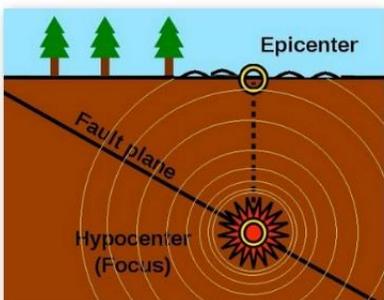


homeschoolden.com



homeschoolden.com

Earth Science: Learning about Earthquake Vibrations



homeschoolden.com

Layers of the Atmosphere Packet

Layers of the Atmosphere Packet
50+ Pages
Notebook Pages, Hands-on Activities
and More!

Earth's Atmosphere Packet, 50+ pages

Layers of the Atmosphere Printable Activity

Earth's Atmosphere as part of the Earth System Printable Activity

Notes about the Troposphere

The Sun, Light, and the Atmosphere

EXOSPHERE
THERMOSPHERE (600km)
MESOSPHERE (120km)
STRATOSPHERE (30km)
TROPOSPHERE (6km)
Earth's Surface

Satellites in the GPS System

The Exosphere

Exosphere
Thermosphere
Mesosphere
Stratosphere
Troposphere

Magnet Packet: Magnetic Fields, The Magnetosphere, and Animal Migration

This collage features various educational resources for a magnetism unit. It includes several worksheets with text and diagrams, such as 'Magnetism', 'Magnetic Fields', and 'Magnetic Induction'. There are also photos of hands performing experiments with magnets and iron filings. A prominent diagram shows the Earth's magnetic field with magnetic field lines. Other elements include a periodic table snippet showing Fe and Ni, and a diagram of a compass. The text 'Magnetism Packet: Magnets, Magnetic Fields, the Magnetosphere, Migration and More' is overlaid in the center.

Magnetism Packet Magnets, Magnetic Fields, the Magnetosphere, Migration and More

Magnet Unit: Learning about Magnetic Fields!

This section contains worksheets and photos related to learning about magnetic fields. It includes a worksheet titled 'Magnet Unit: Learning about Magnetic Fields!' with diagrams of magnetic fields and text. There are also photos of hands holding magnets and iron filings, and a diagram of a bar magnet with its field lines. The website 'homeschoolden.com' is visible in the bottom left corner.

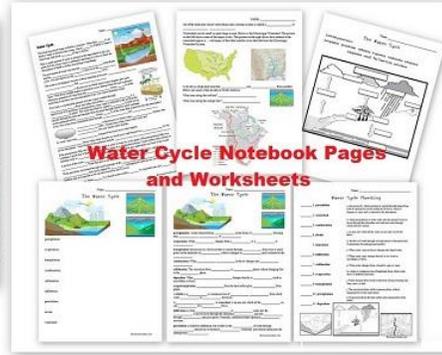
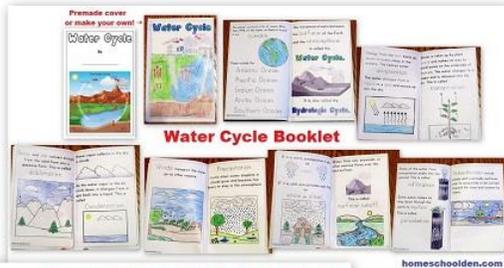
homeschoolden.com

Magnet Unit: Magnetic Induction, The Magnetosphere, Magnetic North, Creating a Compass!

This section focuses on magnetic induction and the magnetosphere. It includes worksheets like 'Magnetic Induction' and 'What is the Magnetosphere?', along with photos of experiments. The 'Magnetic Induction' worksheet describes an experiment where a magnet is moved through a coil of wire to create an electric current. The 'Magnetosphere' worksheet explains the Earth's magnetic field and its interaction with solar wind. There are also photos of a compass and a diagram of the Earth's magnetosphere. The website 'homeschoolden.com' is visible in the bottom right corner.

homeschoolden.com

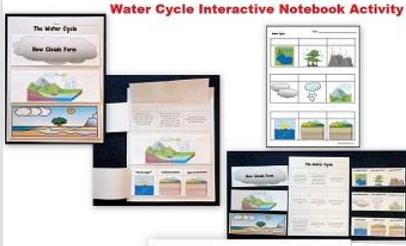
The Water Cycle



50+ Pages

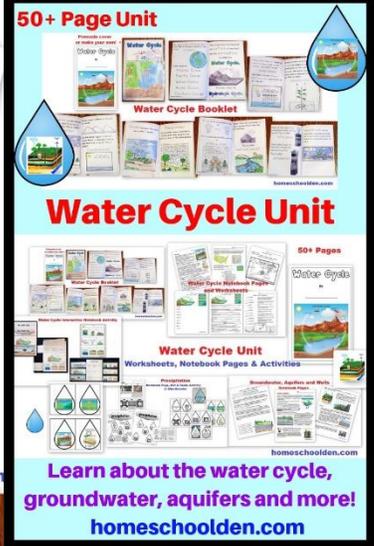
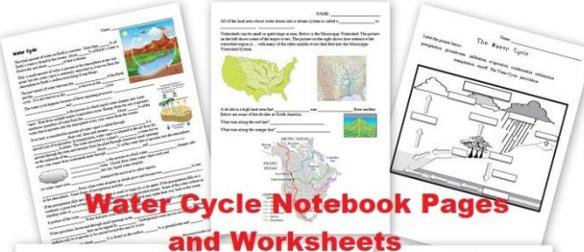
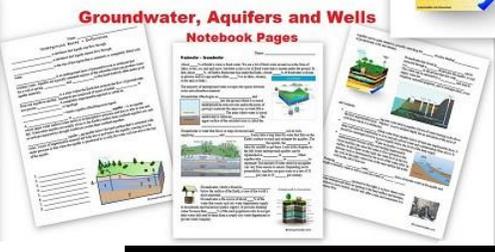
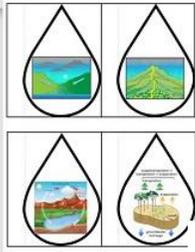
Water Cycle

By _____

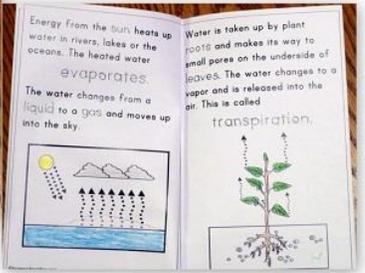
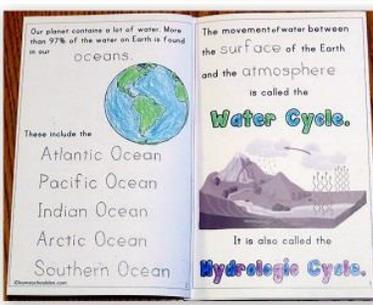


Water Cycle Unit

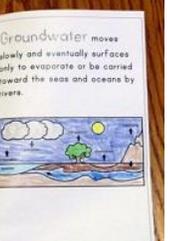
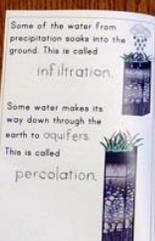
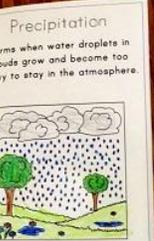
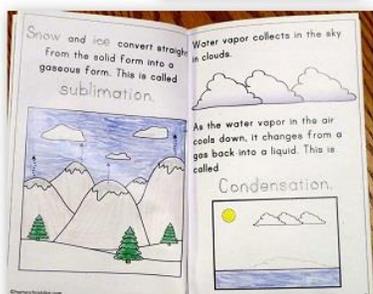
Worksheets, Notebook Pages & Activities



Premade cover or make your own! →



Water Cycle Booklet



Environmental Studies: Trash and Recycling

Trash & Recycling Unit

Trash & Recycling Booklet

Plastics

Recycle **Trash**

Compost **Special Handling**

homeschoolden.com

Trash & Recycling

By

Recycling Facts!

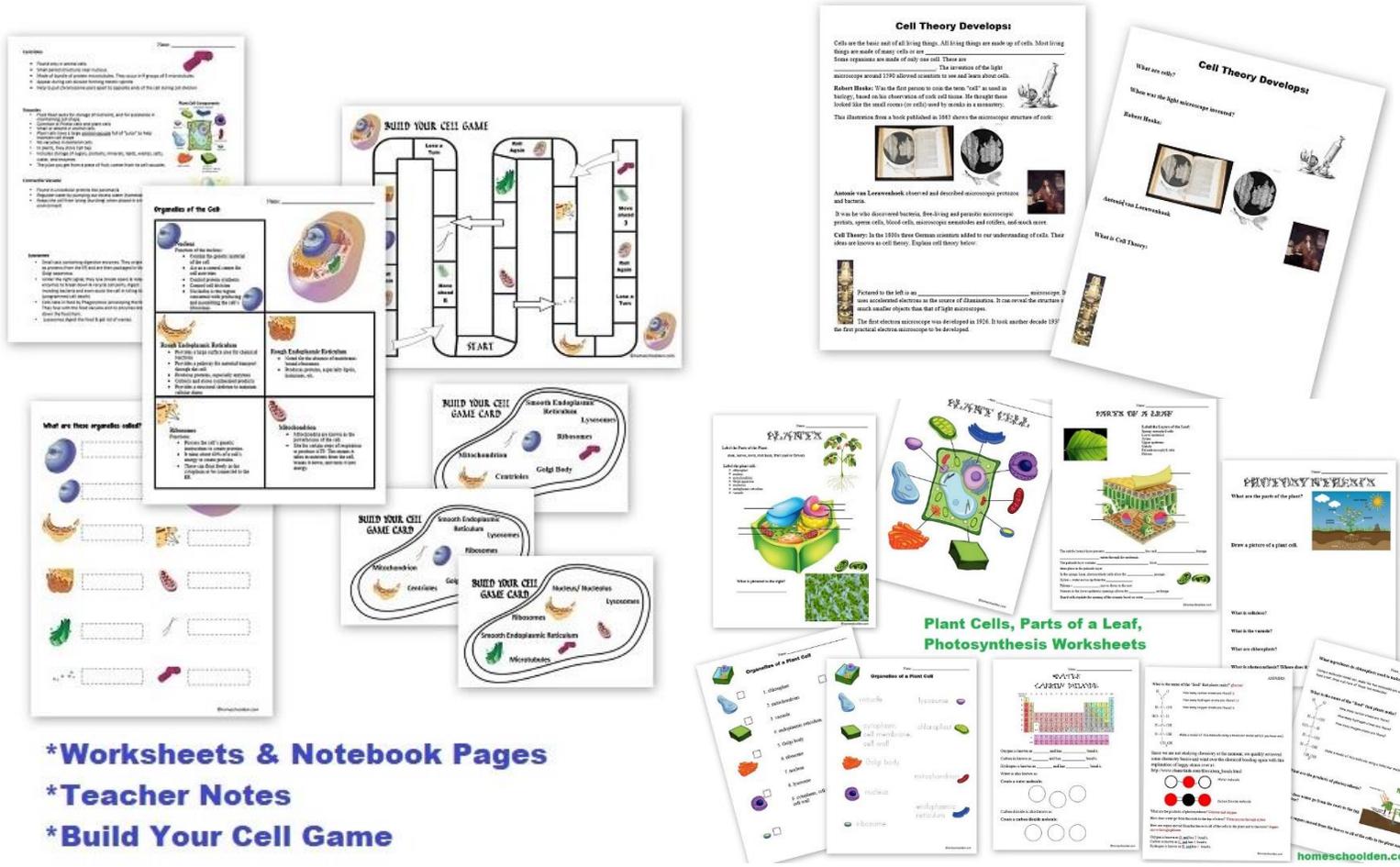
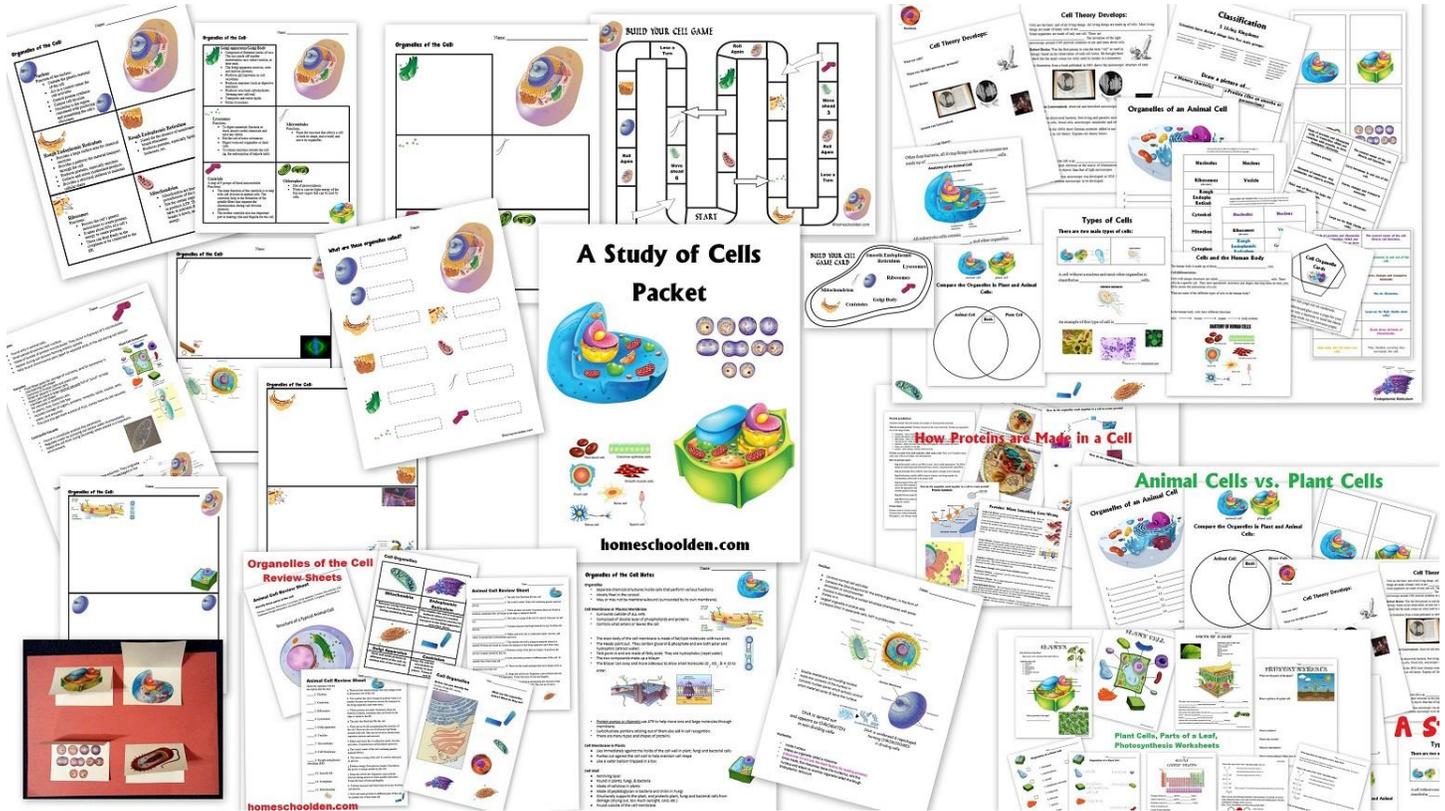
Organic Material

Hazardous Material

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Environmental Studies: The Carbon Cycle, Nonrenewable Energy (Coal, Oil, Gas) and Renewable Energy (Coming Soon!)

A Study of Cells (100 pages)



- *Worksheets & Notebook Pages
- *Teacher Notes
- *Build Your Cell Game

States of Matter

This collage features several worksheets from the 'Three States of Matter' packet. The central worksheet is titled 'Three States of Matter 50+ Page Packet' and lists the states: SOLID, Liquid, and GAS. It is made by Liesl at homeschoolden.com. Other worksheets include 'Changing States of Matter' with a phase change diagram, 'Changes in States of Matter' listing melting, evaporation, condensation, and deposition, and various diagrams showing particle arrangements for solids, liquids, and gases. There are also worksheets with images of different states and phase change processes.

Physical and Chemical Properties of Matter

This collage displays various worksheets from the 'Physical and Chemical Properties of Matter Chemistry Packet'. The central worksheet is titled 'Physical and Chemical Properties of Matter Chemistry Packet 45+ Pages' and is from homeschoolden.com. Other worksheets include 'Mixtures: Solutions, Colloids, Suspensions', 'Worksheets on the Physical and Chemical Properties of Matter', 'Density Worksheet', 'Hands-On Density Activities', and 'Chemistry Unit Review Materials: Physical and Chemical Properties'. There are also worksheets with diagrams, tables, and text explaining physical and chemical properties.

Chemistry Packet Learn about the periodic table, the elements & their groups, valence electrons, Bohr Diagrams, Lewis Diagrams and more!



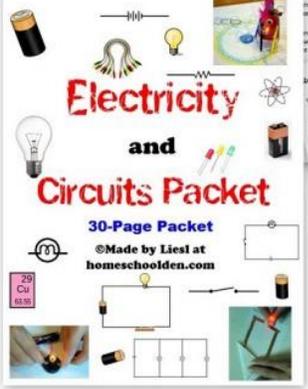
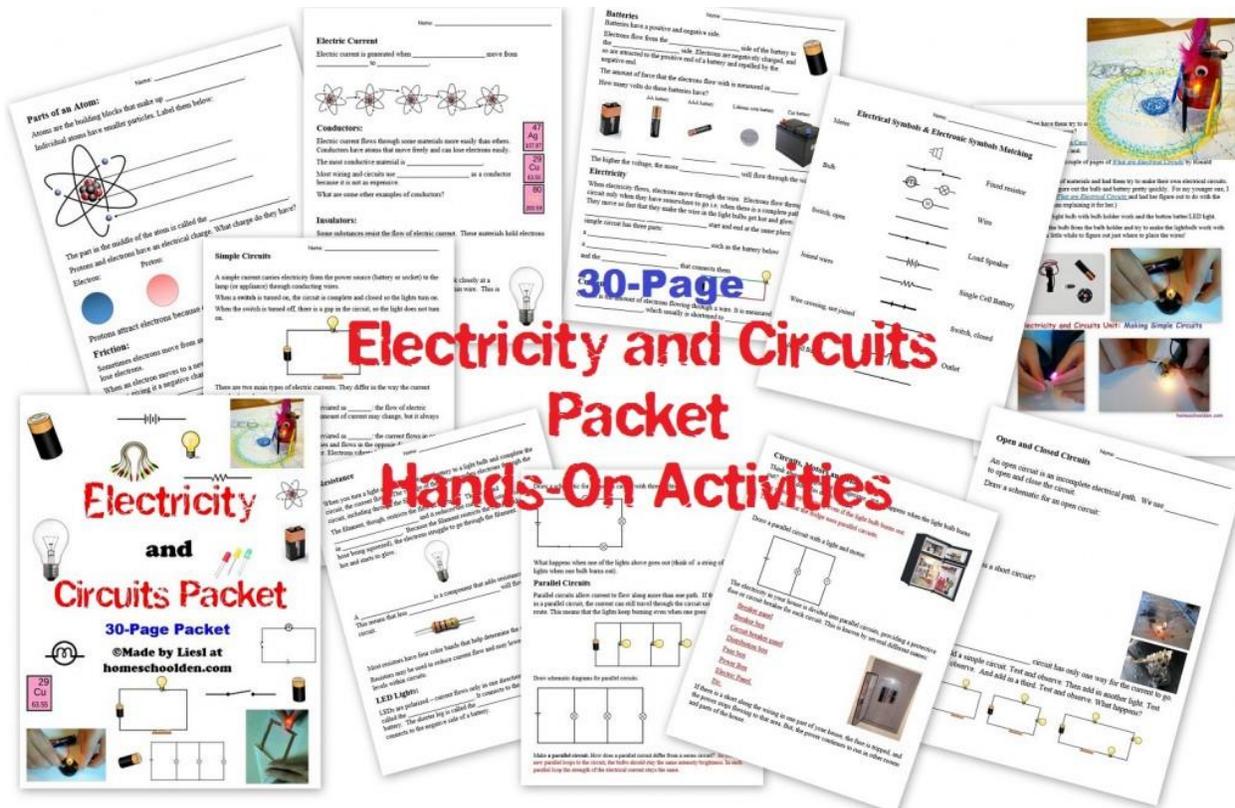
75+ page Chemistry Packet

homeschoolden.com

Hands-On Chemistry Cards!



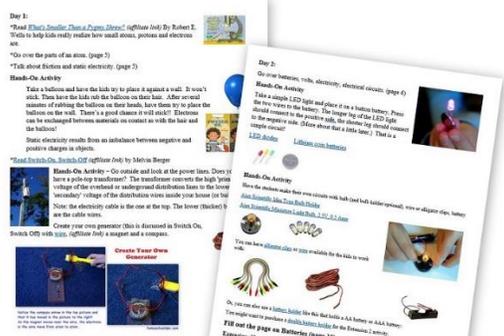
STEM: Electricity and Circuits Unit (30 pages)



Topics in this 30-page Unit

- The parts of an atom
- Electric currents
- Conductors and insulators
- Parts of a light bulb
- Batteries
- Volts, amps, ohms
- Electrical circuits: Power source, load, conductor
- Simple Circuits
- Direct and Alternating Current (DC and AC)
- Resistance, Resistors and How they work.
- Anode, cathode
- Electrical Symbols
- Open and closed circuits
- Short circuits
- How to draw basic electrical schematics
- Series circuits
- Parallel circuits
- Motors
- Circuit breakers and the power grid

Here is a small sampling of the worksheets in the Electricity and Circuits Unit.



Hands-On Activities in our Electricity and Circuits Unit

Electricity and Circuits Unit Daily Plans - with worksheets, books, hands-on activity instruction, and materials needed

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Big Animal BUNDLE



The **Big Animal BUNDLE** includes 5 packets. 1) Animal Unit, 2) World Animals Packet, 3) Rainforest Packet, 4) Life Cycles Packet, 5) Winter Packet.

You can scroll down below to see more pictures or click on the “Quick Preview” links below.

Quick Previews

- Animal Packet [Quick Preview](#)
- World Animal Packet [Quick Preview](#)
- Rainforest Packet [Quick Preview](#)
- Life Cycle Packet [Quick Preview](#)
- Winter Packet and Hibernation Unit [Quick Preview](#)

The **Animal Unit** is 100+ pages. It covers basic animal classification, animal characteristics, body coverings: feathers, fur, scales or skin, vertebrate groups, invertebrate groups, herbivores vs. carnivores, domesticated vs. wild animals, animals and their tracks, nocturnal vs diurnal animals, animal homes and shelters and more!

The **World Animal Packet** is 75+ pages. It covers animals of the 7 continents. There is a new section all about African animals of the savanna.

The **Rainforest Packet** is 50+ pages. Here’s the table of contents for this packet:

- Amazon Rainforest Facts – Notebook pages and answers pp. 3-4
- Amazon Rainforest Biodiversity and Deforestation pp. 5-6
- Map Work –South America – Brazil pp. 7-8
- Amazon River Notebook Page and answers pp. 10-11

- Average Rainfall in Temperate vs. Tropical Climates (Activity) pp. 12-13
- Amazonian Animals Montessori 3-Part Cards pp. 14-18
- Amazonian Animals Matching Page and answer sheet pp. 19-20
- Animals of the Amazon Blank Research Cards pp. 21-31
- Amazon Animal Fun Fact Tracing Pages pp. 33-35
- Insects of the Amazon pp. 36-37
- Insects of the Amazon, Montessori 3-Part Cards pp. 38-39
- Insects of the Amazon Matching Page and Answer Sheet 40-41
- Insects of the Amazon blank research cards pp. 42-44
- Layers of the Rainforest Activities pp. 45-58

The **Life Cycles Packet** is 50+ pages. It helps kids become familiar with the different stages in the life cycles of the chicken, sea turtle, frog, mosquito, butterfly, dragonfly, bee, mouse, and ladybug.

The **Winter Packet** is 100+ Pages. It also includes the **Hibernation Unit**. The first part covers Growing Crystals, Months/ Seasons, Earth's Axis and the Seasons, Arctic vs. Antarctica, Polar Animals, Penguins, Seals, Whales, about a dozen PreK Activity Pages. The Hibernation Unit covers: why animals hibernate, terms such as torpor, brumation, estivation, diapause, endotherms vs. ectotherms. Plus, it covers where animals spend the winter and the dangers of hibernation. It includes various activities such as notebook pages, interactive notebook/lapbook pieces, matching and tracing pages.

These packets can be purchased here at the [Big Animal BUNDLE](#) page or in [Our Store](#).

More pictures of what is included in this Bundle:

1) Animal Unit (100+ pages)

Types of Animals

Types of Animals Answers

Animal Body Covering

A Few Invertebrate Groups

Invertebrates Examples

Invertebrates

Insects or Spiders?

Domesticated vs. Wild Animals

Feathers, Fur, Scales, Skin

Animal Characteristics

Types of Animals

Vertebrate Groups

Invertebrate Groups

Domesticated vs. Wild Animals

Animals and their Tracks

Nocturnal vs. Diurnal Animals

ANIMALS AND THEIR TRACKS

ANIMAL - TRACK MATCHUP

ANIMAL HABITATS

ANIMAL - TRACK MATCHUP

ANIMAL HABITATS

CREATE A FOOD CHAIN OR FOOD WEB

ANIMAL HABITATS

Classification of Animals

Animal Classification Activity

Classification of Animals

Classification of Animals

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2) World Animal Packet – Animals around the world – from the 7 Continents (75+ pages)

World Animal Activity Pages

60+ Page Unit

Australia
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Antarctica

Animals of Africa
Animals of Africa living on land

Animals of North America
Flying and Biting

Animals of Europe
Fun Facts

Animals of Asia
Fun Facts

Animals of the World
Map Activity

Where would you find...

Montessori 3-Part World Animal Cards



Montessori 3-Part World Animal Cards

Adelie Penguin

Emperor Pen

Grey Squirrel

Bison

White Tailed Deer

Fawn

Grizzly Bear

Coyote

Big Horn Sheep

Cheetah

Lion

Giraffe

Hyena

Hippopotamus

Zebra

Whale

European Beaver

Hedgehog

Badger

Brown

Red Fox

Koala

Wombat

Dingo

Platypus

Echidna

Three-toed Sloth

Anaconda

Capybara

Giant Anteater

Panda

Red Panda

Asian Elephant

Komodo Dragon

Sumatran Tiger

Orangutan

3) Rainforest Unit (50+ pages)

Rainforest Unit
50+ pages

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Amazon Rainforest Packet

Amazon Rainforest Packet

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Layers of the Rainforest
Worksheets and Activities

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Rainforest Insects

Rainforest Insects

The rainforest is where the greatest abundance of species of insects can be found. Insects are **amazon** **insectivore** **insects** because they require each other to survive. In the Amazon, most species of plants have only one species of insect or beetle to pollinate them successfully. Many insect species only live on a few acres range which makes them vulnerable to **extinction**.

The Amazon rainforest may house as many as **100,000** species of insects, although only a tiny fraction of this number has been described by scientists. Some scientists estimate that **10%** of the animal biomass of the Amazon Basin is made up of **insects**.

One tree can house to more than **100** different species of beetles!

There are **100,000** species of insects in the rainforest compared to **10,000** worldwide.

Titan Beetles (pictured right) is the largest of all beetles. It can grow to be more than **10** inches. It can fly, but it can't get into the air from the ground. It has to climb trees and launch itself into the air.

Goliath Bird-eating Spider Goliath is the largest spider in the world. It is one of the **10** largest spiders in the world. It has **8** legs and is **10** inches long.

Insects of the Rainforest

- Goliath Bird-Eating Spider
- Tropical Skimmer Dragonfly
- Jewel Beetle
- Army ants
- Titan Beetle
- Scorpion
- Archaeoprygma mander butterfly
- Mosquitoes
- Leaf Cutter ants

 Scorpion	 Goliath Bird-Eating Spider	 Titan Beetle
 Archaeoprygma mander butterfly	 Leaf Cutter Ant	 Army Ants
 Tropical Skimmer Dragonfly	 Bugs and Insects	 Mosquitoes

Handwriting practice sheet with a grid of insect images and lines for writing.

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Animals of the Amazon

 Sloth	 Capybara	 Yellow-Banded Poison Dart Frog	 Kinkajou	 Amazonian Animal
 Howler Monkey	 Caiman	 Caecilian	 Jaguar	 Amazonian Animal
 Toucan	 Emerald Tree Boa	 Amazonian Animal	 Iguana	 Golden L

Comparing Tropical and Temperate Forests

Trees in the Rainforest grow to be almost twice as tall as trees in a temperate forest.



Temperate forests usually lose their leaves in the fall. The height of a tree in a rainforest is only a few feet. They need the nutrients from this ground and use up the food quite quickly because so much plant life is supported in the rainforest.

What happens when people cut down rainforests for farms? Any available nutrients are depleted quickly by farming. Furthermore, much of the topsoil is washed away because there are no plant roots to keep the soil in place.

Animals of the Rainforest

- Giant Anteater
- Kinkajou
- Caecilian
- Capybara
- Jaguar
- Coati
- Armadillo
- Red-bellied Piranha
- Howler Monkey
- Yellow-banded poison dart frog
- Macaw
- Sloth
- Iguana
- Brown basilisk (Jesus Lizard)
- Golden lion tamarin
- Spider monkey
- Toucan
- Amazon River Dolphin
- Caiman

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Amazon Rainforest Animals Fun Fact Pages!

Rainforest Animal Blank Research Cards

Blank research cards with images of sloth, toucan, capybara, and other animals for student use.

The Amazon Rainforest: Fun Facts!

The poison dart frogs got their name because hunters would tip their arrows in the frog's poisons.

The golden poison dart frog of the Amazon has **20,000** mice!

The Brown Basilisk is sometimes called the Jesus Lizard because it can run on water!

The Amazon Rainforest: Fun Facts!

Sloths are among the slowest moving animals on Earth!

Sloths can extend their tongues 10 to 12 inches out of their mouths.

The capybara is the world's largest rodent. They grow to be 4 feet long!

What are some other rodents? rats, mice

The Amazon Rainforest: Fun Facts!

The toucan's coloring acts as camouflage in the rainforest. Their beaks are sometimes mistaken for fruit.

The green anaconda is the largest snake in the world. The average size is 20 feet long and 300 pounds!

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4) Life Cycles Worksheets and Activities (50+ pages)

This 50+ page Life Cycles Packet helps kids become familiar with the different stages in the life cycles of the chicken, sea turtle, frog, mosquito, butterfly, dragonfly, bee, mouse, and ladybug.

Life Cycle Worksheets & Activities

Life Cycle Spinners & Montessori 3-Part Cards

Student activity pages:

Life Cycle - Ordering

chicken
sea turtle
frog
mosquito
butterfly
dragonfly
bee
mouse

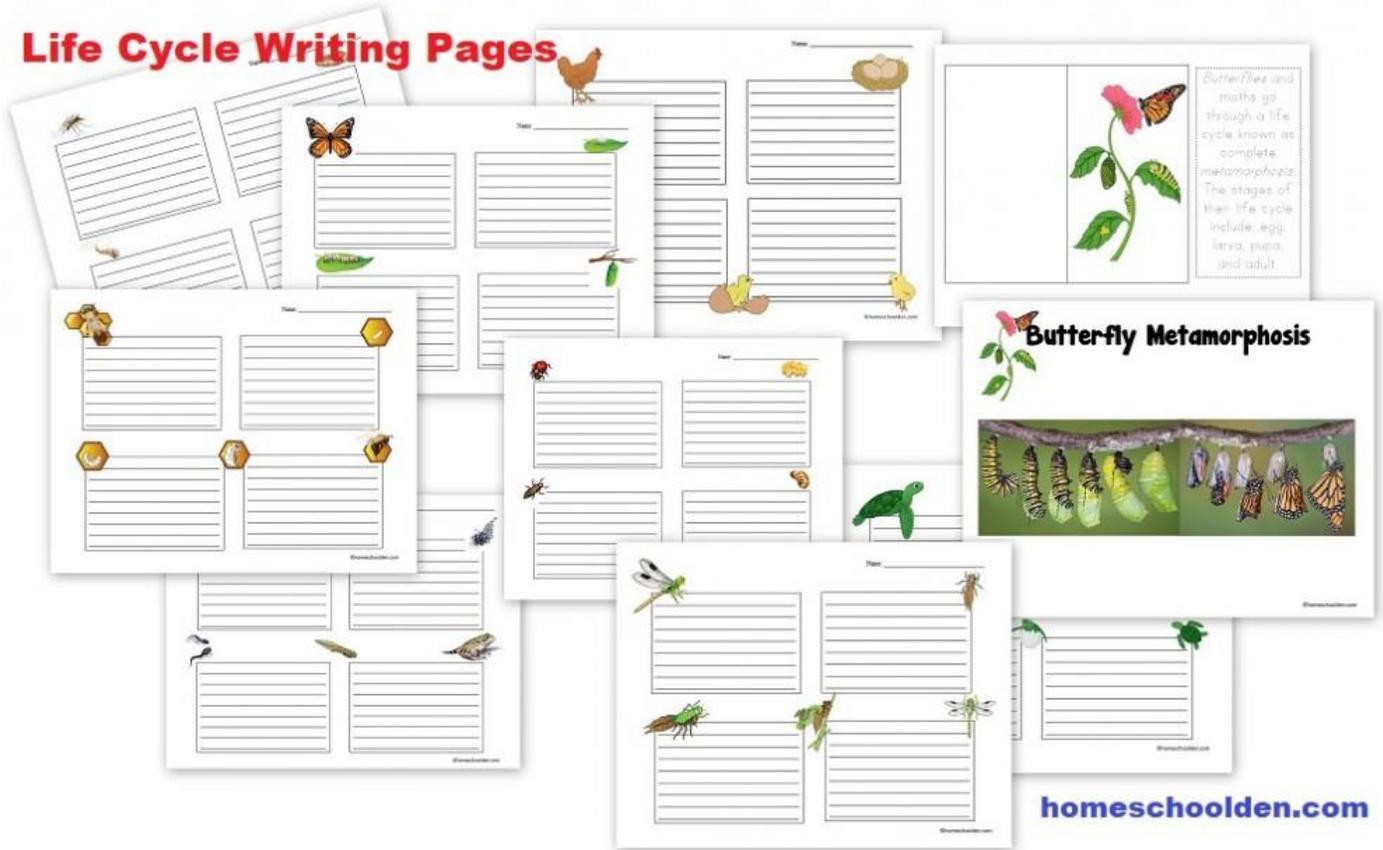
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Life Cycles Packet

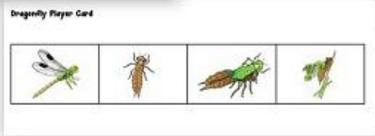
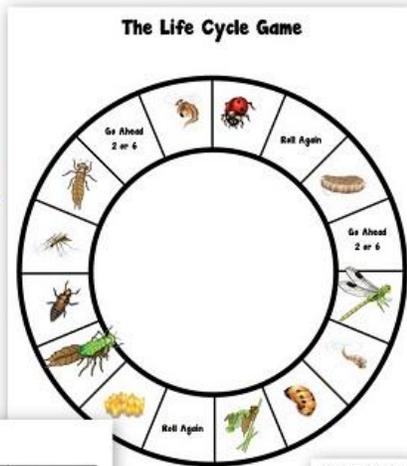
Student activity pages:

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Life Cycle Writing Pages



Life Cycle Game
Be the first player
to fill your life
cycle card!

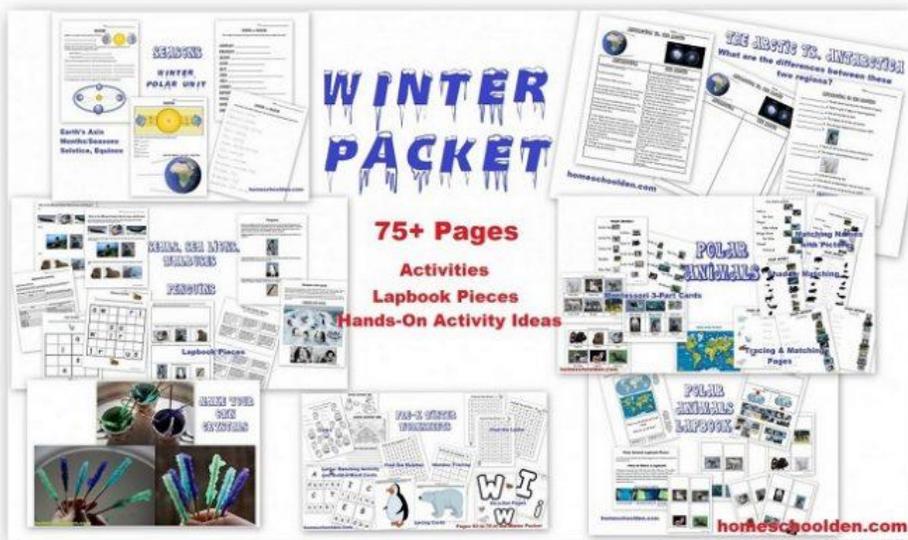


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Hibernation Unit (100+ pages)

5) Winter Packet and

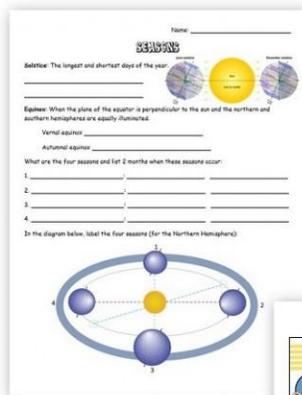
The **Winter Packet** is now 100+ pages because it has been updated to include the **Hibernation Unit**.



What is included in the Winter Packet?

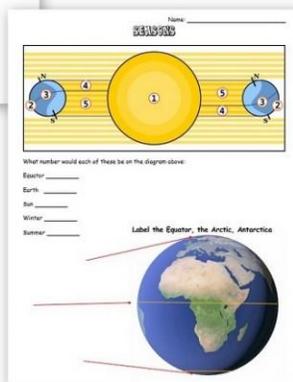
- * Earth's axis and how/why the tilt of the Earth creates the different seasons
- * major differences between the Arctic and Antarctica
- * Polar Animals
- * The differences between seals, sea lions, and walruses
- * Hands-on activity ideas about whales & Lapbook pieces
- * Hibernation Unit

Hibernation Topics Include: why animals hibernate, terms such as torpor, brumation, estivation, diapause, endotherms vs. ectotherms. Plus, it covers where animals spend the winter and the dangers of hibernation.



**Earth's Axis
Months/Seasons
Solstice, Equinox**

SEASONS WINTER, POLAR UNIT



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What are the differences between Seals, Sea Lions, and Walrus?

Seals



Sea Lions



Walrus



What are the differences between Seals, Sea Lions, and Walrus?

Seals



Sea Lions



Walrus



SEALS, SEA LIONS, WALRUSES

PENGUINS

Penguins

Penguins are flightless birds that live almost exclusively in the Southern Hemisphere. They have a unique shield-shaped body which helps them slide over ice and through waves. The white underbelly makes them less visible from underwater predators. Instead of wings they have flippers. There are between 18 and 20 different species of penguins.

Emperor penguin: This is the tallest and heaviest of all living penguin species and lives in Antarctica.



Chinstrap penguin: They live in the Southern Pacific and the Antarctic Ocean. Like many penguins they eat fish, shrimp, fish, and squid.



Penguin Life Cycle

The female emperor penguin lays one egg. The male calls that egg on the top of his feet. It has a shell of wax that helps keep the egg in place and helps to keep it warm. The egg then starts to hatch and the chick is born. The male penguin stays by the side of the egg and the female goes to the sea to get food. The male penguin stays by the side of the egg and the female goes to the sea to get food. The male penguin stays by the side of the egg and the female goes to the sea to get food.



Hands-On Activity

Underwater Mammals

One of the best features of mammals is that they breathe oxygen. They can hold their breath for a long time and they can stay underwater for a long time. How long can you hold your breath?

Name: _____

Age: _____

How long can you hold your breath for?

1st try	_____
2nd try	_____
3rd try	_____
4th try	_____
5th try	_____

Seal Sudoku

Every row, every column and every square must contain the words walrus!

		a	w		r	l
			s	a		
w				r		
	l					
		s				
	e					

Walrus Sudoku

Every row, every column and every grid must contain the words walrus!

a	w		r	l
		s	a	
w				r
	l			
		s		
	e			

Lapbook Pieces

What are the differences between a seal, sea lion and walrus?



Describe these penguins:



Cut-and-Paste Option

(Use the material provided)

Emperor penguin: This is the tallest and heaviest of all living penguin species and lives in Antarctica.

Chinstrap penguin: They live in the Southern Pacific and the Antarctic Ocean. Like many penguins they eat fish, shrimp, fish, and squid.

Fairy penguin: This is the smallest of all penguin species and lives in the southern coasts of southern Australia and New Zealand.

Hand-On Activity about Baleen Whales

Take some pepper and sprinkle it over the water. This represents the tiny krill. Try to pick up the pepper with your fingers. (It's never able to get very much.) Then take a toothbrush (no bristles) and scrub the water with it. (It's never able to get out large bits of the krill.)



WHALES

Toothed vs. Baleen Whales, Hands-On Activity Ideas, Lapbook Pieces

Toothed vs. Baleen Whales




Toothed vs. Baleen Whales

Use these photos and glue them into the correct column on the following page.



Toothed vs. Baleen Whales

Baleen whales are considerably larger than toothed whales. Baleen whales have two blow holes. Baleen is made of keratin.

Toothed Whales



Sperm whale - largest toothed whale, 29-60 feet

Orca

Beluga

Baleen Whales



Blue Whale - largest baleen whale 33-100 feet

Humpback Whale

Gray Whale

Bowhead

Hands-On Activities About Whales!

These are all activities for your whale lapbook. Use the photos, drawings, and cutouts.

What makes good vocabulary?

Research and Retention:

Use the provided cards to create a whale lapbook. Use the photos, drawings, and cutouts.

Hands-On Activities About Whales!

These are all activities for your whale lapbook. Use the photos, drawings, and cutouts.

What makes good vocabulary?

Research and Retention:

Use the provided cards to create a whale lapbook. Use the photos, drawings, and cutouts.

Lapbook Pieces

Use these photos and glue them into the correct column on the following page.



WINTER PACKET

75+ Pages
Activities
Lapbook Pieces
Hands-On Activity Ideas

The Winter Packet is now 100+ pages because it has been updated to include the Hibernation Unit:

Hibernation Unit

25+ pages

Hibernation Unit

Why hibernate?

In the winter, it is often extremely cold and food is scarce. Animals hibernate to avoid life-threatening conditions: extremely cold temperatures, lack of food or water.

Animals find warm water sources. Their body temperature drops. It becomes less often to breathe since it doesn't eat or drink much (or at all). Many hibernators live off stored food for until the spring.

Evating during hibernation: Some animals store fat, some, like bears, eat, and so on. They will wake up every now and then to eat. Chipmunks, for example, wake up every few days to eat.

Alone or with others? Some animals like woodchucks make dens they sleep alone. Others like moles, bats, frogs, female skunks, and meerkats hibernate in groups. The young ones with their mothers until spring. Many sleep in family groups.

Groups of up to twelve skunks, usually females and their young, gather together.

Some female bats, give birth during hibernation. Female meerkats also sleep in family groups.

Big brown bats gather in large caves and may hang in clusters of over 100 bats!

Thousands of garter snakes hibernate together in a heap in rocky crevices. Before an area melting under just after hibernation.

hibernation
brumation
torpor
estivation
diapause
endotherm
ectotherm

What is hibernation?

Hibernation is a long-term state of reduced metabolic activity. It is a survival strategy used by many animals to survive the winter. In hibernation, an animal's body temperature drops, its heart rate slows down, and its breathing becomes very shallow. This allows the animal to conserve energy and survive through the winter without eating or drinking.

What is diapause?

Diapause is a state of suspended development. It is a survival strategy used by many insects to survive the winter. In diapause, an insect's development is paused, and it can survive through the winter without eating or drinking.

What is the difference between an endotherm and an ectotherm?

endotherms	ectotherms
They control their body temperature and keep it constant. This means they can change their body temperature.	They depend on the environment to control their body temperature. They can't change their body temperature.
They have a higher metabolic rate and burn more energy.	They have a lower metabolic rate and burn less energy.
They can survive in a wider range of temperatures.	They can only survive in a narrow range of temperatures.
They can survive in a wider range of environments.	They can only survive in a narrow range of environments.

What is hibernation? brumation? diapause?

Hibernation is a long-term state of reduced metabolic activity. Brumation is a shorter-term state of reduced metabolic activity. Diapause is a state of suspended development.

Lightbulb/Glowstick Notebook Pages (Cut out & fill in the dotted lines)

hibernation	brumation
endotherm	ectotherm

Can you tell the pictures and drawings below and place them on the back of the notebook pages?

Here are how some animals spend the winter:

Arctic Ground Squirrel
Drops its body temperature to 30° or 27° F (0° or -2° C). Hibernates in a hole in the ground. It stays in its hole for 6-8 months. It wakes up in the spring.

Wood Frog and many other frog and toad
These frogs have hibernated in the ground in the fall. In the spring they wake up and start to eat. They lay their eggs in the water. Their eggs produce a special sugar called glucose that acts like antifreeze.

Freshwater Turtle
It can survive temperatures as low as 29° F (-1° C). Over half of their body weight goes to fat. They hibernate in the mud. They live for 30-40 years.

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hibernation
torpor
estivation
brumation
diapause

endotherm
ectotherm
warm-blooded animals
cold-blooded animals

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Where Do Animals Hibernate?

A warm, safe place for animals to hibernate is called a hibernaculum. The place is hibernaculum.

Types of hibernacula

Burrows

Some animals dig winter homes with rooms for sleeping or storing food. They hide the entrance under rocks, trees or bushes.

Many animals dig their burrows deep below the frostline—the deepest point in the ground which will freeze.

They will often line their burrows with grass, dry leaves, moss and animal fur for warmth.

Some examples of animals that use burrows:

- Ground squirrels
- Woodchucks (groundhogs)
- Mole
- Chipmunks

Dens

Dens are like many forms — sometimes there are shallow caves or spaces in a rock. They could also be a dirt tunnel across the trunk of a living tree, an old hollow log in a field.

Hollow trees

The woodpecker creates a den in a hollow tree or log or in an empty wooden log. The hole is 12 feet below the ground.

Where Do Animals Hibernate?

Under dirt, leaves, logs, stones or bark

Caves and crevices, abandoned mines, storm sewers & cellars

Underwater mud

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Where Do Animals Hibernate?

Types of hibernacula

Some hibernate in dens.

Some hibernate in burrows.

Some spend the winter on or under the mud.

Some hibernate in caves.

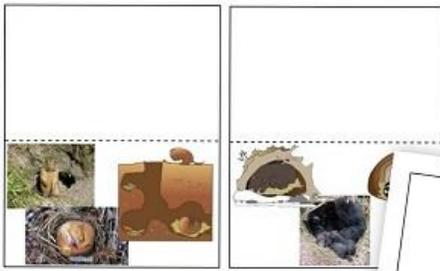
homeschoolden.com

Where do animals hibernate:

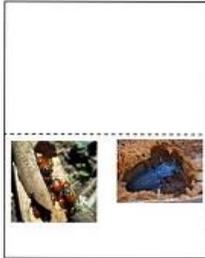
interactive notebook activity

matching page

tracing pages



Where do Animals Spend the Winter?



Some hibernate in burrows.

Some spend the winter in dens.

Some animals hibernate in groups.

Where Do They Hibernates?

Woodchucks, ground squirrels, mice and others hibernate in burrows.

Bears, skunks, raccoons and others spend the winter in dens.

Bats hibernate in dark caves.

Where Do They Hibernates? (cont.)

Some animals like snails, ladybugs, turtles and frogs spend the winter under rocks, logs, leaves, or bark.

Some animals like crayfish, snapping turtles, and other types of frogs, spend the winter on or under the mud.

Where Do They Hibernates?

1. in a burrow

2. in a den

3. under cover (under logs, rocks, leaves, bark, etc.)

4. on or in the mud (under water)

5. in dark caves

6. in groups

Animals: brown bear, wood frog, ground squirrel, garter snakes, snail, skunk, box turtle, bat, raccoon.

Where Do They Hibernates?

1. in a burrow

2. in a den

3. under cover (under logs, rocks, leaves, bark, etc.)

4. on or in the mud (under water)

5. in dark caves

6. in groups

Animals: brown bear, wood frog, ground squirrel, garter snakes, snail, skunk, box turtle, bat, raccoon, snapping turtle.

Biology Unit (continued):

Food Chain Food Web Energy Pyramid Activities

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Symbiosis

interaction between two different organisms living close by one another

Good for one, harmful for the other

predation

Good for one, neutral for the other

commensalism

Good for both

mutualism

Harmful for one, neutral for the other

parasitism

Harmful for one, harmful for the other

competition

One organism of the same or different species attempt to use an ecological resource in the same place at the same time. They may compete for water, sunlight, food, or space.

amensalism

One organism lives on or inside another organism and harms it

antibiosis

One organism secretes a chemical that kills the other organism, while the one that secreted the chemical is unharmed.

antibiosis

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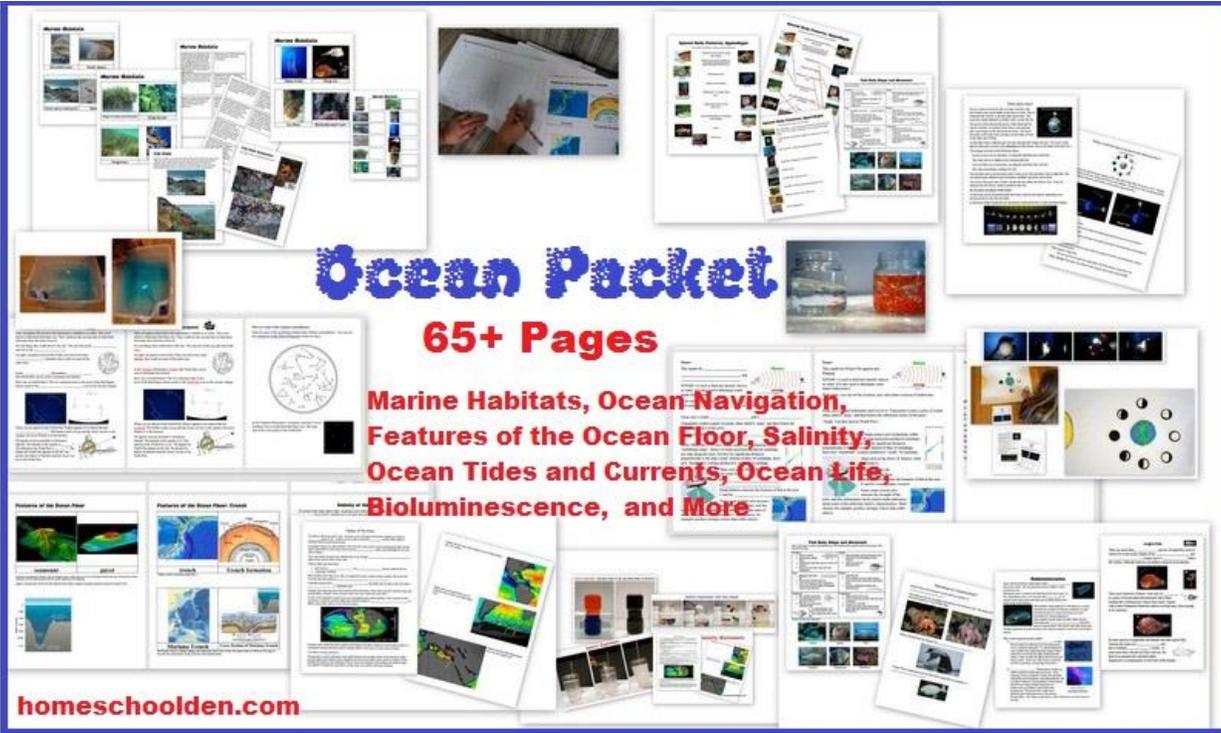
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antibiosis

Ocean Unit – Layers of the Ocean/Ocean Zone

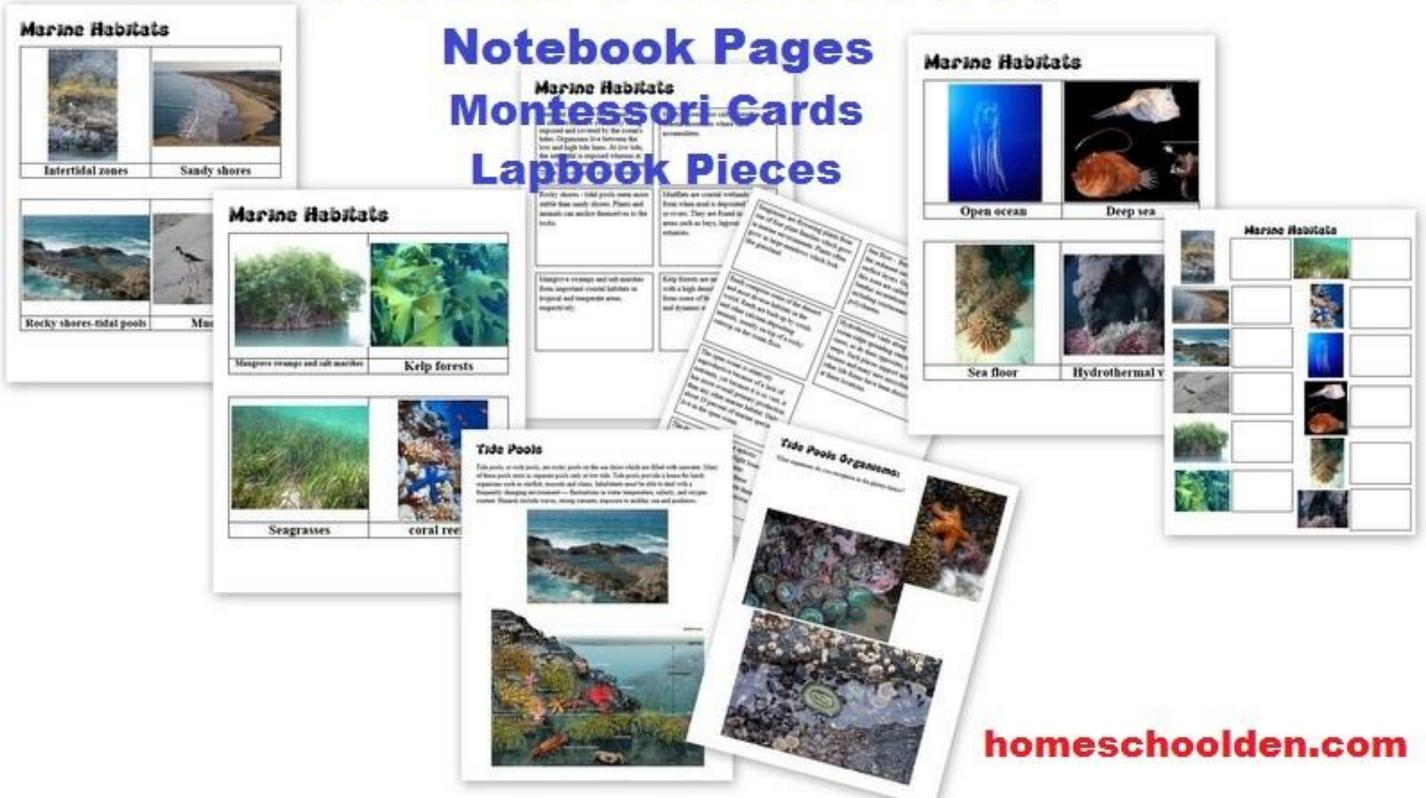


Ocean Pocket
65+ Pages
Marine Habitats, Ocean Navigation, Features of the Ocean Floor, Salinity, Ocean Tides and Currents, Ocean Life, Bioluminescence, and More

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Marine Habitats

Notebook Pages
Montessori Cards
Lapbook Pieces



Marine Habitats

Intertidal zones **Sandy shores**

Rocky shores-tidal pools **Mangrove swamps and salt marshes** **Kelp forests**

Seagrasses **coral reef**

Tide Pools

Tide Pools Organisms

Marine Habitats

Open ocean **Deep sea**

Sea floor **Hydrothermal v**

Marine Habitats

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Scientific Classification and Taxonomy Packet

Scientific Classification and Taxonomy Packet

60+ pages
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Introducing Scientific Classification Dichotomous Key Activities

Question to consider:
Which has more in common with humans - an earthworm or a grasshopper?

Classification of Life

Classification of Life

Classification of Life

Classification of Life

Dichotomous Key Activity

Dichotomous Key Activity

Dichotomous Key Activity

Dichotomous Key Activity

Bird Classification

Bird Classification

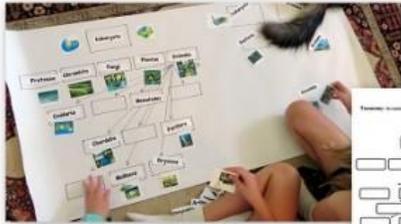
Bird Classification

Bird Classification

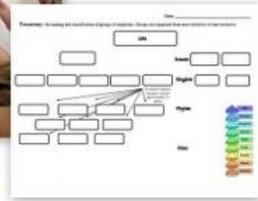
From our 60+ page Scientific Classification & Taxonomy Unit

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Taxonomy & Scientific Classification Unit



Classification Chart Activities



Animal Phylum, Meaning, Photo Sorting Activity

Phylum Name	Meaning	Example
Bryozoa	Mass animals	
Porifera	Pore bearer	
Echinodermata	Spiny Skin	
Cnidaria	Stinging nettle	
Annelida	Little ring	
Nematoda	Thread like	
Platyhelminthes	Flat worm	

Chordata	With a chord	
Mollusca	Soft	
Arthropoda	Jointed foot	



Bryozoa	Annelida
Cnidaria	Chordata
Nematoda	Platyhelminthes
Echinodermata	Porifera
Arthropoda	Mollusca



Animal Phylum Bingo

World Facts Packet

Do your kids know the 4 largest countries? Which countries have the most people? The longest river? This packet covers basic world and U.S. facts. Plus, it covers geographic features, landforms, world landmarks, topographic maps, and more! This packet also includes geographic features, landform words, deserts of the world, topographic maps and more!

- PAGES INCLUDE:**
- * Largest countries
 - * Population facts
 - * Major world religions
 - * Facts about the US: largest/smallest state, capital, highest mountain, longest river, rivers & lakes sheet, largest cities, neighbors
 - * Blank fact sheet pages for: Canada, United Kingdom, Australia, South Africa
 - * Famous world landmarks

World Facts Packet (cont.)

Can you identify these famous World Landmarks?

- Eiffel Tower
- Pyramids of Giza
- Leaning tower of Pisa
- St. Basil's Cathedral
- Angkor Wat
- Sistine Chapel
- Dome of the Rock
- Big Ben
- Temple of the Emerald Buddha
- Machu Picchu
- Sydney Opera House
- Parthenon
- Colosseum
- Taj Mahal
- Great Wall of China
- Stonehenge
- Sphinx
- Chichen Itza
- Hagia Sophia
- Palace of Versailles
- Masjid al-Haram, Mecca
- Moscow Kremlin

Eiffel Tower	St. Basil's Cathedral	Angkor Wat
Leaning Tower of Pisa	Sistine Chapel	Dome of the Rock

Great Wall of China	Stonehenge	Pyramids of Giza
The Sphinx	Taj Mahal	Chichen Itza

Famous World Landmarks

World Landmark Bingo 1

World Landmark Bingo 2

World Landmark Bingo 3

World Landmark Bingo 8

Parthenon	Big Ben	Temple of the Emerald Buddha
Sydney Opera House	Colosseum	

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8 Bingo Cards

Can you identify these famous World Landmarks?

- Eiffel Tower
- Pyramids of Giza
- Leaning tower of Pisa
- St. Basil's Cathedral
- Angkor Wat
- Sistine Chapel
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- Taj Mahal
- Great Wall of China
- Stonehenge
- Sphinx
- Chichen Itza
- Hagia Sophia
- Palace of Versailles
- Masjid al-Haram, Mecca
- Moscow Kremlin

Landform Activities

Landforms

island lake bay strait isthmus

butte mesa plateau canyon mesa

volcano mountain

Landforms

Color in the landforms. Write the name of each landform in the space.

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World Facts Packet
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PAGES INCLUDE:

- *Largest countries
- *Population facts
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- *Blank fact sheet pages for: Canada, United Kingdom, Australia, South Africa
- *Famous world landmarks

including answer sheets

Geographic Features Landform Words
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Famous World Landmarks
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8 Bingo Cards

World Facts Packet

- +World Fact Pages, USA Fact Pages
- +Geographic Features, Landform Words
- +World Landmarks
- +Deserts of the World
- +Topographic Map Activities

Topographic Map Activities
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Continents of the World

Continents of the World
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