

Introduction to Foundations of Science: Science and the Flood (Year 2)

Science Year 2 covers the account of the global flood of Genesis (Genesis 2-11), examining the changes made to our earth and to the way we understand science.

All our members start with *Science and Creation (Year 1)* first, because the topics in the following years build on what is learned in Year 1.

Required Text:

In the Beginning: Compelling Evidence for Creation and the Flood (8th Edition), by Walt Brown, is a REQUIRED textbook for Science Year 2.

The entire book is available for free online at <http://www.creationscience.com/onlinebook/>, or you may purchase a hardbound copy at Amazon.



Using the Bible to Teach Science:

Our curriculum combines grades 4-12 together for science each day. Our plan covers the six days of creation over the entire school year and is designed to be done together as a whole family, with additional independent reading and research assignments for high-school students. Our plan is to offer this as a 4-year sequence, giving students the opportunity to visit each topic repeatedly and in greater depth.

All the science we will study over our 4-year curriculum is firmly based upon the creation of the world by YHWH.

- We believe that Scripture teaches **YHWH created the world** in six literal, consecutive 24-hour days.
- We believe that **the Flood of Noah's day** was a worldwide, literal flood. It was a significant geological event and much (but not all) fossil sediment originated at that time.
- We believe that the **gap theory has no basis** in Scripture.
- We believe that no apparent, perceived or claimed **evidence in science** can be valid if it contradicts the scriptural record. Of primary importance is the fact that evidence is always subject to interpretation by fallible people who do not possess all information.

We also attempt to emphasize some things in our curriculum:

- We seek to teach our students to **think logically and carefully** about the created world. We emphasize the scientific method, which consists of observing (gathering facts), hypothesizing (suggesting explanations), and experimenting (testing explanations).
- We teach that **science is inseparable from mathematics**, which we call the “language of science.” We teach our students to be precise, exact, and careful when interacting with God's world.
- We acknowledge that **we are made in the image of a Creator**, and we hope to cultivate creativity in our children and constant appreciation of the created world. (We try to avoid the use of the word “nature,” choosing to use the word “creation” instead.) While teaching responsibility and stewardship of God's creation (Genesis 1:28), we also seek to worship the Creator, rather than created things, in all that we do (Romans 1:18-32).

Homeschooling Torah's science curriculum is different from most other publishers. It is typical to study science by topics, spending up to a year at a time studying biology, chemistry, physics, geology, anatomy, etc.

However, because we want to use the Bible as our primary textbook, we use a more holistic approach to studying science. Because we view Scripture as absolute truth, we want to see YHWH's creation from His perspective.

For instance, why did He create light before creating plants? How can studying things in the order in which they happened help us understand their properties better? In later years, how does the Flood affect the created world we see around us? When we study science found in Job, the Psalms, the Prophets, or the New Testament, how does the context of the passage help us understand why that particular scientific principle is being discussed?

We believe that seeing science from a biblical perspective, rather than a man-made, evolutionary perspective, can help us see things from the Creator's viewpoint. We were first inspired to use this unique order when studying the writings of Sir Isaac Newton. He is credited with many scientific discoveries and even laws of science, which is amazing because even Einstein only has theories. Newton credits his success in science to studying the Scriptures verse by verse, then asking questions of the text, taking it very literally. Our hypothesis is that

students will be able to think MORE scientifically if they read the Scriptures FIRST, even though it's not the way the public schools do it.

**“I have more understanding than all my teachers,
For Your testimonies are my meditation” (Psalm 119:99).**

Topics Covered in Year 1

- **Light, Energy, and Matter (Creation Day 1)** – Topics include magnetism, electricity and currents, motion, force, light and sound waves, color, gravity, radiation, electronics.
- **Water and Atmosphere (Creation Day 2)** – Topics include water, oceanography, molecules, atmosphere, weather.
- **Land and Plants (Creation Day 3)** – Topics include rocks, minerals, elements, chemical reactions, earthquakes, plants, flowers, seeds, trees, fungi, mold, bacteria.
- **Sun, Moon, and Stars (Creation Day 4)** – Topics include the moon and moon phases, planets, constellations, eclipses, galaxies, meteors, star clusters, comets, asteroids, calendars, and the study of space.
- **Birds and Sea Life (Creation Day 5)** – Topics include birds, fish, amphibians, environmental science.
- **Land Animals and Man (Creation Day 6)** – Topics include fossils, reptiles, mammals, insects, invertebrates, classification systems, microbiology, human anatomy and physiology, disease.
- **Sabbath and the Importance of Rest in Creation (Creation Day 7)**

Topics Covered in Year 2

Year 2 covers the account of the global flood of Genesis (Genesis 2-11), examining the changes made to our earth and to the way we understand science. Topics include **biology** (cellular biology, genetics, microbiology, botany, zoology), **chemistry** (chemical composition and reactions, stoichiometry, gases, thermodynamics), and **physics** (magnetism, motion and wave theory).

Topics Covered in Year 3

Year 3 covers scientific topics addressed in the Torah, the Tanakh, and the Apostolic Scriptures. Topics include **biology** (cellular biology, taxonomy, human anatomy and physiology), **chemistry** (atomic theory, kinetics), and **physics** (classical mechanics, work and energy, electricity, optics, nuclear physics). The scientific method and historical applications of Scripture are emphasized.

Topics Covered in Year 4

Year 4 covers the life, studies, discoveries, and inventions of famous scientists in world history, examining how closely their views aligned with Scripture and how Scripture helped them understand YHWH's world. Scientists include the following:

- Aristotle
- Babbage
- Bacon
- Bohr
- Boyle
- von Braun
- Carnot
- Carver
- Copernicus
- Damadian
- Darwin
- Einstein
- Enoch
- Faraday
- Galileo
- Gilbert
- Goodyear
- Grosseteste
- Haber
- Harvey
- Herschel
- Howell
- Huygens
- Irwin
- Job
- Joule
- Kelvin
- Kepler
- Leavitt
- Leeuwenhoek
- Linnaeus
- Lumsden
- Maury
- Maxwell
- Morris
- Morse
- Newton
- Pascal
- Pasteur
- Planck
- Pottenger
- Price
- Riemann
- Rumford
- Solomon
- da Vinci
- Wilder-Smith
- Young

Features of Our Science Curriculum:

- Each “week” of lesson plans is set up so that **3 days will be spent discussing science topics with the Parent**, then **2 more days of study, projects, and review can be done relatively independently**. In a typical homeschool, the parent and children spend three days a week studying science together. Expect this to take about an hour per day. However, two days a week are planned where the children can do science mostly independent of the parent. This can help you have time to accomplish housework, errands, and other responsibilities. You are always welcome to do *more* than the curriculum suggests.
- **Memorization** is an important part of our curriculum, so that students will have a mental “handle” on which they can hang all of the other things they learn. We strongly emphasize the days of Creation on which God made things, and we learn the history of scientific inventions and discoveries. We emphasize especially the Latin and Greek roots of scientific words, to promote literacy and the ability to interact with scientists and academic literature in the sciences. For this reason, you will begin each week by learning science vocabulary words. A dictionary will be needed. Online dictionaries will work just fine! Try to help your children put definitions into their own words, simplifying things as much as possible. Understanding is the most important thing!
- We have utilized online resources extensively in our curriculum, to save you the added expense of purchasing additional books and materials. ***You will need Internet access for many of the lessons.***
- We have scheduled topics of **discussion** to go with each topic. However, don’t feel that you must limit the discussion to only these things! Mom should feel free to discuss things that she knows are important to her family. Allow the Holy Spirit to guide you as you learn together.
- We provide at least weekly opportunities for science to be “**hands on.**” However, out of respect for your budget and energy levels, we try to use supplies that are readily available around your home.
- We do suggest ways to spend time outside **observing Creation**, but because we ourselves live in a cold climate where we can’t always watch things grow or stay outside too long, we offer other options for families who also have difficulty getting outside at all times of the year or might live in an urban environment.
- Throughout the year, we will be constructing a **science notebook**. At least once each week, we schedule a “notebooking” activity that your children can mostly do independently. Provide them with supplies, such as colored pencils, markers, pretty papers, glue, and special scissors. Younger children might want to dictate a paragraph to

Mom, which she could then type and print out, to be included in their notebooks. Some families like to have their children notebook several times a day. Other families skip notebooking altogether, just having their children “tell back” (narrate) to them what they have learned.

- Some activities are simply listed as **research projects**, such as, “Visit a public library or do research online on the migration of birds.” These could be used as notebooking activities, as writing assignments, or as parts of larger reports or projects. Do what works best for your family!
- **High school students** are ready to discuss and interact with many of these topics on a much deeper level than younger students. We recommend that you take many of the weekly notebooking topics and require 2-3 pages of essays from your high school students. You may wish to pose controversial questions of your students and ask them to defend their positions. We have also included additional reading assignments, research projects, and application activities for high school students. Some of these are more difficult than others, so use your discretion in what you require of your own students. Resources and e-books are available for free online but if your budget allows, consider purchasing hard-copy books, since it will be easier for your student to read, to highlight, and to take notes.

A Further Word About High School:

As already mentioned, we use a holistic approach to studying the Bible and what it says about science. This will not match the typical high-school sequence for science, which is typically earth science, biology, chemistry, and physics.

If your student already started high school, and if he is on a certain “track” and wants to maintain that, you might not want to use our science curriculum.

Ours uses more of a spiral approach over 4 years, covering biology, chemistry, earth science, and physics for a short time each year, then returning to do more the next year. It works best for students just beginning 9th grade, unless your older student is not intending to need a typical high-school study schedule for college or a future career.

However, a student just beginning 9th grade *will* cover the normal subjects covered in any high school and can expect to learn what is needed for a regular high-school science education.

We like Science for High School, mixed with some videos and lab demonstrations from Khan Academy, although neither is Torah observant, of course.

- <http://www.scienceforhighschool.com/how-to-use>
- <https://www.khanacademy.org>

Internet Studies:

Throughout this curriculum, we recommend various websites to study topics in further depth. If you do not have access to the Internet, a local library should be able to provide you with many similar resources.

Please use discretion when using any website, including the ones we recommend, and always supervise your children when using the Internet.

Please contact us if any link does not work so that we may update it.

About Foundations of Science

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Scripture taken from the King James Version of the Bible, unless otherwise noted.

“Therefore all things whatsoever ye would that men should do to you, do ye even so to them” (Matthew 7:12).

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FOUNDATIONS OF SCIENCE

WEEK 1—INVESTIGATING SCIENCE

In Year 2 of *Foundations of Science*, we will be studying science in the context of the global flood that YHWH sent on the Earth during the days of Noah.

TEXTBOOK NOTE:

During Science 2, we will be using *In the Beginning: Compelling Evidence for Creation and the Flood (8th Edition)*, by Walt Brown, Ph.D (2008, Center for Scientific Creation), as a textbook. This book is also available free online at <http://www.creationscience.com/onlinebook/>.

Day 1

Learn:

Before starting this week of science, each student should look up each word in a dictionary or online. Write out a short definition for each. Place these vocabulary words and definitions into a notebook or write them on individual notecards. (Note: Some of this vocabulary is a review from Year 1.)

- Observation
- Hypothesis
- Experiment
- Prediction
- Theory
- Assumption
- Equation
- Formula
- Mass
- Volume
- Density
- Proportion

Hear:

Discuss the following together:

- Read Genesis 7 aloud together. After reading, close your Bibles and try to make a list of every detail you can remember from this chapter in 5 minutes. Then compare your list to the chapter. How well did you remember the details?
- Read Genesis 6:1-8. Based on what you remember from Genesis 7, how many people observed what life was like before the flood? Is it possible for you to accurately know what living conditions were like before the flood?
- Read the following article and discuss:
 - <https://answersingenesis.org/what-is-science/two-kinds-of-science/>
 - What two kinds of science are there?
 - Which one will we be using when we study science from the world before the flood?
 - <https://answersingenesis.org/evidence-for-creation/tools-for-inquiry-logic-and-observation/>
 - What tools can we use to study historical science?
- Read Deuteronomy 19:15. Do you feel that the Scriptures can be used as a valid eyewitness?

Day 2

Hear:

- ❑ Read Lesson 1 (Collecting Data) and do the procedure on the last page. The procedure is designed for a class of students to do together. Design your own procedure, based on this one but better suited for your homeschool setting.
 - <http://www.msnuclaus.org/membership/html/jh/physical/scientificmethod/lesson1/scientific1a.html>

Day 3

Hear:

- ❑ Read Lesson 4 (Engineering a Solution):
 - <http://www.msnuclaus.org/membership/html/jh/physical/scientificmethod/lesson4/scientific4a.html>
 - What type of engineer would you consider becoming? What type of math classes would you need to take to prepare yourself? Make a notebooking page that shows what you have learned.

Day 4

Keep:

- ❑ The process of investigation is called the “scientific method.” As a family, make a chart illustrating the scientific method, which you can hang on your wall.
 - Observing (gathering facts)
 - Hypothesizing (suggesting explanations)
 - Experimenting (testing explanations)

Do:

- ❑ This lab is designed for a class of students to do together. Design your own experiment, based on this one but better suited for your homeschool setting.
 - <http://www.msnuclaus.org/membership/html/jh/physical/scientificmethod/lesson2/scientific2a.html>
 - Be sure to take good notes of the outcome of your experiment and add it to your notebook.
- ❑ You may wish to download a [Science Experiment Record Form](#) from our website.

Day 5

Do:

- ❑ Do this lab and add a page to your notebook explaining what you learned.
 - <http://www.msnuclaus.org/membership/html/jh/physical/scientificmethod/lesson3/scientific3a.html>
 - Substitute as needed for any items you do not have at home. You are looking for objects with a variety of density, volume, and mass. For instance, you may need to substitute for *scoria*, *aventurine*, and *feldspar*, types of rock.

FOUNDATIONS OF SCIENCE

WEEK 2—THE EXISTENCE OF NOAH’S ARK

TEXTBOOK NOTE:

During Science 2, we will be using *In the Beginning: Compelling Evidence for Creation and the Flood (8th Edition)*, by Walt Brown, Ph.D (2008, Center for Scientific Creation), as a textbook. This book is also available free online at <http://www.creationscience.com/onlinebook/>.

OPTIONAL BOOK:

You may enjoy the book *The Way Things Work*, by David Macaulay (any edition). Students may wish to look up their weekly vocabulary words in this book by using the index in the back.

Day 1

Learn:

Before starting this week of science, each student should look up each word in a dictionary or online. Write out a short definition for each. Place these vocabulary words and definitions into a notebook or write them on individual notecards.

- Upthrust
- Displacement
- Buoyancy
- Gravitational force
- Submergence
- Load
- Archimede’s Principle
- Density (review from Week 1)

Hear:

Discuss the following together:

- Read Genesis 6:9-22 together. Make a notebooking page to illustrate the following important facts, so that you can refer to it repeatedly during this year of science:
 - Of what kind of wood was the ark constructed? (verse 14)
 - What was inside the ark? (verse 14)
 - What covered the inside and outside of the ark? (verse 14)
 - What were the dimensions of the ark? (verse 15)
 - How was the roof to be built? (verse 16)
 - How many decks or floors did the ark contain? (verse 17)
 - Describe the door. (verse 17)
 - What things would be taken onto the ark during the coming flood? (verses 18-21)
- Look up the Hebrew words and definitions for the following words from Genesis 6:
 - Ark (verse 14)
 - Gopher wood (verse 14)
 - Pitch (verse 14)
 - Rooms (verse 14)
 - Cubit (verse 15)

- ❑ Read Genesis 8:4 together. Where did the ark rest after the flood waters started to recede? Find this general location on a world map (or use Google Earth).

Day 2

Hear:

- ❑ Read *In the Beginning*, Sections 94-102 (pp. 43-46), plus Figure 38 (p. 45) and Figure 40 (p. 47). If you would prefer to read online, you can find this material here:
 - Noah's Ark Probably Exists - <http://creationscience.com/onlinebook/EarthSciences3.html>
 - Section 94 - <http://creationscience.com/onlinebook/EarthSciences4.html>
 - Section 95 - <http://creationscience.com/onlinebook/EarthSciences5.html>
 - Section 96 - <http://creationscience.com/onlinebook/EarthSciences6.html>
 - Section 97 - <http://creationscience.com/onlinebook/EarthSciences7.html>
 - Section 98 - <http://creationscience.com/onlinebook/EarthSciences8.html>
 - Figure 40 - <http://creationscience.com/onlinebook/EarthSciences18.html#wp2948205>
 - Section 99 - <http://creationscience.com/onlinebook/EarthSciences9.html>
 - Section 100 - <http://creationscience.com/onlinebook/EarthSciences10.html>
 - Section 101 - <http://creationscience.com/onlinebook/EarthSciences11.html>
 - Section 102 - <http://creationscience.com/onlinebook/EarthSciences12.html>

Day 3

Hear:

- ❑ How do things float?
 - http://www.school-for-champions.com/science/fluid_floating.htm
- ❑ What is buoyancy?
 - <http://hyperphysics.phy-astr.gsu.edu/hbase/pbuoy.html>

Learn:

- ❑ What is "gopher wood"? http://www.creationtips.com/gopher_wood.html
 - Make a notebooking page sharing what you have learned.
- ❑ Would Noah's Ark float? Learn about the experiments several university students performed, at <http://www.smithsonianmag.com/science-nature/could-noahs-ark-float-theory-yes-180950385/>.
 - (Note: This is a secular article, so the authors probably don't even believe that Noah's Flood was a real event. Discuss whether their viewpoint affects the conclusions reached in their experiment.)

Keep:

- ❑ High school: Write two paragraphs explaining the two laws of flotation.
 - See <http://notes.tyrocity.com/6-state-the-laws-of-flotation/>.

Day 4

Do:

- Why do balloons float?
 - <http://science.howstuffworks.com/helium1.htm>
 - <http://science.howstuffworks.com/helium2.htm>
 - <http://science.howstuffworks.com/helium3.htm>
 - Do as many of the demonstrations as possible.
- <http://www.kids-fun-science.com/easy-science-experiment.html> - How many pennies does it take to sink your ship?

Keep:

- High school: Practice calculating the density of an object.
 - <https://youtu.be/xvssalic0Mo>
 - http://www.bbc.co.uk/bitesize/higher/physics/mech_matt/pressure/revision/1/
 - http://www.algebralab.org/practice/practice.aspx?file=word_density.xml

Day 5

Do:

- <http://www.creationtips.com/arksize.html> - How large is the ark? If possible, measure an area in your backyard or at a local park, to help you visualize the size of the ark.
 - Also read: <http://www.creationtips.com/cubit.html>
- The exact location of Noah's ark is a very controversial topic, with opinions and "proofs" for each claimed location. The following articles and videos give varying opinions, as well as Sections 94-102 (pp. 43-46) of *In the Beginning*. Read through these and then as a family, decide which view you think is most believable (if any). How do we determine truth in these situations? What kinds of "eye witness" proofs are given?
 - High School Students: Write an essay explaining the various locations, as well as your own opinion about which is correct (if any).
 - <https://youtu.be/2cl3wBPrWF0> - "Noah's Ark Found: 2010 on Mount Ararat in Turkey"
 - <https://answersingenesis.org/creationism/arguments-to-avoid/special-report-amazing-ark-expose/>

FOUNDATIONS OF SCIENCE

WEEK 3—THE EVENTS OF THE FLOOD

OPTIONAL BOOK:

You may enjoy the book *The True Story of Noah's Ark*, by Tom Dooley. This book is also recommended in Year 1 of our World History curriculum.

Day 1

Learn:

Before starting this week of science, each student should look up each word in a dictionary or online. Write out a short definition for each. Place these vocabulary words and definitions into a notebook or write them on individual notecards.

- sediment
- fossil
- subterranean
- erosion

Hear:

Discuss the following together:

- Read Genesis 7-8 together.
- Read *In the Beginning*, Section 128 (p. 46), or online at <http://creationscience.com/onlinebook/EarthSciences15.html>.
 - According to Genesis 7:11 and 8:2, where did all the water come from?
 - According to Genesis 7:17-20, how deep was the water on the earth during the flood?
 - According to <http://water.usgs.gov/edu/earthhowmuch.html>, how much water is on the earth today?
 - Do you think there was rain before the flood?
 - <https://answersingenesis.org/creationism/arguments-to-avoid/there-was-no-rain-before-the-flood/>

Day 2

Hear:

- Read *In the Beginning*, Section 129 (pp. 46-47) and notes on p. 101, or online at <http://creationscience.com/onlinebook/EarthSciences16.html> and <http://creationscience.com/onlinebook/ReferencesandNotes95.html>
 - According to Genesis 7:4, how much of life on the face of the earth was destroyed? What do you think “on the face of the earth” means? Were sea creatures destroyed? Compare to Genesis 7:21-23.
 - Where have fossils been located?
 - <https://answersingenesis.org/kids/geology/evidence-flood/>
 - <https://answersingenesis.org/fossils/fossil-record/high-dry-sea-creatures/>

Do:

- Do you have any local museums with fossil artifacts that you could visit soon?

Day 3

Hear:

- Read *In the Beginning*, Section 130 (pp. 47-48) and notes on p. 101, or online at <http://creationscience.com/onlinebook/EarthSciences17.html> and <http://creationscience.com/onlinebook/ReferencesandNotes96.html>.
 - According to Genesis 7:1 and 7, how many people were present on the ark?
 - Read 2 Peter 3:5-6. Of what fact is most of mankind ignorant? Why?
 - How has the historical account of the flood traveled around the world?
 - <https://answersingenesis.org/the-flood/flood-legends/flood-legends/>

Learn:

- What promise does God make in Genesis 8:22? See <https://answersingenesis.org/environmental-science/climate-change/should-we-be-concerned-about-climate-change/>.

Day 4

Hear:

- Read *In the Beginning*, Section 131 (p. 46), or online at <http://creationscience.com/onlinebook/EarthSciences18.html> and <http://creationscience.com/onlinebook/ReferencesandNotes97.html#wp4940877>.
 - According to Genesis 7:2-3, how many of each kind of animal was preserved on the ark?
 - How did all the animals fit on the ark?
 - <https://answersingenesis.org/noahs-ark/how-could-noah-fit-the-animals-on-the-ark-and-care-for-them/>
 - <http://www.icr.org/article/noahs-ark-model>

Learn:

- Make a notebooking page that illustrates the animals God considers to be clean. Refer to Leviticus 11 and Deuteronomy 14:3-20. (How many of each of these animals were present on the ark?)
- Compare what you've learned today to the popular pictures of Noah's ark. How is the Bible's description different?



Day 5

Do:

- Make a timeline of the events of Genesis 7 and 8, to place into your notebook and refer to throughout the year. Illustrate your timeline as much as possible, to show what you have learned this week.