

Chemistry Experiment Packet

5 Experiments for young chemists!

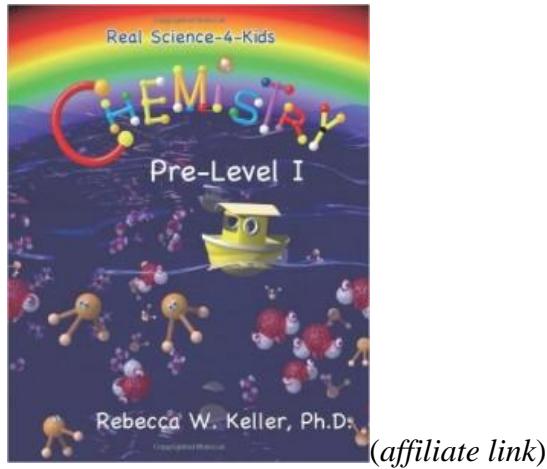


Made by Liesl at homeschoolden.com



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](#) (*affiliate link*) 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

Disclosure: Please note that some of the links in this packet are affiliate links, and at no additional cost to you, I will earn a commission if you decide to make a purchase.

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.



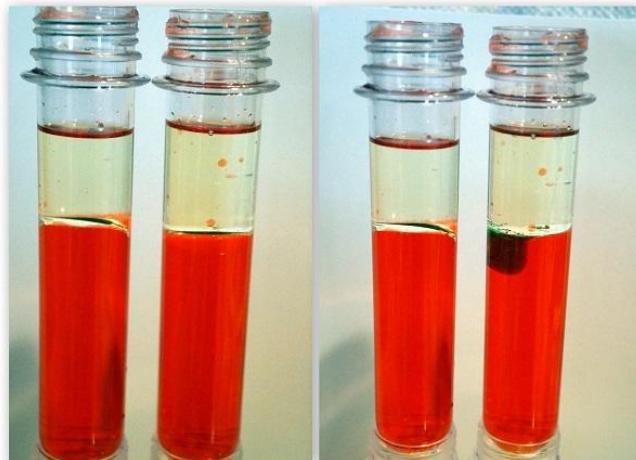
Oil, Water and Soap Experiment



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

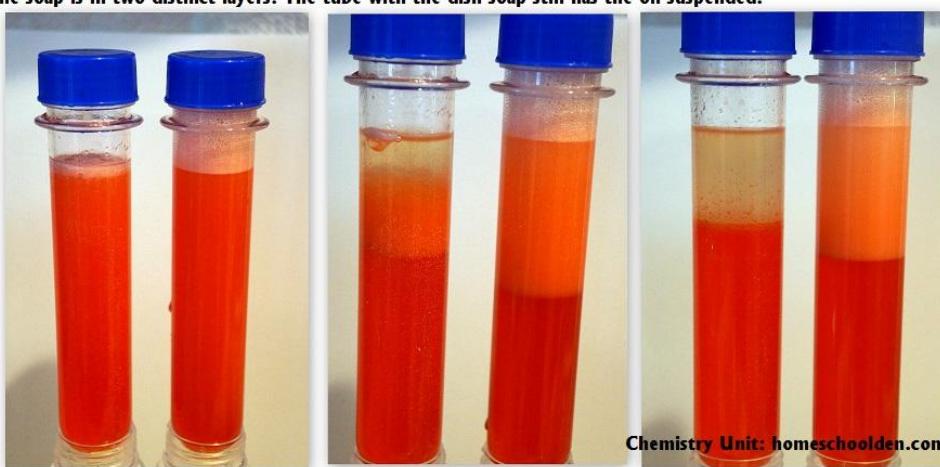
Many of you may be familiar with this activity already. I know our family did this lots of times when the kids were in preschool. But this time, the had a better understanding of what was happening chemically.

- Add food dye to water (I would suggest coloring the water the same color as you used for your H₂O molecules in the activity above. In our case, our H₂O 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.



Chemistry Unit: homeschoolden.com

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.:

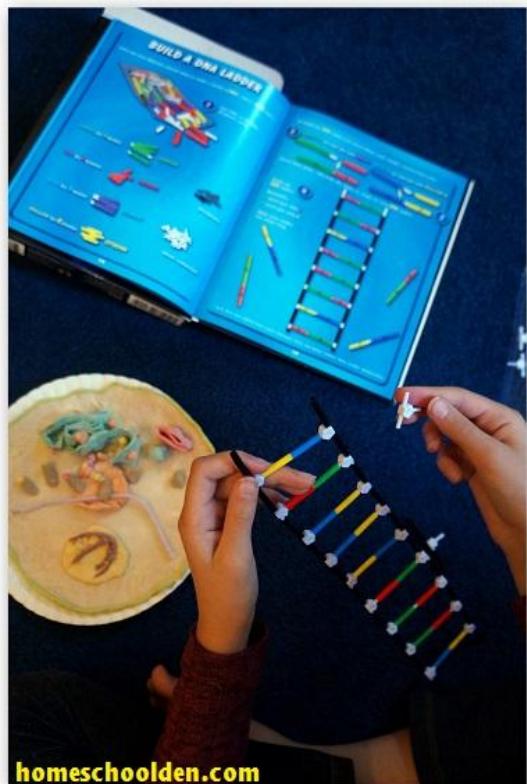
Since Chapter 10 (in RS4K) talks about DNA, I pulled out a DNA kit called [DNA Experiment Kit](#) (*affiliate link*) that has been in the cupboard (we didn't get to it last year!).



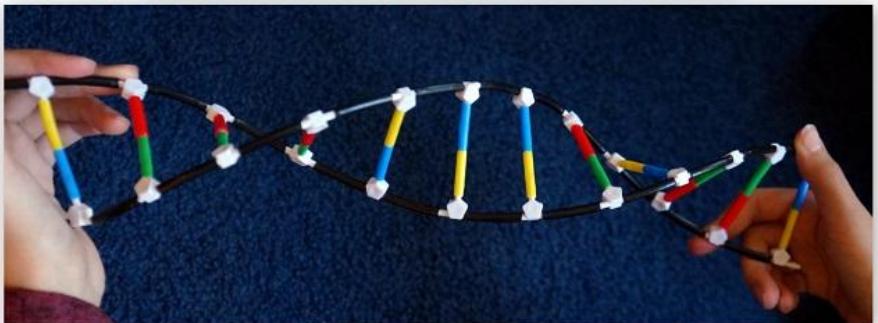
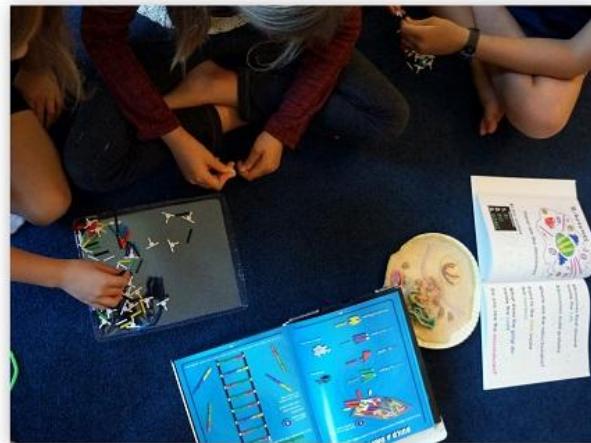
We talked about the 4 molecules that make up the "rungs" on the DNA ladder. We looked at the shape of each (in the booklet provided with that kit). We saw how adenine and guanine have two rings, while thymine and cytosine have just one. Then the kids built their own DNA ladders pairing adenine and thymine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

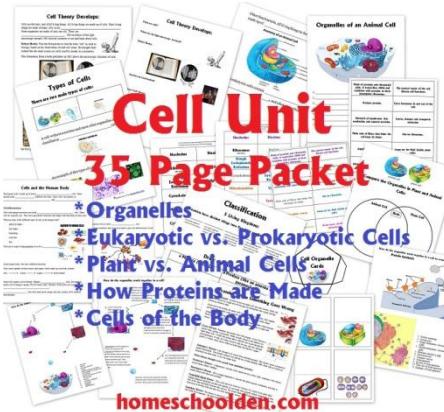


Building
DNA

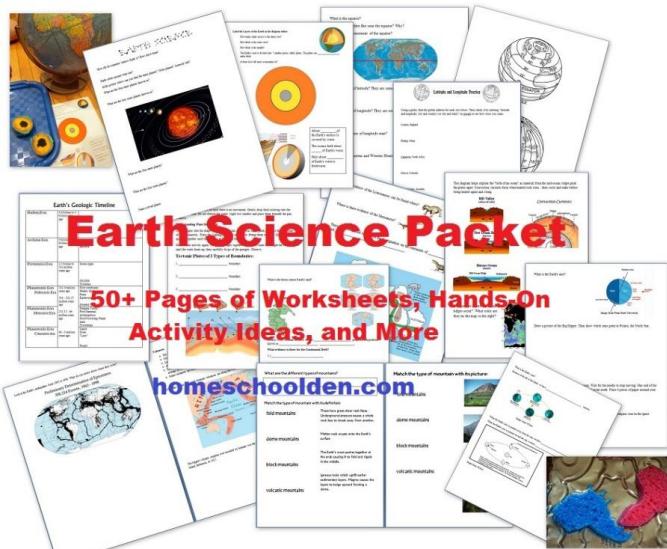


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A Study of Cells Packet



Earth Science Packet: Plate Movement, Earthquakes Volcanoes and more!

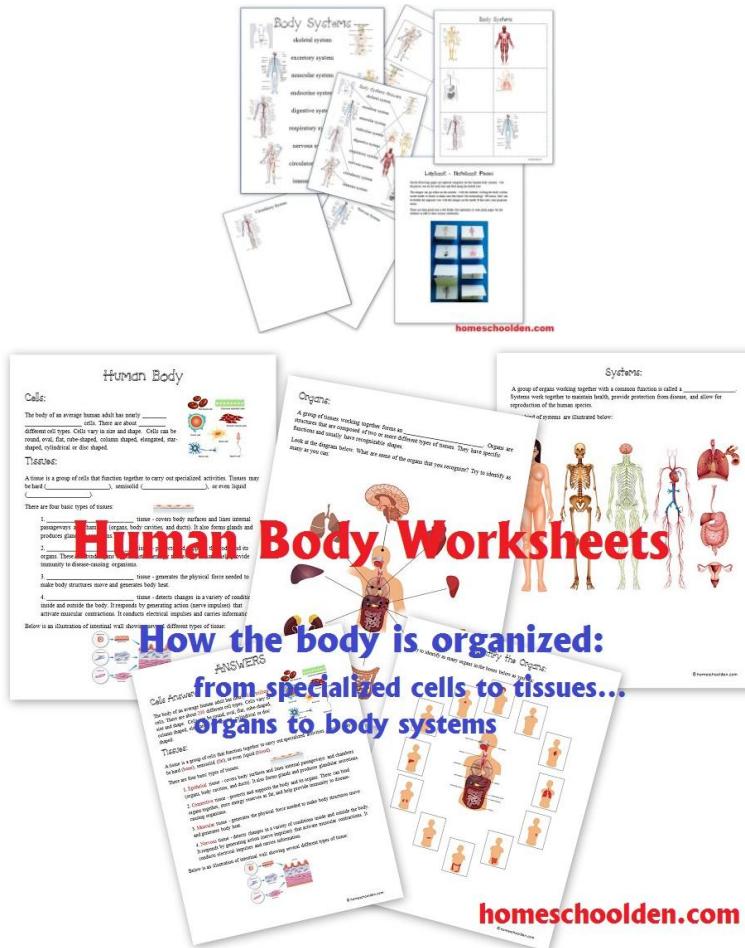


Simple Machines Packet

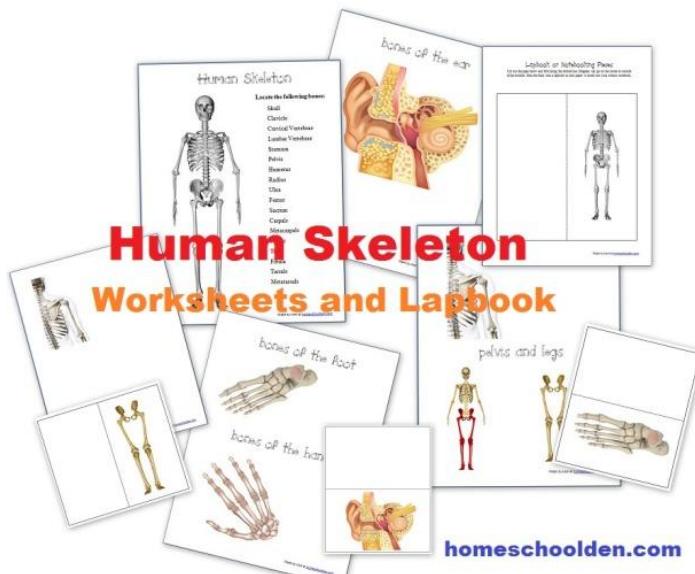


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Human Body Systems



Skeleton Lapbook and Notebook Pages



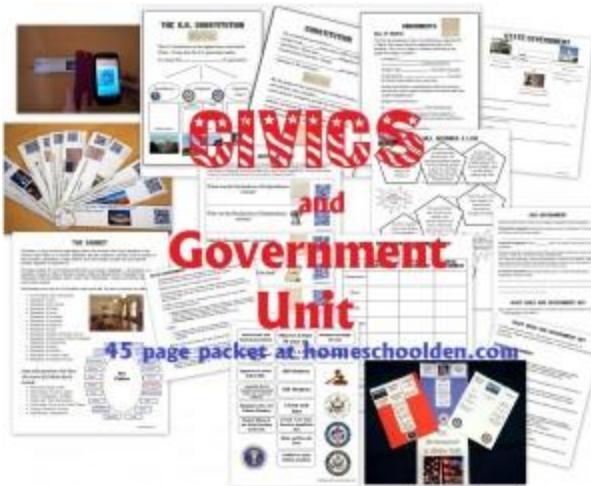
Digestive System Pack



We will have packets on the circulatory system and muscular systems sometime soon.



Be sure to check out our packets: at homeschoolden.com
Civics and Government Packet:



American Revolution Packet (A Study of the causes of and events leading to the American Revolution such as the French & Indian War, Sugar & Molasses Acts, Stamp Act, Boston Massacre, Townshend Acts, Boston Tea Party, Lexington & Concord and more)



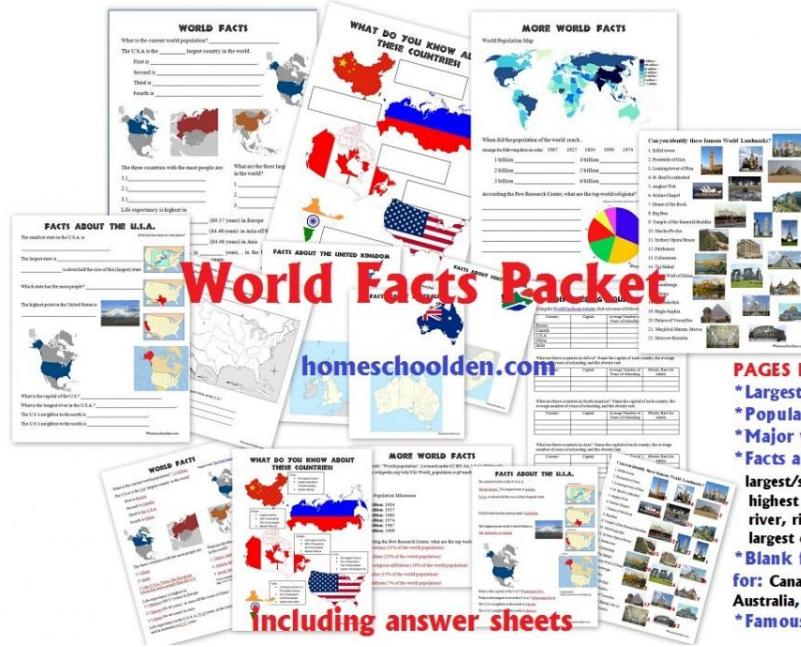
**Highlighting:
30-Page Packet**

The French and Indian War
 Albany Plan
 Sugar and Molasses Acts
 Pontiac's Rebellion
 Proclamation of 1763
 Stamp Act
 Sons of Liberty
 Notable Men of Boston
 Townshend Acts
 Tea Act
 Boston Tea Party
 Intolerable Acts
 First Continental Congress
 Battles of Lexington and Concord



World Facts Packet:

- *Largest countries
- *Population facts
- *Major world religions
- *Facts about the World: longest river, largest desert, wettest and driest places on Earth, tallest mountain, deepest spot in the ocean, etc.
- *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



PAGES INCLUDE:

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- *Famous world landmarks

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Rocks and Mineral Packet



and for 3-7 year olds, our 60+ page Dinosaur Packet!

