

# Chemistry Experiment Packet

5 Experiments for young chemists!

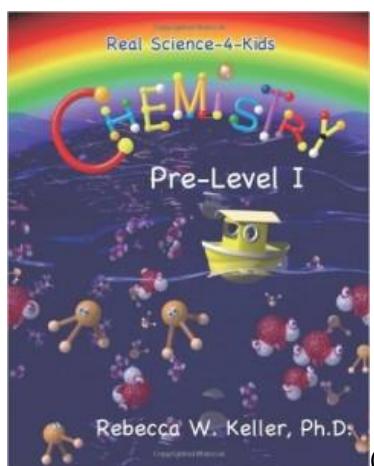


Made by Liesl at [homeschoolden.com](http://homeschoolden.com)



This semester we've been doing a Chemistry Unit for science. We tend to do our science and history units together. In the next two posts, I wanted to share some of the activities I did that were more geared toward my youngest (my older kids have done these before). Then after that I will share the chemistry materials my older two (grades 5 and 7) have used as we've delved into a pretty big unit on the Periodic Table.

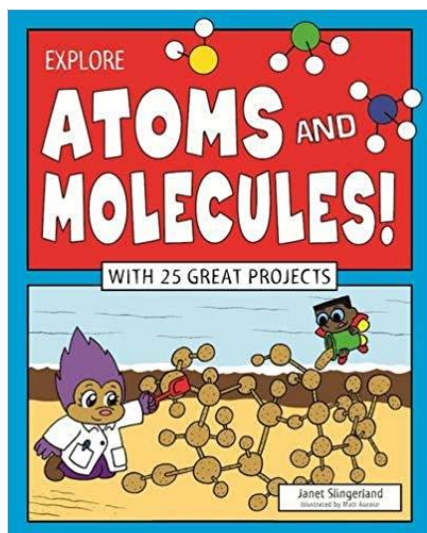
We used Real Science-4-Kids Chemistry pre-Level I for ED (who is 7 and in Grade 2). This student textbook is absolutely at the perfect level as an introduction to chemistry. My daughter really enjoyed the illustrations and the analogies used were really useful. She really was able to understand the concepts being explained. We generally just read one chapter together and another day would do a science experiment together (we don't have the lab book or other resources you can purchase with this series, though they are available). This book covers some challenging topics, but in a way that my daughter really understood (but of course we'll cover this material again in 2 or 3 years). I had my older two read through this book again as well. For them it was a very quick read.



I wanted to share some of the experiments that we did to go along with some of the material in this book. This packet contains the various activities we did that supplement the material we read in RS4K.

- Matter is Neither Created Nor Destroyed (Molecules switch atoms) - Chapter 3
- Acids-Bases - Chapter 4
- Mixtures - Chapter 6
- Un-Mixing: Chromatography - Chapter 7
- DNA Kit - Chapter 10

Another wonderful book for kids is *Explore Atoms and Molecules with 25 Great Projects*



# Matter is Neither Created Nor Destroyed

This first experiment helped prove the concept that matter is neither created nor destroyed. We have done the vinegar - baking soda experiment many times before, but in this particular experiment we showed that during the reaction no matter was destroyed. We did this by weighing everything before the chemical reaction and then weighing it after. We kept the gases "trapped" with a balloon.

See the blooper in the picture to the right below?!! The first time we did the experiment, some of the gas escaped. We did it a second time with two balloons.



**Chemistry Experiment:**  
**Matter is Neither Created Nor Destroyed**



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We filled the balloon with baking soda. We put vinegar into our bottle.

Be sure to hold the bottle while the reaction takes place!!



## Matter is Neither Created Nor Destroyed (cont.)

We filled the balloon with baking soda. We put vinegar into our bottle.

**Weigh the bottle before adding the baking soda to the vinegar.** Make a note of the weight. Then carefully let the baking soda in the balloon mix with the vinegar in the bottle. Hold the bottle steady. Then carefully weigh the bottle again. It should weigh the same, helping students understand that even though a gas was produced from the reaction, the weight of the materials remained the same.

Be sure to hold the bottle while the reaction takes place!!

We used two balloons to make sure no gas escaped.

I took a picture below for you, but after we took the photo we placed the orange balloon over the lip of the bottle too



**Chemistry Experiment:**  
**Matter is Neither Created Nor Destroyed**



# Acid - Base Experiment

This experiment is always such a hit with the kids! ED was quite little when we did it last time. We read the section about acids and bases in the student text book. We talked about the different properties of acids and bases. Acids tend to be sour and include things like vinegar, lemons, oranges, batteries and other things. Bases tend to be bitter and include things like soap, cleaners, bananas and dates.

To make the indicator, chop up a red cabbage (you can also buy it pre-chopped). Boil it for 10 or 15 minutes, then let it soak for several hours. After it cooled, I covered it and put it in the fridge for the next day.

We filled our test tubes about half way.

ED went around the house gathering things to test. She chose vinegar, lemon juice and a tangerine. For the bases she chose a date (which we smashed up), window cleaner, bathroom cleaner, and baking soda. The results were really impressive!

The date never did change the cabin indicator. The date was the one in the middle. :)





# Mixtures

After reading the chapter about Mixtures in Chapter 6, it was time to do some hands-on activities.

The student chemistry textbook went into quite a bit of detail about molecules that dissolve and those that don't. It talked about oil, water and soap and how they interact. Using Popsicle sticks, we made our own diagrams of water molecules (in red), oil molecules (blue chains), and soap (with a red OH group on one end and the oil-like molecules (in blue) on the other).

We pretended to mix the molecules all together. Then we had the soap surround the oil molecules.... with the blue end pointing into the middle and the red end toward the outside. The water molecules were then on the very outside.

This really helped the kids visualize what was happening to the oil and soap and how/why oil is "suspended" in the water by the soap.



**Oil, Water and Soap Experiment**



**Showing how oil molecules are surrounded by soap molecules.**

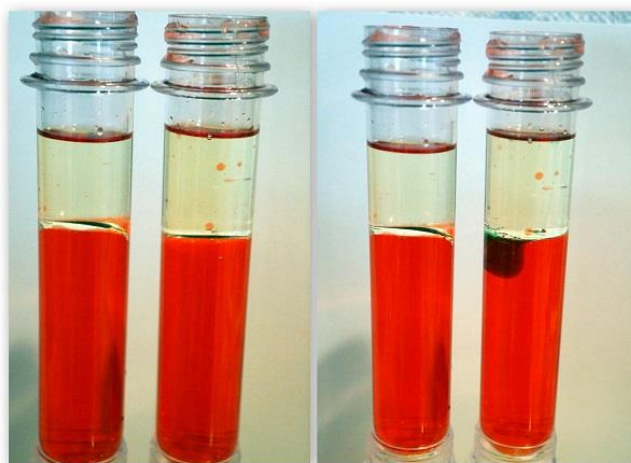
**The soap molecules have one end that is more like oil and the other more like water.**

**The oil is thus surrounded by the soap molecules and is suspended in water.**

Of course, then it was time for the oil, soap and water experiment itself!

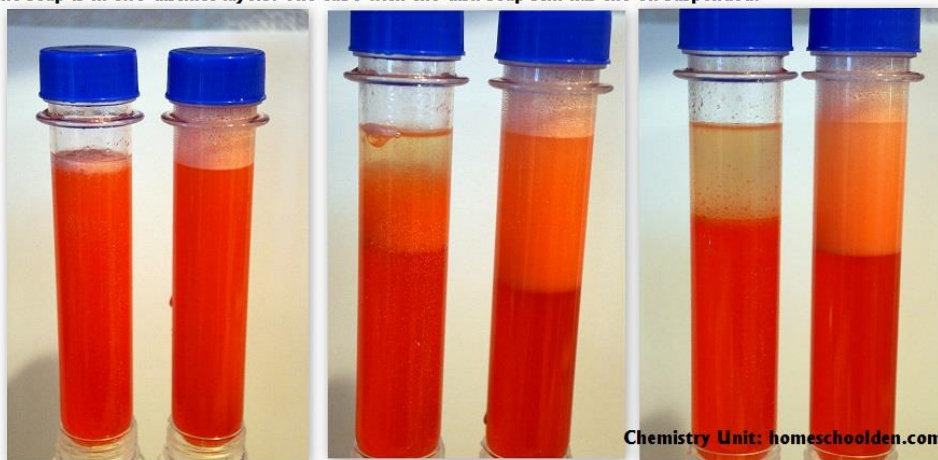
Many of you may be familiar with this activity already. I know our family did this lots of times when the kids were in preschool. But this time, they had a better understanding of what was happening chemically.

- Add food dye to water (I would suggest coloring the water the same color as you used for your H<sub>2</sub>O molecules in the activity above. In our case, our H<sub>2</sub>O Molecules were red, so we used red dye in our water.)
- Add a layer of oil in both test tubes
- Add a squirt of dish soap to just ONE of the test tubes.
- Shake both vigorously.
- Watch as the oil starts to separate out in the test tube that has **no** dish soap. This takes about 2 minutes.
- Come back after about 15 minutes to re-check the experiment. The oil should have separated almost completely for the test tube without dish soap!



**Chemistry Unit: Mixtures** Soap is like both oil and water, so it can make oil "dissolve" in water.

**Top Pictures:** Add food dye to water. Then add a layer of oil. In one test tube, add a small squirt of dish soap. **Bottom Pictures:** Vigorously shake the two test tubes. After two minutes you will see that the tube without the soap starts to separate into three distinct layers (oil/mixture/water). After 15 minutes, the tube without the soap is in two distinct layers. The tube with the dish soap still has the oil suspended.



## Un-Mixing: Chromatography

The next chapter in RS4K was on un-mixing. We did a very simple activity that shows how molecules can be separated. We used basic markers, water, and coffee filters for our activity. We tested orange, purple, and black.

[Teach Engineering](#) had this explanation of chromatography: "The separation of a mixture into its components is a physical process, i.e. because the components of the mixture are not chemically combined, they can be separated by physical means. Criminal investigators use this technology to identify substances such as drugs, blood, ink and other fluids."



This activity can also be done with chromatography paper, Sharpie® markers, and isopropyl alcohol (rubbing alcohol). See this post over at [Teach Engineering](#) for instructions, lab worksheets and more.



# DNA Kit

The last couple of chapters of the Chemistry textbook talked about proteins and DNA. We did a huge [Cell Unit](#) last spring and I took the opportunity to review some of what we had learned. We pulled out April Terrazas's book [Cellular Biology: Organelles, Structure, Function](#) (*affiliate link*) to review the basic functions of the organelles. We like the book because it is so repetitive and the kids quickly remembered the descriptions. We went on to review the notebook pages we completed last spring on how proteins are made (which we went over in quite some depth in our [study of cells](#)). I kept the play dough version of that and we talked about the various parts... you can see that on the left in the photo below. That is our version of how proteins are made in the ribosomes with transfer RNA, etc.:

Since Chapter 10 (in RS4K) talks about DNA, I pulled out a DNA kit called [DNA Experiment Kit](#) (*affiliate link*) that has been in the cupboard (we didn't get to it last year!).



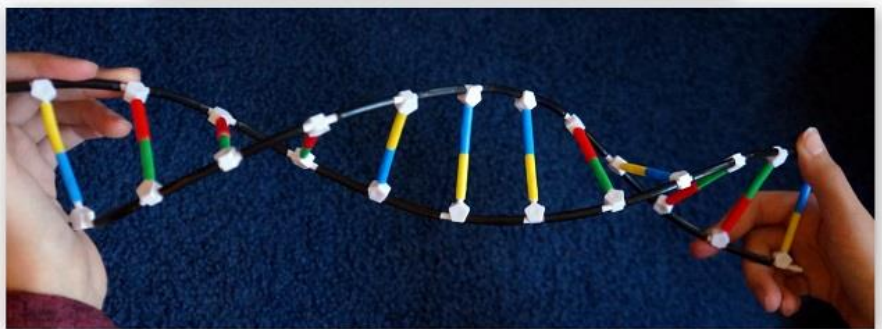
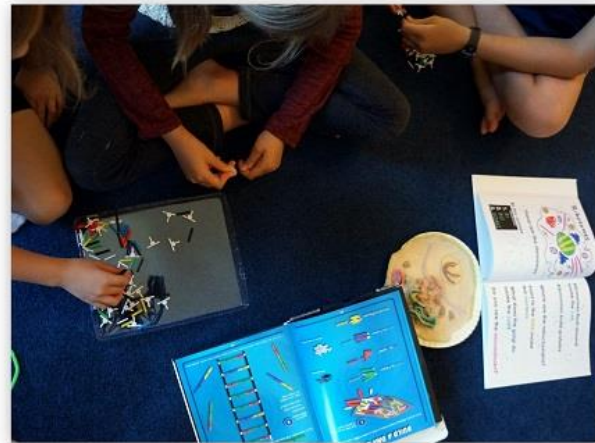
We talked about the 4 molecules that make up the "rungs" on the DNA ladder. We looked at the shape of each (in the booklet provided with that kit). We saw how adenine and guanine have two rings, while thymine and cytosine have just one. Then the kids built their own DNA ladders pairing adenine and thymine (green and red tubes) and pairing guanine and cytosine (blue and yellow).

You can then unzip the DNA ladder and build a duplicate copy with the extra bag of pieces provided.

This kit also comes with materials needed to extract DNA from fruit or onions. It talks in quite a bit of detail about genes. And, the kit also has an activity for extracting DNA from you! We did not do these, but will at some point in the future because the instructions are easy to follow... and those activities are cool!!



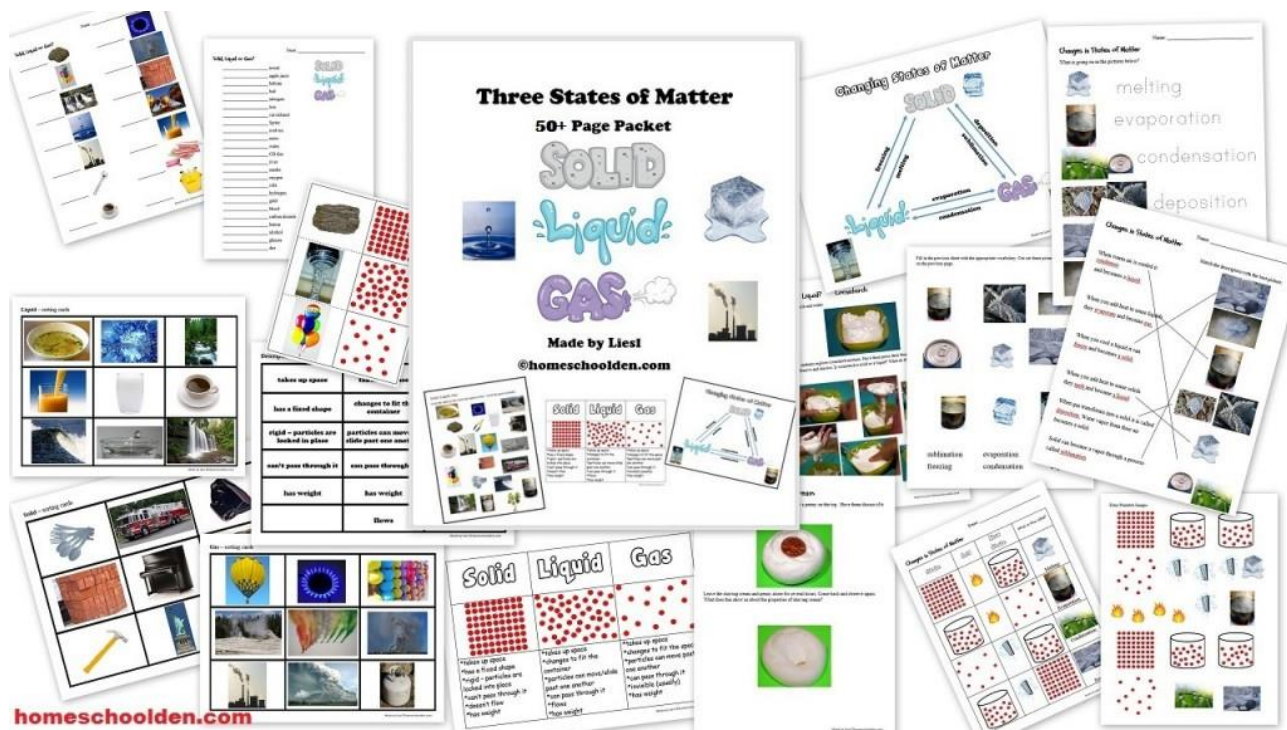
**Building  
DNA**



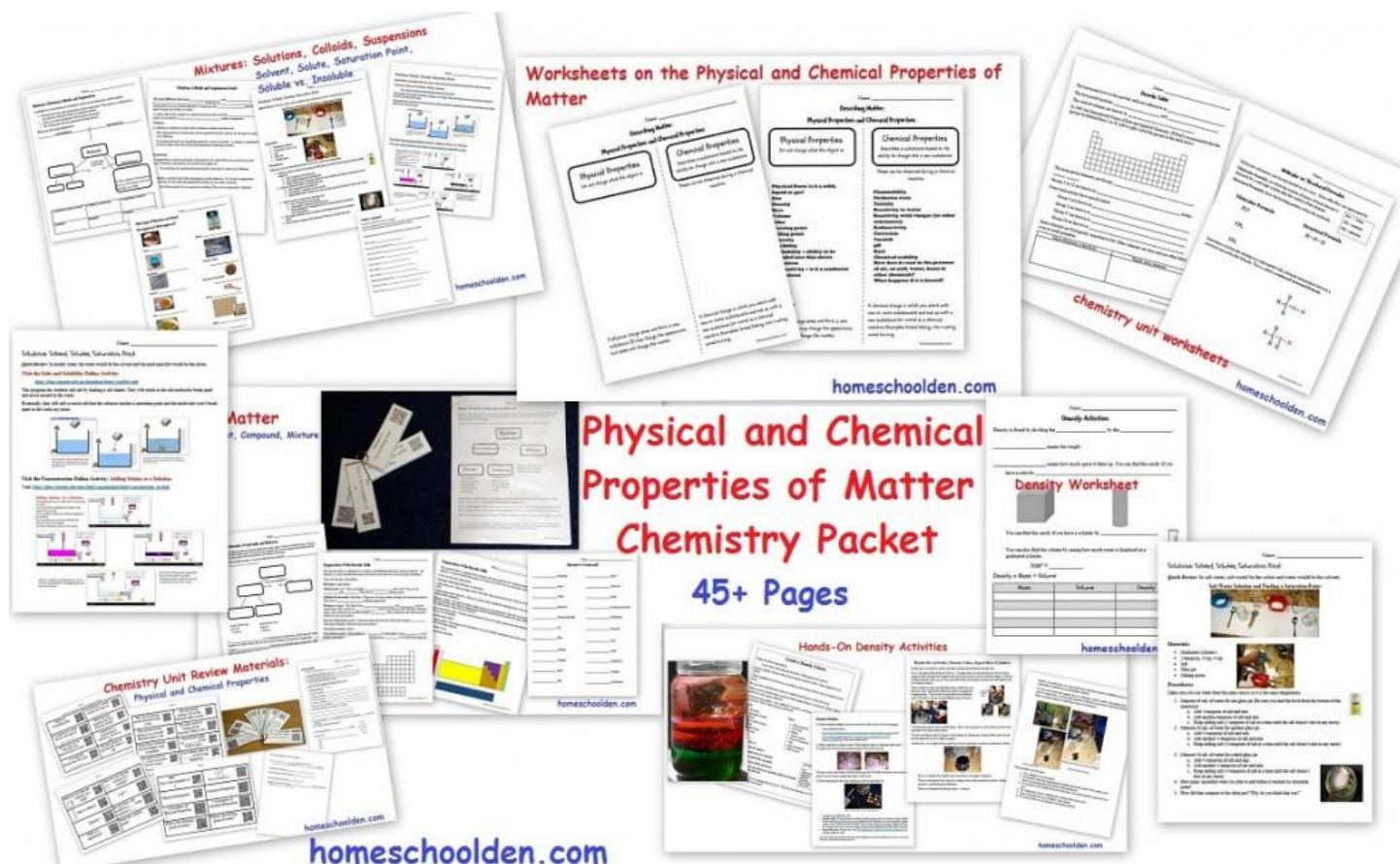


You might also be interested in these packets:

## States of Matter

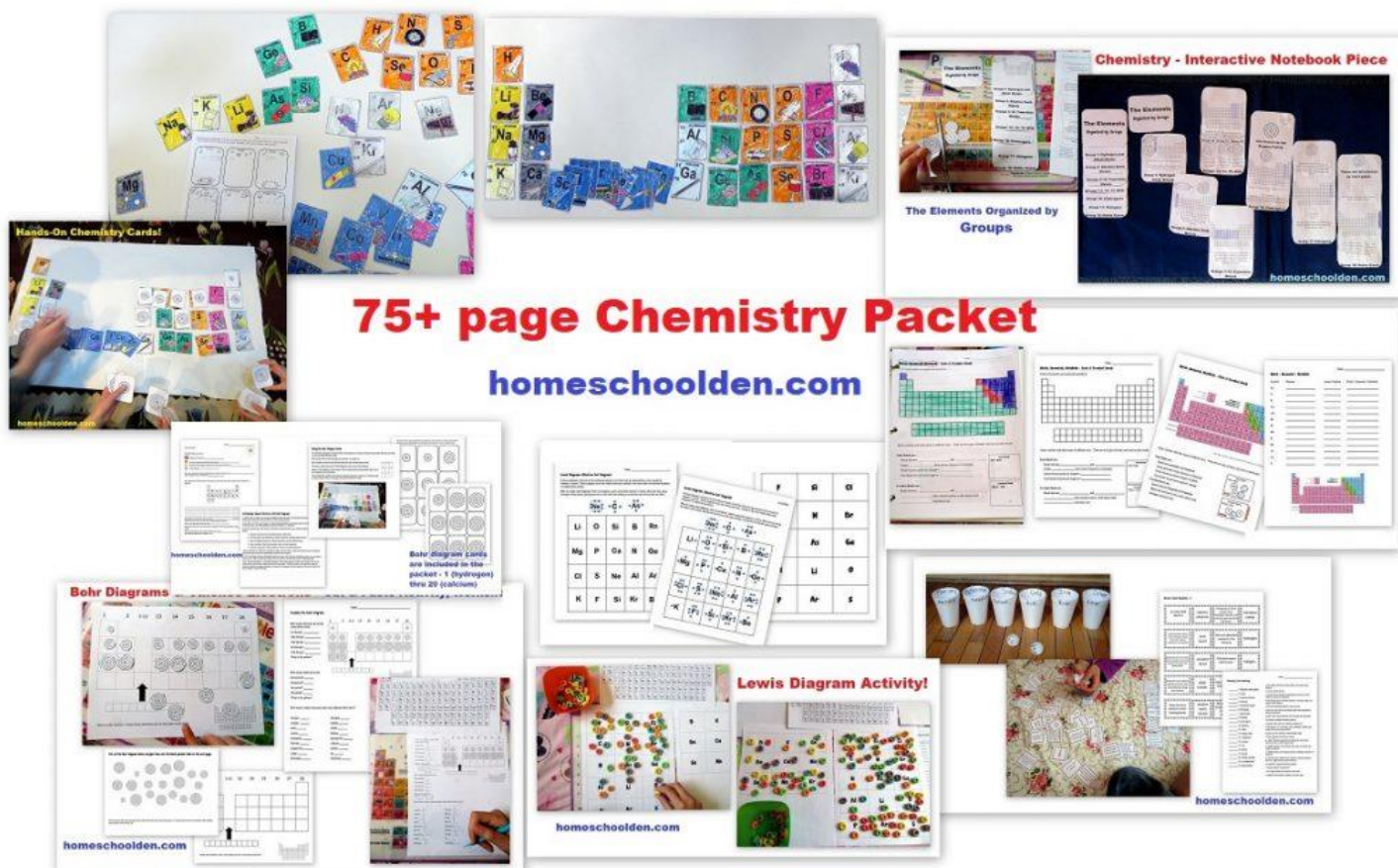


## Physical and Chemical Properties of Matter





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



## **Hands-On Chemistry Cards!**





## Electricity and Circuits Packet

**Electricity and Circuits Packet**

**Hands-On Activities**

**30-Page Packet**

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**Parts of an Atom:** Atoms are the building blocks that make up individual atoms have smaller particles. Label them below:

**Electric Current:** Electric current is generated when \_\_\_\_\_ move from \_\_\_\_\_ to \_\_\_\_\_.

**Conductors:** Electric current flows through some materials more easily than others. Conductors have atoms that move freely and can let electrons easily. The most conductive material is \_\_\_\_\_ as a conductor because it is not as expensive. What are some other examples of conductors?

**Insulators:** Some substances resist the flow of electric current. These materials hold electrons.

**Batteries:** Batteries have a positive and negative side. Electrons flow from the \_\_\_\_\_ side of the battery to the \_\_\_\_\_ side. Electrons are negatively charged, and positive end. The amount of force that the electrons flow with is measured in \_\_\_\_\_.

**Electrical Symbols & Electronic Symbols Matching:**

**Open and Closed Circuits:** An open circuit is an incomplete electrical path. We use \_\_\_\_\_ to open and close the circuit. Draw a schematic for an open circuit:

**Simple Circuits:** A simple circuit carries electricity from the power source (battery or socket) to the lamp (or appliance) through conducting wires. When a switch is turned on, the circuit is complete and closed so the light turns on. When the switch is turned off, there is a gap in the circuit, so the light does not turn on.

**Resistance:** When you turn a light on, the current flows through the wires and the light bulb. The light bulb is a component that adds resistance to the circuit. Resistance is a component that adds resistance to the circuit. Resistance is a component that adds resistance to the circuit.

**Parallel Circuits:** Parallel circuits allow current to flow along more than one path. If there is a break in the circuit, the current can still flow through the other path. This means that the lights keep glowing when one goes out.

**LED Lights:** LEDs are polarized - current flows only in one direction. LEDs are polarized - current flows only in one direction. LEDs are polarized - current flows only in one direction.

**30-Page Packet**

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Day 1:  
\*Read *What's Smaller Than a Paperclip?* (affiliate link) By Robert E. Wells to help kids really realize how small atoms, protons and electrons are.  
\*Go over the parts of an atom. (page 5)  
\*Talk about friction and static electricity. (page 5)

**Hands-On Activity:**  
Take a balloon and have the kids try to place it against a wall. It won't stick. Then have the kids rub the balloon on their hair. After several minutes of rubbing the balloon on their heads, have them try to place the balloon on the wall. "There's a good chance it will stick!" Electrons can be exchanged between materials on contact with the hair and the balloon!  
Static electricity results from an imbalance between negative and positive charges in objects.

\*Read *Switch On, Switch Off* (affiliate link) by Melvin Berger  
**Hands-On Activity - Go outside and look at the power lines.** Does it have a pole-top transformer? The transformer converts the high gram voltage of the overhead or underground distribution lines to the lower "secondary" voltage of the distribution wires inside your house (or building). Note the electricity cable is the one at the top. The lower (thicker) one is the cable wires.  
Create your own generator (this is discussed in *Switch On, Switch Off*) with \_\_\_\_\_ (affiliate link) a magnet and a compass.

**Create Your Own Generator**  
Having the complete setup in this picture and then 2. In the next step, the picture is the right to the magnet moving back and forth. The wire is the magnet wire from the coil.

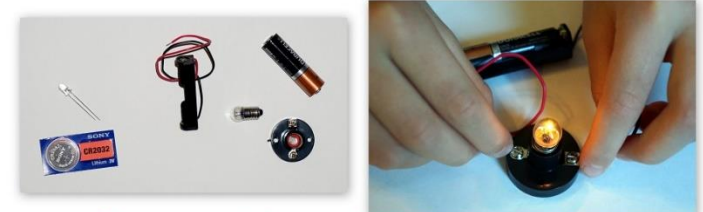
**Electricity and Circuits Unit**  
**Daily Plans - with worksheets, books, hands-on activity instruction, and materials needed**

Day 2:  
Go over batteries, volts, electricity, electrical current. (page 6)  
**Hands-On Activity:**  
Take a simple LED light and place it on a button battery. Press the two wires to the battery. The longer leg of the LED light is the positive side, the shorter leg should connect to the negative side. (Once about that a little later) That is a simple circuit!  
LEDs are polarized - current flows only in one direction. LEDs are polarized - current flows only in one direction. LEDs are polarized - current flows only in one direction.

**Hands-On Activity:**  
Have the students make their own circuits with both (not both halves optional), wire or alligator clips, battery.  
You can have \_\_\_\_\_ (affiliate link) or \_\_\_\_\_ available for the kids to work with.

On page 10 you also use a battery. Have the kids build a AA battery or AAA battery. You might want to purchase a double battery holder for the Extension 2 activity.  
**Fit out the page on Batteries (page 10)**  
the circuit to see if the light bulb will still work.  
**Extension 2: After fitting out the Batteries page (that follows) have the students try this:** Have the students make the LED bulb work with the AAA battery. (It won't.)

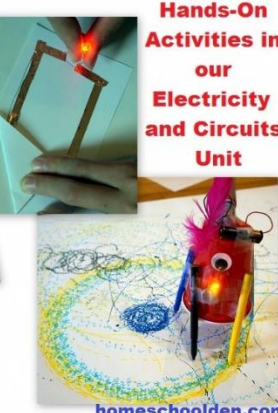
**Electricity and Circuits Unit: Making Simple Circuits**



Electricity and Circuits Unit: Making Simple Circuits



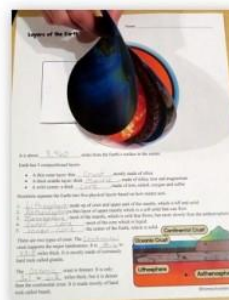
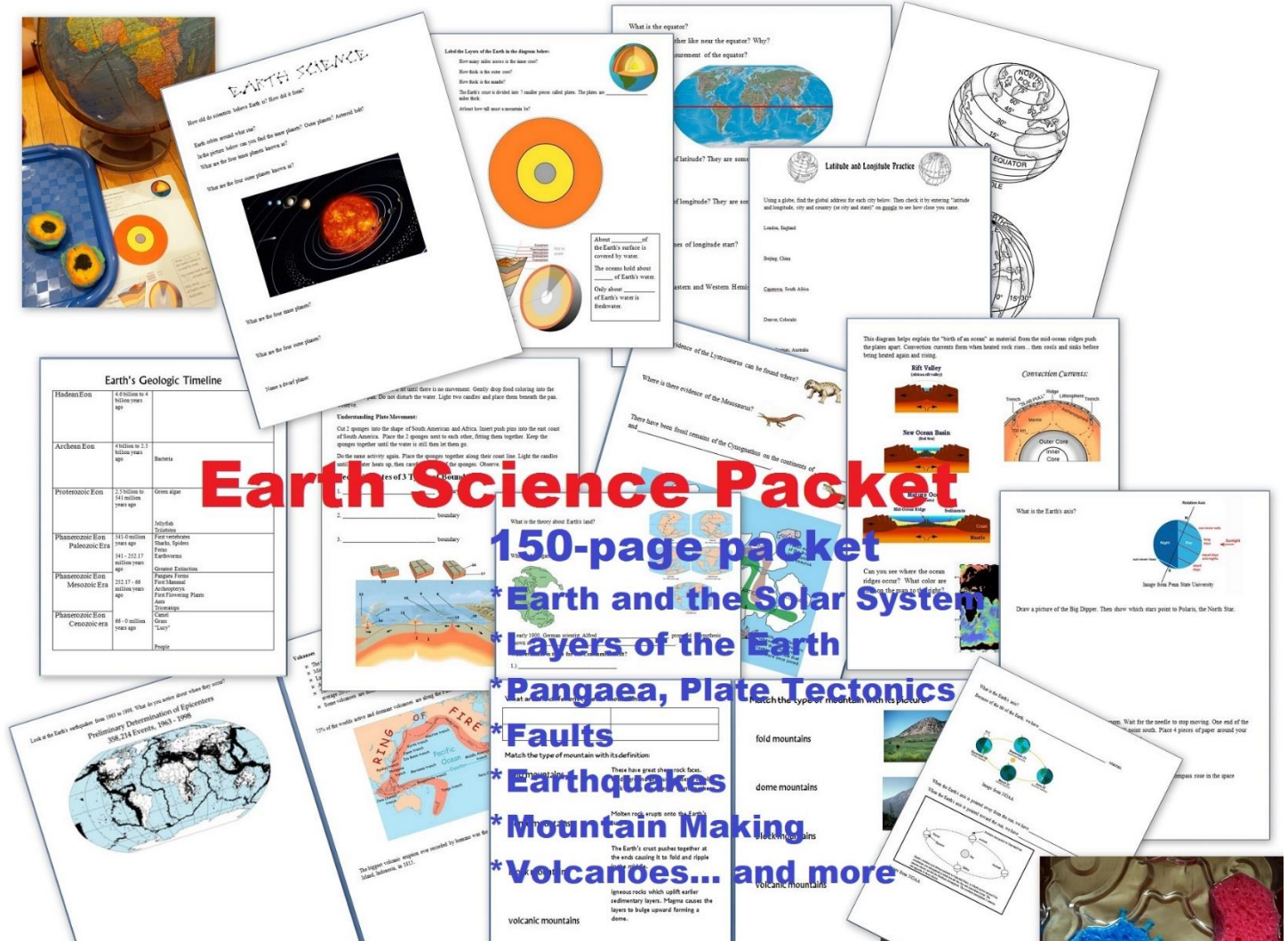
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## Earth Science Packet (150 pages)



## Layers of the Earth Interactive Notebook Pages



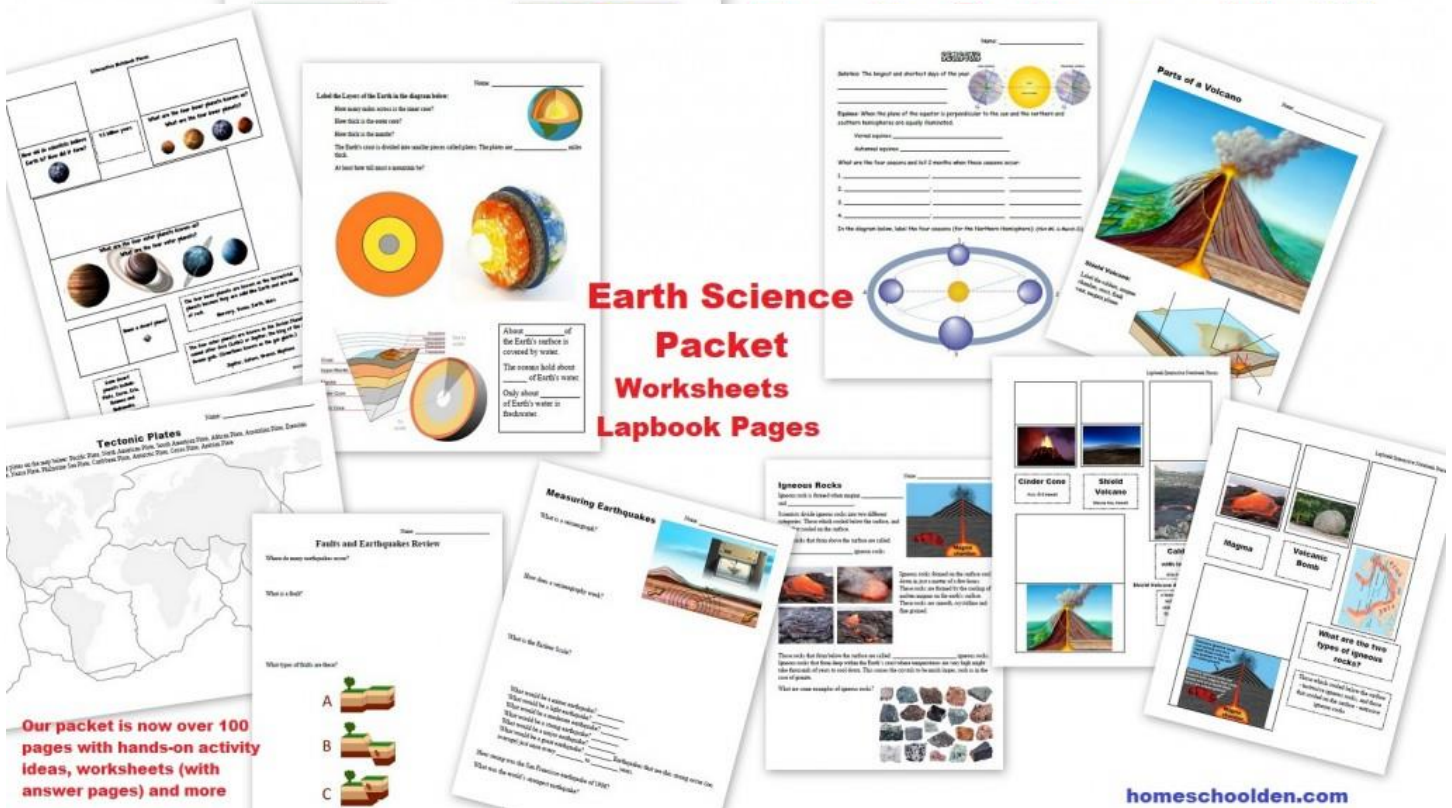
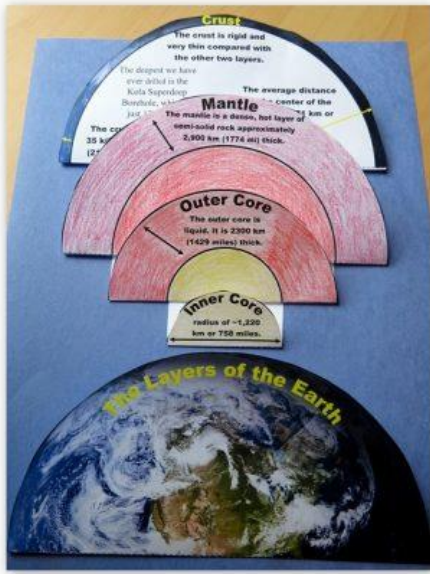
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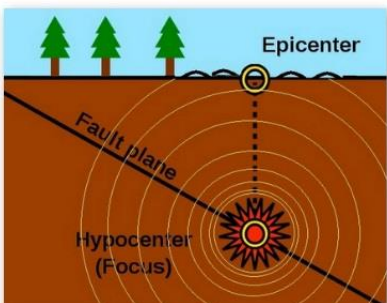


## Earth Science Packet (more pictures of what's included...)

## Layers of the Earth - Interactive Notebook Activity

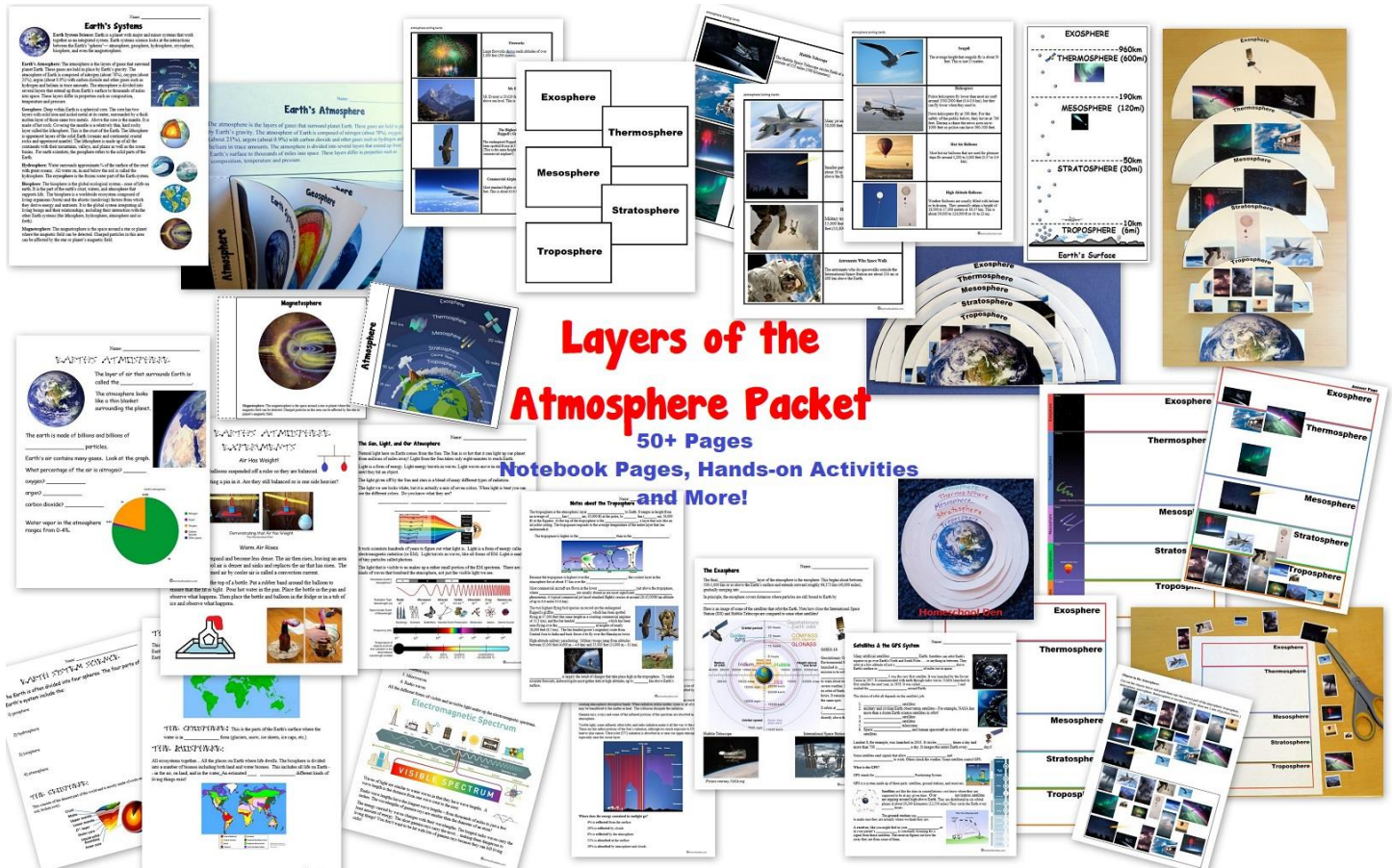


## Earth Science: Learning about Earthquake Vibrations





# Layers of the Atmosphere Packet

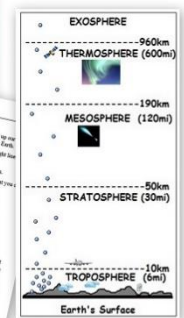
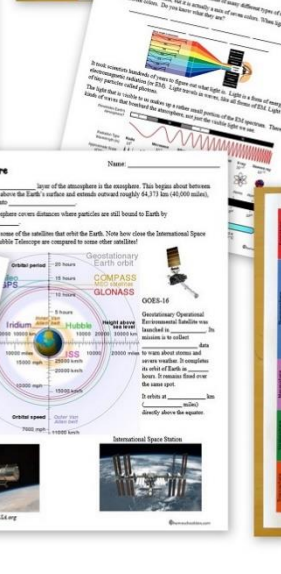
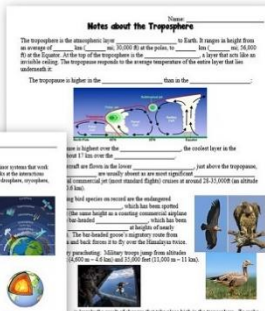


## Earth's Atmosphere Packet, 50+ pages



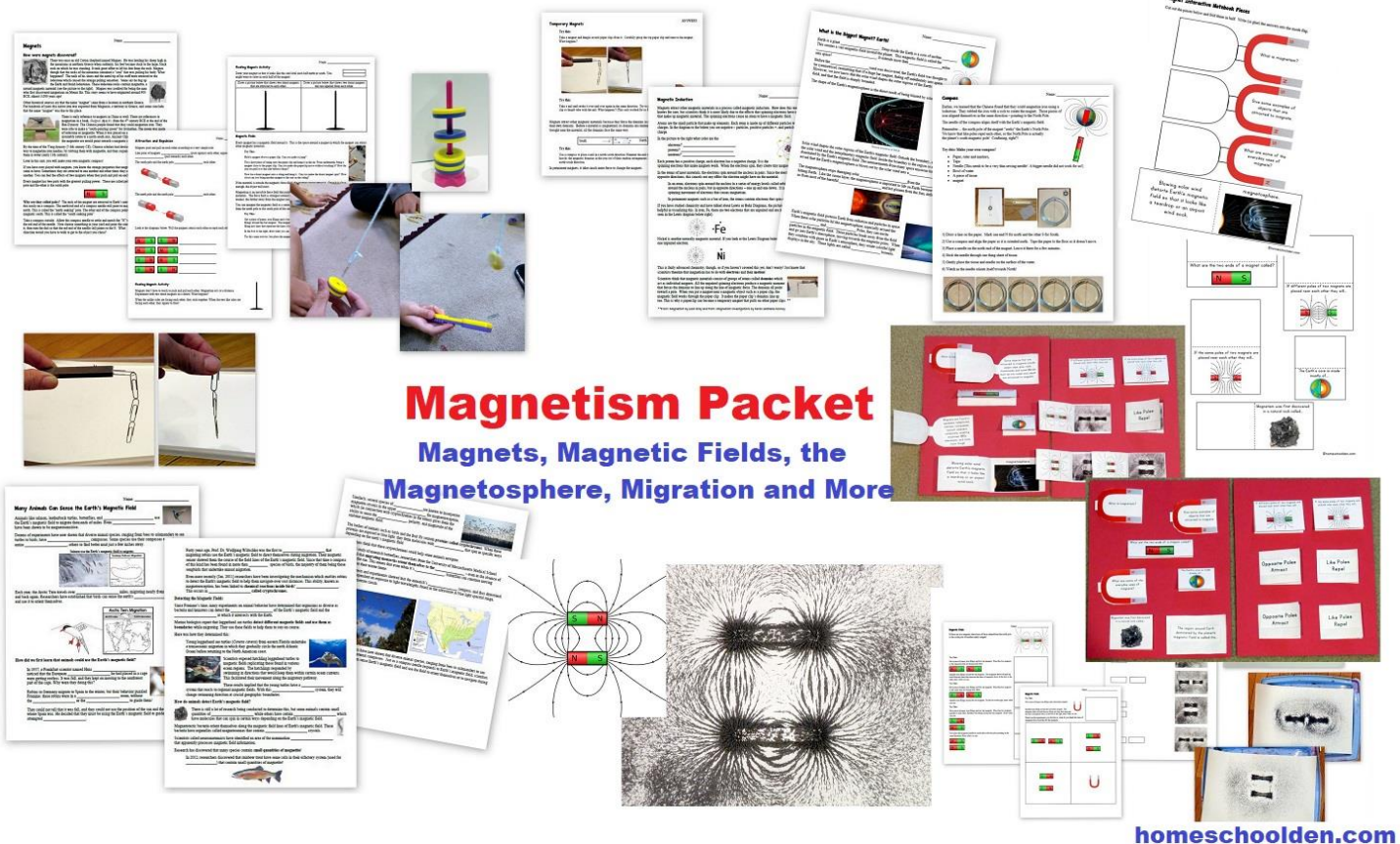
### Earth's Atmosphere as part of the Earth System Printable Activity

The atmosphere is the layers of gases that surround planet Earth. These gases are held in place by Earth's gravity. The atmosphere of Earth is composed of nitrogen about 78%, oxygen about 21%, argon about 0.9%, with carbon dioxide and other gases such as hydrogen and helium in trace amounts. The atmosphere is divided into several layers that extend from Earth's surface to thousands of miles into space. These layers differ in properties such as composition, temperature and pressure.

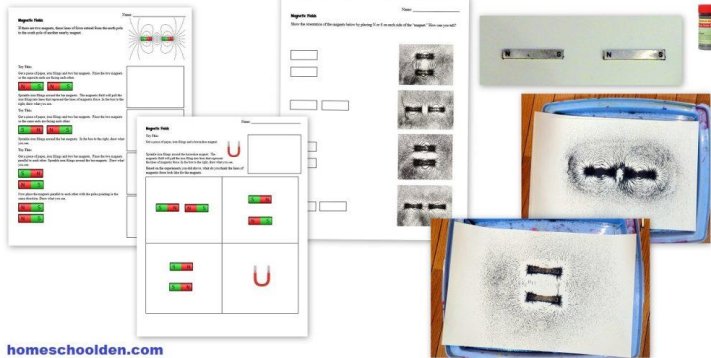




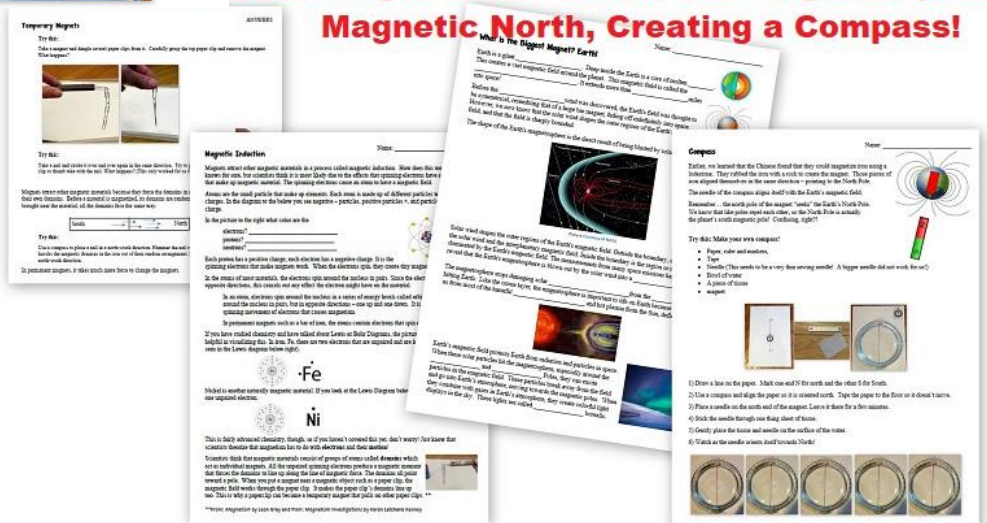
# Magnet Packet: Magnetic Fields, The Magnetosphere, and Animal Migration



## Magnet Unit: Learning about Magnetic Fields!



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





# 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.

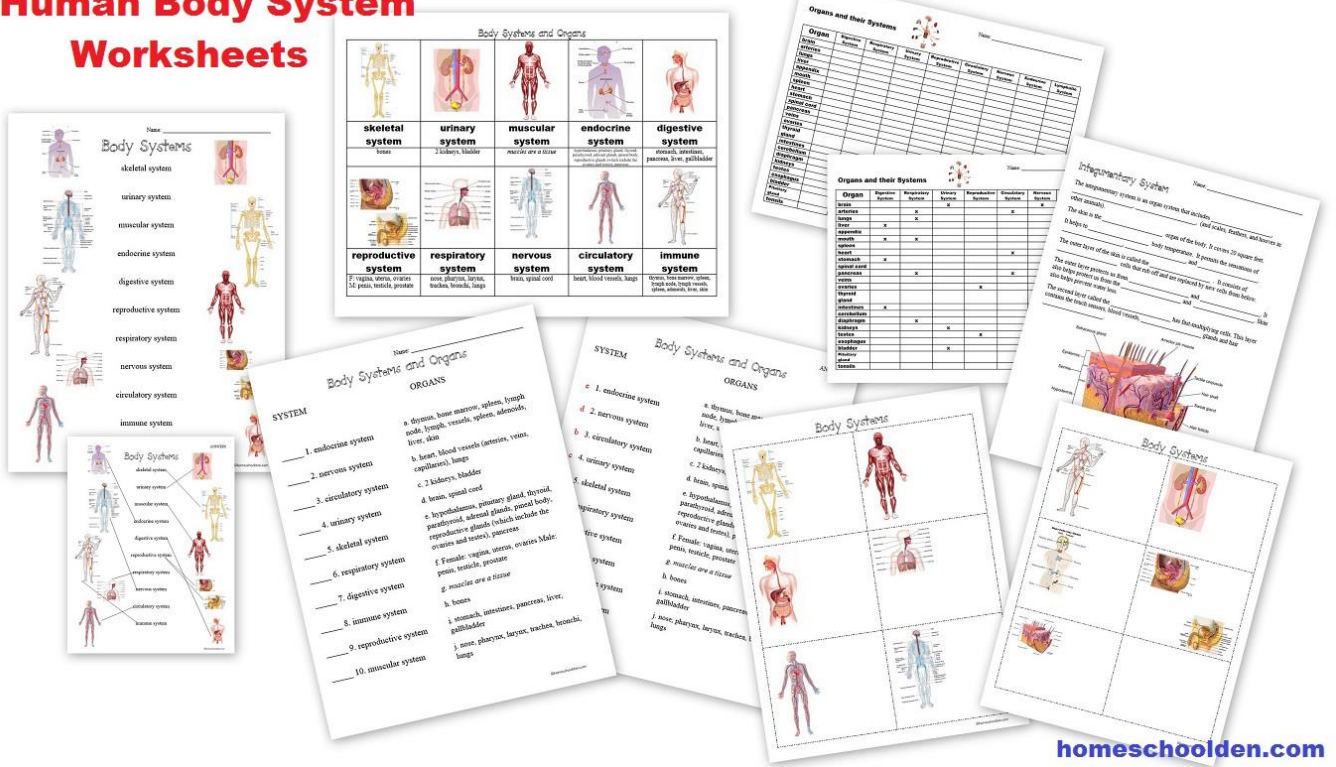
The **Winter Packet** is 100+ Pages. It also includes the **Hibernation Unit**. The first part covers Growing Crystals, Months/ Seasons, Earth's Axis and the Seasons, Arctic vs. Antarctica, Polar Animals, Penguins, Seals, Whales, about a dozen PreK Activity Pages. The Hibernation Unit covers: why animals 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](#).

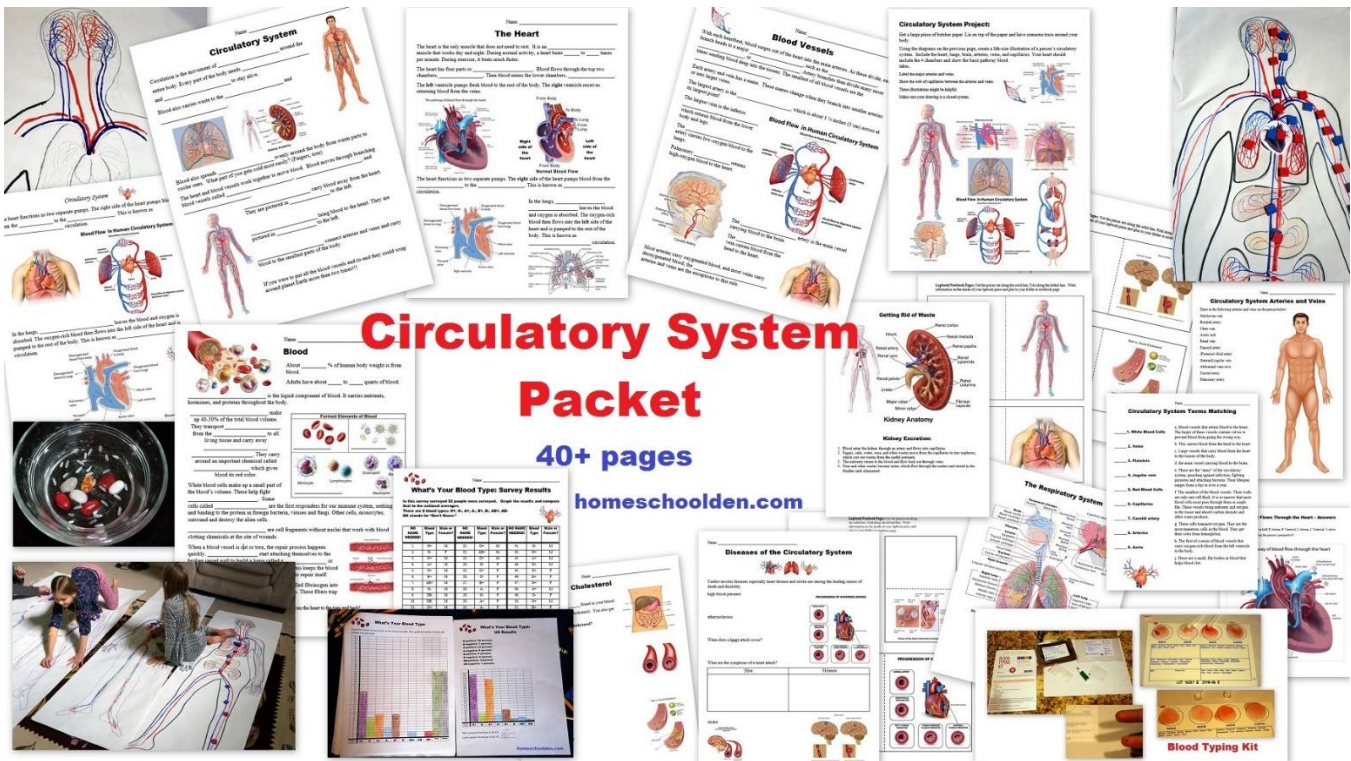


## Human Body Systems (25 pages)

# Human Body System Worksheets



## Circulatory Packet (40 pages)

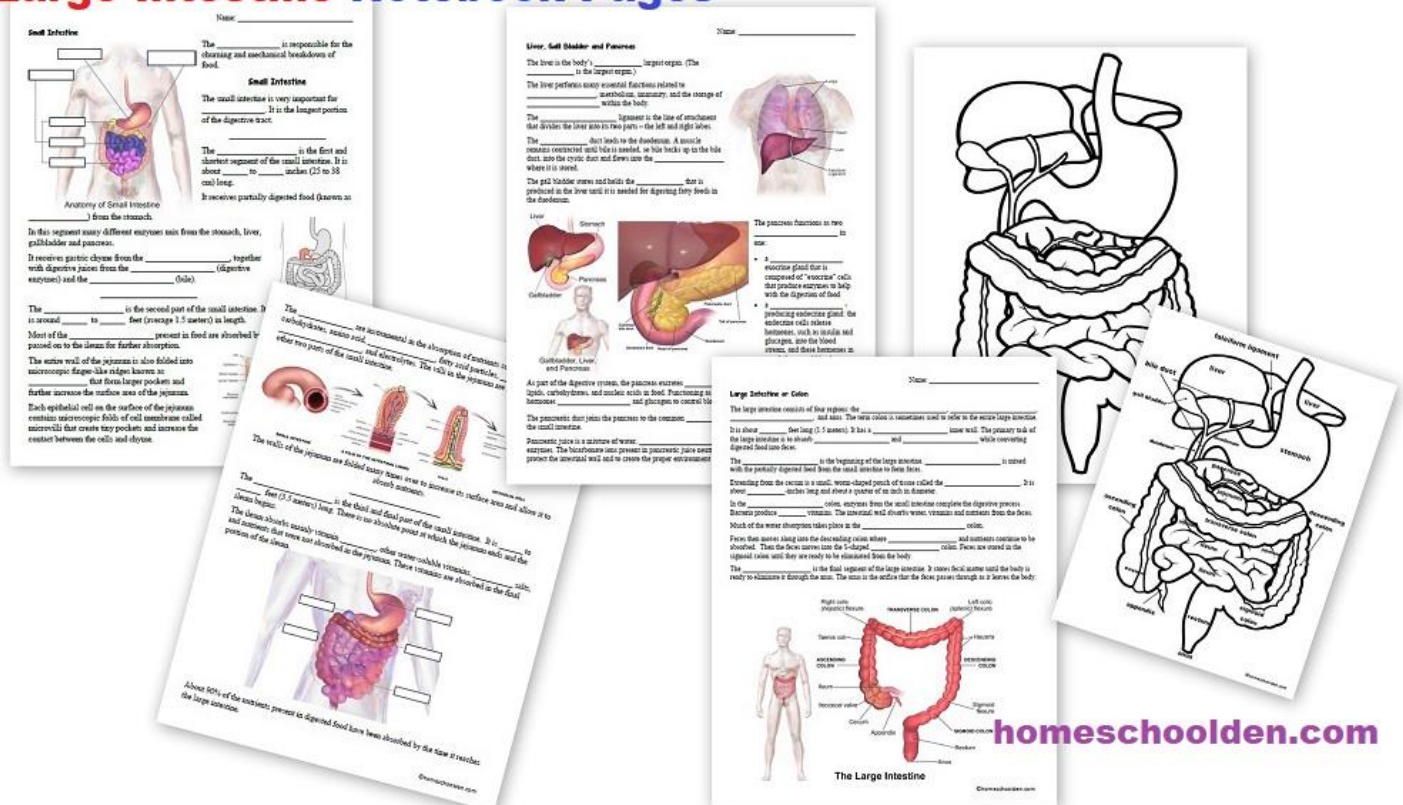




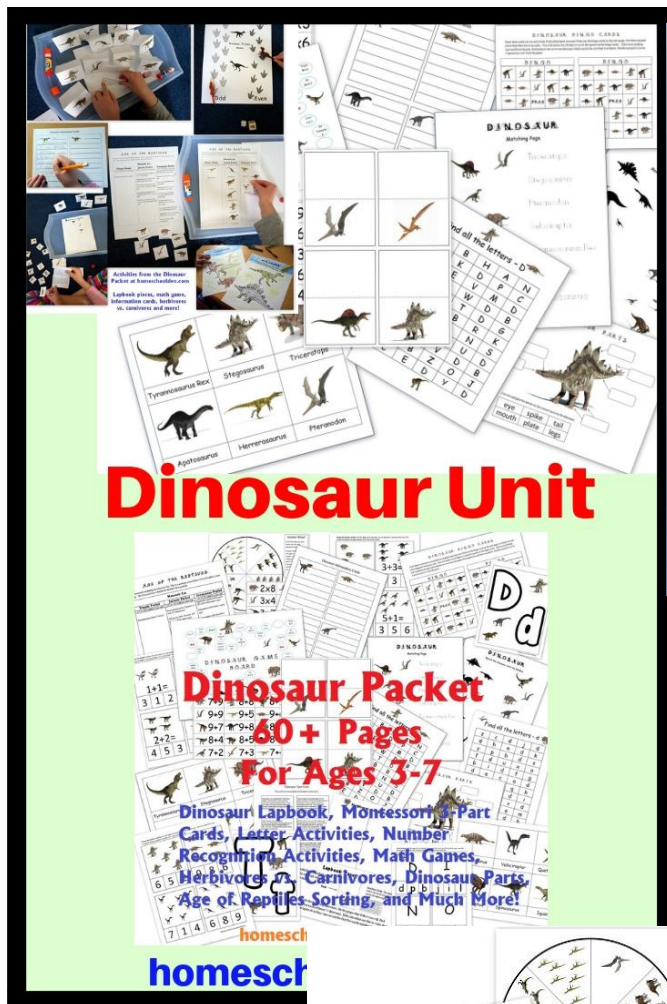
# Digestive System Packet (75+ pages)



## Small Intestine, Liver, Gall Bladder & Pancreas, Large Intestine Notebook Pages







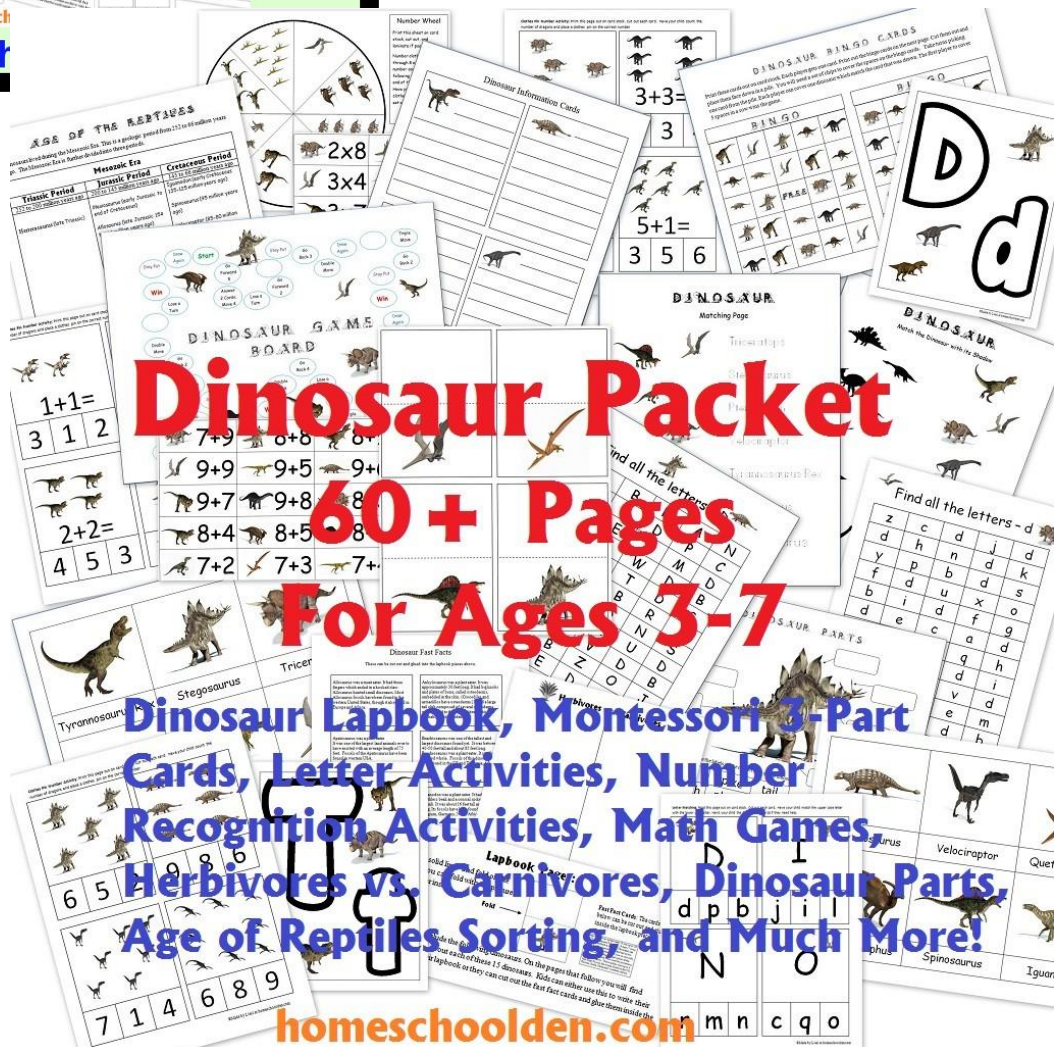
# Dinosaur Unit

**Dinosaur Packet**  
**60+ Pages**  
**For Ages 3-7**  
 Dinosaur Lapbook, Montessori 3-Part  
 Cards, Letter Activities, Number  
 Recognition Activities, Math Games,  
 Herbivores vs. Carnivores, Dinosaur Parts,  
 Age of Reptiles Sorting, and Much More!

homeschool

## DINOSAUR GRID GAME



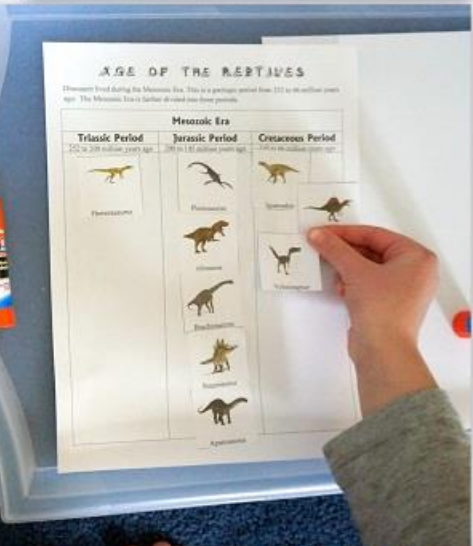
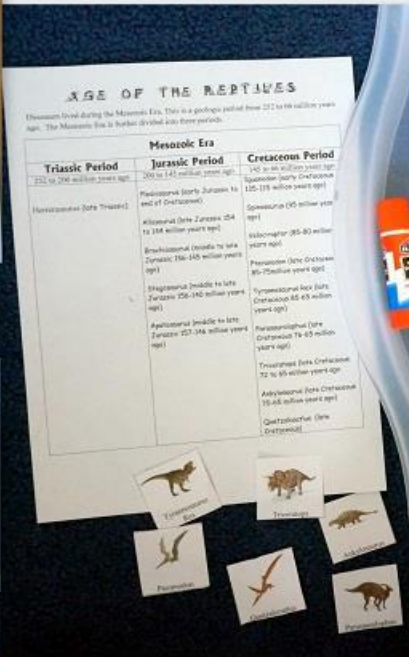
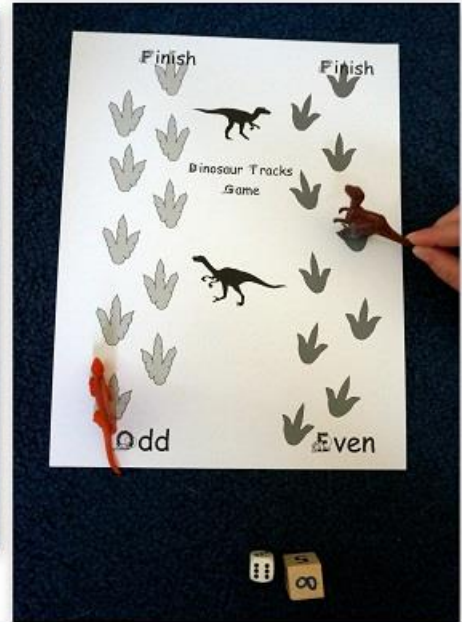


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homeschoolden.com





**Activities from the Dinosaur Packet at [homeschoolden.com](http://homeschoolden.com)**

**Lapbook pieces, math game, information cards, herbivores vs. carnivores and more!**

