

CrossWired Science



BIOLOGY/CHEMISTRY/PHYSICS

Student Notebook - Year 1

Semester 101



An incredible journey into Biology, Chemistry and Physics that powerfully shows the beauty, power, intelligence and the love of the God who created all things.

Quick Start Info

CWS: Biology/Chemistry/Physics 101/102

Welcome to Biology/Chemistry/Physics 101/102 - We are happy to take you on a thrilling journey to learn about God's handiwork as we study Biology, Chemistry and Physics together. Our prayer is that you will come to know the power, love intelligence and beauty of the Lord more than you ever thought possible through the things you learn in this course! **PLEASE READ BEFORE BEGINNING.**

1. Be sure to be logged in when you are using the downloadable Student Modules The printable Student Modules will schedule and navigate every lesson of the year. (The online calendars are for those using CWS to supplement only). These printable Student Modules are the **ONLY way** to effectively access the online lessons and videos. **All blue print is hyperlinked.**

2. There are 24 Student Modules for Bio/Chem/Physics Year 101/102. They may be printed module by module.

- **Bio/Chem/Physics 101: 12 Modules: Global Topics: Fluid Dynamics/Electricity**
- **Bio/Chem/Physics 102: 12 Modules: Global Topics: Sound/Acids & Bases**
- **Mighty Feathers: Major Topic EXTRA CREDIT** (This is a bonus section on Birds)

3. BCP integrates with our younger program, CrossWired Science CORE (First Timers).

- **Modules in BCP 101 & 102 correspond to the Module Lessons in the CWS Year 1 Core Curriculum**
- Some lessons each week overlap for all of children, kindergarten through High School, including: Experiments/Video Links/Core Videos/Specific Videos/Gold Digs/Memory Verses/Devotions/Concept Drawings/and Research/Scientists. (K-8th grade). Each age has its own level of work in each of these content areas.
- The graphs below include both Standard CrossWired Science Core for Year 1 and BCP - Year 1 Modules.

4. There are 10 Regular Sections in each Module: (+ one sometimes for experiments)

- 1. Power Topic:** The special topic for the week.
- 1.5 Experiment Blocks and Hunts:** 3 week experiment blocks and Long-term hunts.
- 2. Super and Standard Article:** Super=from CWS website. Standard= from a Creation Scientist.
- 3. Concept Drawings:** Drawings that help solidify important concepts and train the eyes.
- 4. Research:** Research Creation Scientists and scientists from the past.
- 5. Specific Videos:** Important videos for all levels of CWS to watch.
- 6. Global Topics-Core Videos:** Videos designed to lay a foundation for seeing God's wonders.
- 7. Verses:** Verses from the Bible to memorize.
- 8. Devotionals:** CWS Devotionals of all kinds.
- 9. General and Unit Links:** Others links to broaden Science knowledge and solidify topics.
- 10. Additional Resources:** Bonus resources to help solidify the basics of Biology, Chem & Physics.

5. You do not need to print the Student Modules. You can save money and use printable to access materials and simply use a regular notebook to record your student's work. You can also use an editing tool to type in these electronically. You can also print them in black and white to save a lot of ink.

If you print them in color, we highly recommend the **EPSON ECOTANK COLOR PRINTER 3760 SE** (Costco/Sam's club). Printing costs to print the first 12 modules for CWS in color is about \$5 TOTAL. This printer

Quick Start Info (cont.)

6. There are Global Topics in CWS. These bring out God's wonders in different subject areas. Each Global Topic has a lesson page. The Lesson page for the Global Topic Fluid Dynamics looks like this: [LESSON PAGE](#). To access this, go to "Curriculum" in the top menu. Click *First Timers* or *Second Timers*. Chose *Fluid Dynamics*. You will see the "Lesson Page". The *BCP Modules* accesses these lessons and many more and schedules the lessons for the students. Each lesson has three red buttons in the top right hand corner: "Directions", "Info" and a "Quick Look" video. These explain the lesson and how to do it. Global Topics are arranged like this for students using CWS as a supplement. If you are a student using CWS as full curriculum, you will use the **Modules** to access ALL lesson components.

7. Hyperlinked General Links and Unit Links. "General Links 1", "General Links 2" and "Unit Links" are not accessible by clicking (hyperlinked), unless you are in the Parent or Admin Account. (If parents are logged on in in their user, you can see General Links and Unit Links when you click on the Parent Tab in the top menu. These General and Unit Links are immediately accessed when an image is clicked. **To get to the links in the student user**, you must copy and paste the Link in the URL bar at the top of every link. We realize this is inconvenient, but we do it to add a tiny amount of internet protection.

8. Interestables and Clipped Sentences. We will often ask students to find "Interestables". These are interesting—even fascinating— facts and concepts. We want Note Taking to be as easy and pleasant as possible. We encourage using "Clipped Sentences" for note taking, which are shortened notes like those taken in a college class. An example of a clipped sentence for, "The iris is the colored part of the eye. It grows and shrinks to let different amounts of light into your eye." Clipped: "Iris colored. Grows shrinks. Adjusts light."

9. Review is an essential component to a CrossWired approach. Review is VERY important for detailed long-term memory! *You will see materials brought back to your students at regular intervals.*

The material in Core Videos and some in Gold Digs and Digging Deepers will need to be mastered over the course of 3-4 years in Biology/Chemistry/Physics (BCP).

When you watch a Core Video of each Global Topic the first time, 3-5 notes are taken on it. The second time through, an easy First Timer Quiz is taken. The third time there is a little more difficult Mastery Quiz. BUT, even after these 3 sessions with every Core Video you are not done with the material.

There is a very novel Mastery System we will be introducing. It will take all the material of all the Core Videos/Gold Digs and Digging Deepers and assesses by computerized Super-Reviews what a child knows and doesn't know. The students will be helped to get 100% in every Review by in-built video-based animated sessions. The more the student masters the material in their three interactions with the material before the Super-Review, the more enjoyable "Super-Mastery" will be. Super Mastery is mastering ALL CWS Core material.

10. Go at your OWN pace! We encourage you to choose what sections fit your students' needs and spread out the lessons over as much time as needed. The goal is to create a LOVE for learning about God's handiwork, NOT to create head-smart but heart-ignorant young people. !

11. Stay Connected - Join our [CrossWired Science Community Facebook Group](#) and join our email list at contact@crosswiredscience.com. Log in and Registration questions? Use the same email.

1. Power Topic: Marvelous Machines

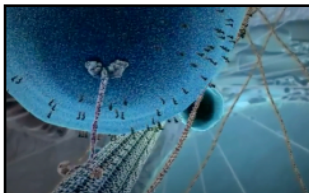
There are amazing hidden machines in our cells. These are so complex and so perfectly built that they point powerfully to God being their designer. We want to introduce this topic to you today by mentioning kinesin proteins that run through your cells carrying supplies needed by other parts of the cell. This is amazing! Enjoy this! (Be sure you are logged in)

WATCH: “[Marvelous Machines](#)” (18 minutes) Find 10 “Interestables” (Interesting concepts) and record here and, if necessary, on the back of this sheet.

WATCH: [Amino Acids](#) After you are done with the video above, watch this 2 minute video for next week. (Scroll down the Home page and see it on the right.)

Power Topic Mod 1: [Marvelous Cell Machines](#) 20 min

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.



Kinesin Walking Protein

POWER TOPIC: DISMANTLING EVOLUTION BIT BY BIT

Write 3 great concepts for each video. Star the best one.



[Boulders moved over 500km!](#) CMI 1 min



[Sedimentary blankets - evidence for Noah's Flood](#)

CMI 1 min



[The Fossil Record](#) TAF 2 min

1.5a Aerodynamics & Bernoulli Experiment Block (3+ Hours over 3 Weeks)

Mods 1-3

NOTE: This is the official Connected Experiment Block of CWS. All levels of CrossWired Science do this experiment block this week.

You may do any experiment in our [FD Experiment/Activity List](#) instead.

Your Experiment Block for the next 3 weeks is Aerodynamics and Bernoulli's Principle Experiments. This is a challenging experiment block because there is so much to choose from! Don't forget to take a stab at the paper airplane innovations. You may also choose to do some of the activities list on the [Fluid Dynamics Experiment Plan Page](#).



The Concorde's Delta Wings

PROCEDURE:

- Do one to ten of the following experiments. They vary greatly in difficulty. Pick what intrigues you!
- Use the links below to access them.
- Take 1-3 Pictures of your experiments & tape them in the boxes below or tape them on the back of this sheet.
- Be sure to build the 🍏paper rocket from the video below . If you get the aerodynamics right, you will be astonished. It flies the length of a football field!

NOTES:

The wind bag can be purchased from the web location listed in the experiment.
You may substitute other experiments if you desire.

BERNOULLI'S PRINCIPLE EXPERIMENTS

[Ball, TP & Blowers](#)

[Wind Bag and Paper](#)

[Bernoulli's Exps](#)

MORE SOPHISTICATED EXPERIMENTS

[Plane Wing](#)

[Helicopter](#)

[Home-made Helicopter](#)

[Multi-stage Rocket](#)

PAPER AIRPLANE EXPERIMENTS

Paper airplanes can teach many powerful lessons about flight. Watch first this simple video on [CrossWired Science Paper Airplane Basics](#) & begin to work with the aerodynamics of paper airplane flight.

The first one on the paper rocket is like the CrossWired Science Paper Airplane Basics (very simple) BUT once you get its aerodynamic design done right - it works incredibly!

🍏[CWS:World's Best Paper Plane & Rocket](#)

[Paper Airplane Trick Shots Amazing!](#)

[World Record Paper Airplane](#)

[Fold Five Incredible Paper Airplanes](#)

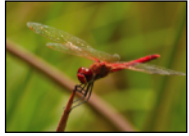
1.5a Aerodynamics & Bernoulli's Principle Experiments Photos

List your findings below for your Aerodynamics and Pressure experiments.. List your favorite experiments that you did from the dozens listed on the Journal pages including [Bernoulli's Bonus Experiments](#). Describe them and write your results and tape on pictures. Use the back of this page if you need to.

1.5b Flight Patterns Hunt 3 Months

Mods 1-12

The purpose of this experiment block is to get you thinking more deeply about aerodynamics and to apply your knowledge to living things. You have the next 3 months to find 20 flying creatures with different flying patterns and analyze the aerodynamics involved in each. You may include flying mammals, and insects and birds. The analysis of their flights may be researched or hypothesized. You must see each one personally. We've listed 6. Write in your analysis of these two and do likewise for your remaining flight patterns. (Put the remaining 5 on the back)



Flight Patterns Hunt



1. **Dragonfly** (See [Dragonfly Flight Design](#))
2. **Hummingbird** (See [Hummingbird flight Design 1](#) and [Design 2](#) and [Robotics](#))
3. **Butterfly** (See [Red Admiral Flight](#), [Designer Wings](#), [Photonic Structures](#) for beauty,)
4. **Birds 1** (See [Swifts](#), [Albatross](#))
5. **Grasshopper** (See [Locusts](#))
6. **Fly** (See [Aces of the Air](#), [How Flies Fly](#), [Fly Development](#))
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.

2a. Super Article: [Bones 1](#) Sections A-D

Mod 1

This is your “Super Article” for this week.

Go to this link. Read the first 4 letters A-D.

Write 7 of the best interestables you found in this section here.

Star the best one.



1.

2.

3.

4.

5.

6.

7.

2b. Standard Article

Mod 1

Annotate this article; underline what is interesting and star the best info.

Write 5 clipped-sentence interestables from this article here and on the back.

Hear Bee, Make Nectar by Dr. David Catchpoole

Not only can plants ‘hear’, but they can rapidly *respond* to certain sounds, new research has shown.¹

When a recording of the sound of a bee buzzing nearby was played back to evening primrose flowers, they began producing sweeter nectar. Within only three minutes from first sound exposure (i.e. the time researchers had to wait to collect the quantity of new nectar required for their measuring equipment to work), the concentration of sugar in the nectar increased by ~20% on average. Bees can discern concentration differences as small as 1–3%, so even allowing for old nectar diluting the newer product, it would still be a significant incentive for bees to more regularly visit flowers of that species—and to stay longer when they do, increasing the chances of pollination.

The researchers found that the sound of buzzing bees caused the flower to vibrate, whereas removal of most of the petals lessened flower vibration. This suggests a key role of the flower, particularly the petals, in directly receiving, or at least enhancing reception of, the bees’ sound. I.e. the flower functions like an ‘ear’, say the researchers.



The point of all this? As the researchers explain, producing high-grade nectar all the time would use a lot of the plant’s resources, and exposed nectar is subject to degradation by microbes. So “a mechanism for timing the production of enhanced reward [for the bees] to a time when pollinators are likely to be present could be highly beneficial for the plant.” Indeed so—a ‘win-win’ for both species.

Of course, the researchers attribute this to evolution. But describing an organism’s hitherto-unrealized *feature* and its *usefulness* is not the same thing as explaining its *origin*. Rather, who’d have ever thought of a flower being akin to an ‘ear’?! Answer: The One the Bible says made the flowers and the bees, and everything else in this mind-bogglingly complex creation that continues to surprise and delight.

1.

2.

3.

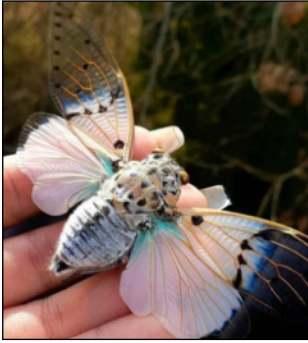
4.

(Continue on back.)

3. Dragonfly, Cicada Wing Concept Drawing (15-20 minutes)

Draw Cicada Drawing on the front of this sheet and Dragonfly on the back. *Training the eyes to see!*

Mod 1

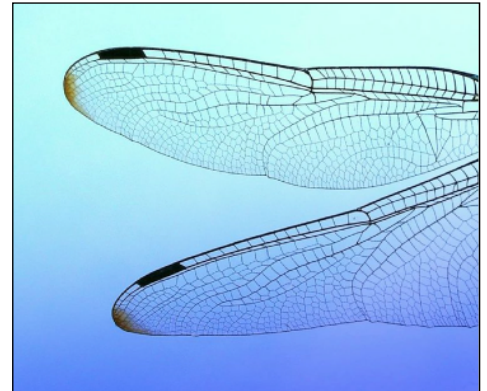


God adds beauty even to insect wings!

The transparent wings of a dragonfly and a cicada are both made of chitin, a modified form of sugar!

Sugar-hi-tech wings, an astonishing wonder constructed by God's master-minded DNA!

Even the wing veins are designed for great stresses and exceedingly complex aerodynamics.



Draw a Dragonfly and Cicada Wing! [The Secret Of Backward Flight](#) and [Dragonfly Design](#)

The dragonfly is considered to be the lion of the insect world, one of the most agile flyers on earth. Zipping along at 40 miles-per hour, these aerodynamic wonders can fly forward or backward or up and down like a helicopter. They can even fly backwards! Notice that the wing isn't shaped with a foil (wing bump) like planes and birds have. Lift is achieved by changing wing angles. **Look at the changing sizes and the amazing spacing of the "cells" created by the ribbing in the wings. Look at the curves in the secondary ribbing.** God created a masterpiece with light-weight strength in all the right places.

NOTE: Darken the thicker reinforcing ribs and the specie identifying black "rectangles". Note where major "ribs" curve and "cells" (little rectangles) range from large to small. All this goes into making dragonflies among the most efficient gliders on earth as their cells produce vortices that give them passive lift.

Cicada/Dragonfly Wing "Veins"

Write 4 interestables about this on the back.



Front Cicada Wing

For the insect buff: There are two basic aerodynamic models of insect flight. Most insects use a method that creates a spiraling [leading edge vortex](#).^{[20][21]} Some very small insects use the fling and clap or [Weis-Fogh](#) mechanism in which the wings clap together above the insect's body and then fling apart. As they fling open, the air gets sucked in and creates a vortex over each wing. This bound vortex then moves across the wing and, in the clap, acts as the starting vortex for the other wing. Circulation and lift are increased, at the price of wear and tear on the wings. Many insects can [hover](#) by beating their wings rapidly, requiring sideways stabilization as well as lift.^[22] A few insects use [gliding](#) flight, without the use of thrust. It is found in some species of arboreal ants, known as [gliding ants](#). ^{Wiki}

4. Research: Research and record 5 especially fascinating facts for each person. You can add general facts, but we are looking for 5 great facts! Facts for Creation Scientists, may be found in the given link. Click the name.

Mod 1

[Nicola Tesla](#)

[Dr. Elizabeth Mitchell](#)

5. Specific Videos

Record 5 “Interestables” or answer the questions.

ETHOLOGY (Animal Behavior)]. [CAT FLIP](#) SED 6m

ARTHROPODS (Insects, Lobsters, Spiders) [MANTIS SHRIMP](#) Ver 7 m

MARINE BIOLOGY: [DOLPHIN ECHOLOCATION.](#) ILL 4 m

- 1.What happens to the air after it passes through the phonic lips?
- 2.How many clicks per second do the phonic lips generate?

REPTILES: [CHAMELEONS CHANGE COLOR](#) Ver 5 m

PHYSICS: [NEWTON'S LAWS OF MOTION](#) PG 22m (Watch to minute 11)

PHYSICS: [BACKYARD SQUIRREL MAZE 1.0- NINJA WARRIOR COURSE](#) MR 20 m

6. CWS Global Topics Watch core videos & take the quizzes.

Mod 1

Video: FD V1: [FD AND BERNOULLI](#) Score: _____



Video: FDV2: [WRIGHTS AND FOILS](#) Score: _____

Video: FDV3: [CARB VENTURIS & SUPER FEATHERS](#)
Score: _____



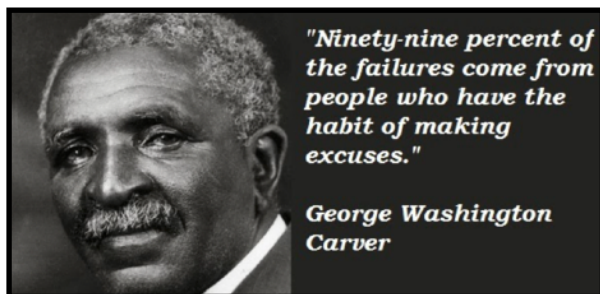
Note: There are optional worksheets for these videos.

They can be downloaded from the top left hand corner of the lesson once you open the lesson.

7a. Verses - Write the verses, explain what they mean and 2 ways they apply to you or things you have seen. Then memorize them. Use the back as needed.

Romans 1:20

7b. Quote- Follow directions below.



Quotes: (10 minutes)

Write this quote and one other quote from this scientist on the back.

8a. CWS Devotionals: Read one of the devotions in the links below. Write the main take-home point and 2 personal applications below. Use the back for more room.

Title: _____

Additional Devotionals:

Teen Devotion: [A Backpacking Trip](#)

Science Devotion: [Hearing Plants](#)

Bible Devotion: [A Hike To What We Never Want To Have](#)

8b. CWS Devotionals: Read the devotional. Follow directions at the end.

The Most Astonishing Feet on Earth! pg.1



Geckos can be quite cute little guys!

God hides wonders in the craziest places. One of them is tucked on the bottom of Gecko feet.

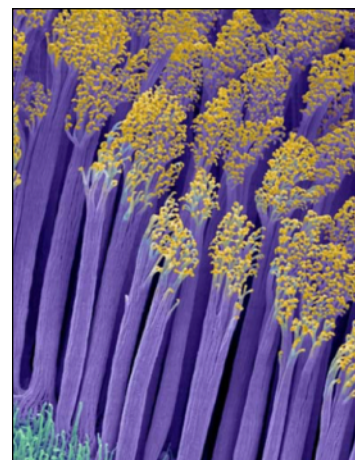
Geckos were a mystery for many years. They can cling to almost any surface in the wildest way. You can put one on a piece of glass then turn the glass upside down. The gecko can walk around on it easily. While still upside down, you can pry three of his feet off the glass and he can still hold on with one foot. What's really strange is it isn't using any way that anyone could think of to do it.

The more scientists explored the gecko's abilities the more they were astonished. No one on earth knew how a tiny gecko could hold on to things the way it does. When

they discovered what was happening, everyone was shocked.

Gecko feet are probably the most sophisticated feet on earth. They have tiny hairs on the bottom of their feet called setae. They are so small that you cannot see them without a powerful microscope. The hairs look like little Christmas trees with long trunks. The ends of the "branches" look like little spatulas. There are between 400 and 1000 "branches" of the setae hairs which all end in these incredibly tiny spatulas. There are about 250 *million* spatulas per foot. That's one billion "spatulas per gecko!"

When a gecko foot sticks to something, it isn't from anything sticky on the bottom surface of their feet. Some thought that they held on by suction like how a rubber-tipped children's arrow sticks to a door. But they tested the gecko foot in a vacuum and it still worked. To their astonishment, they learned that the gecko is using molecular forces to stick to things.



There are 1 billion "spatulas" on the gecko's four feet!



There are over 1500 different kinds of geckos. Some have the setae feet and some don't.

These tiny spatulas, a billion for all four feet, get close enough to, for example, the atoms of a mirror it wants to climb. When the spatulas get close enough to the surface, the van-der-Waals molecular forces of the spatulas attract the van-der-Waals forces of the mirror's glass. The spatulas are just the right size to get close enough to irregular surfaces like those of glass and can stick by using atomic forces. What a shocker this was to scientists.

When you learn about things like this, it's important to remember how they came about. A code that God designed built the gecko from atoms in the food that its mother ate and atoms that it ate.

The code built the gecko and everything in its tiny amazing body atom-by-atom! This means a whole lot to us as Christians.

8b. CWS Devotionals: Follow the directions at the end.



The setae hairs are in these folds on the bottom of their toes.

The Most Astonishing Feet on Earth! pg.2

God shows us through the living things He created that He is intelligent beyond anything that we can comprehend. By creating larger things like the earth, the moon, the sun and the 100 billion galaxies of the universe He shows us that He has power beyond anything we can imagine.

God will never forget anything that concerns us. He is also completely aware of our desires and the sighings of our hearts when something we have hoped for hasn't happened. But through the

marvels of living things and the majesty of larger things God is whispering and shouting to us that we can trust Him. He WILL act in excellent ways when the time is exactly right.



Do you have some desires and sighings you need to trust the Lord with? Do it now in a quiet place. Write down your prayers and leave them with Him. He will not disappoint you; *you will not be put to shame!*

"Lord, all my desire is before You, and my sighing is not hidden from You."

Psalms 38:9

God is aware of our desires and He knows our sighings when we are waiting. He will give what is good at the best possible time. No good thing does He withhold from those who walk uprightly (Psalms 84:11, I Timothy 6:17)

***"You have taken account of my wanderings;
You have put my tears in Your bottle. Are they not in Your book?"***

Psalms 56:8

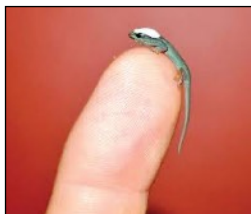
God knows our hurts and does not forget them.

"No one who hopes in You will ever be put to shame..."

Psalms 25:3

"There is nothing good the human heart has yearned for that will not be granted or a great deal more."—Oswald Chambers

Hope in God *alone*; He will not disappoint you. People may; God won't.



Write what this devotional means in your own words and add a couple personal applications on the back—either needs you have or answers God gave you.

8c. CWS Devotionals: Read the article and follow the directions at the bottom.

The Subway and God

There is a slot canyon in Zion National Park called "The Subway." Physical wonders like the Subway are all remnants of the flood and other natural processes. But, the Bible tells us that God somehow orchestrated the wonders in the earth we have today. We see this through the verse in Psalms 104:8, ***"The mountains rose and the valleys sank to the levels You decreed."***

Creation geologists believe this verse is speaking of God overseeing the making of the world's topography. The earth's surface of Noah's time was destroyed by the Flood but God was involved in re-shaping the earth. The placements, shapes and heights and depths of the mountains and the valleys of the world were all moved into place according to His plan. The amazingly beautiful Subway Canyon is here because God wanted it to be here.



The Subway is part of a 5 hour hike that requires some repelling.



I've been awed beyond belief at what I've learned In Biology. This has caused me to not argue a whole lot with God; If God says He somehow decreed the exact height of mountains and depth of valleys, I know that He's also claiming that He is responsible for the wonders we see now in the physical Earth. I don't dispute it; I say, "Thank you!" for the beauty I see.

Because of the beauty of the earth, we can greatly look forward to heaven because God will be there and it will be a place that is astonishingly wonderful in every way!

Write what this devotional means in your own words and add a couple personal applications here and on the back—either needs you have or answers God gave you.

9a. [FD General Links 1](#) Choose 30 min of links to watch.



Mod 1

Today is a “General Links 1” Lesson where you pick what Links to watch.

Write 2 great facts from 3 of your favorite Links. Record links watched on the View Record Sheet.

PARENTS: Watch the brief video linked here which explains [How To Do Links](#). Click on the button “Quick Looks” in the upper right hand corner of the page. This is VERY important.

Record your Link Views. Every link has a number. Record the date viewed in small print in the appropriate box in the Viewing Records sheet.

IMPORTANT: The General Links 1 link above is not to activated links. In the student user, Links can only be accessed by copying the URL. For clickable links you must be logged into the Parent User and access the links from the Parent/Teacher tab . Here is a hyperlink to this set. [General Links 1 Hyperlinks](#)

Link 1:

Link 2:



Link 3:

9b. VIEW RECORD SHEET**FLUID DYNAMICS GENERAL LINKS 1** - Log in to access. Choose30-45 min of links. Log in to parent/Teacher account for **HYPERLINKS**. Record the date watched.**Level 1**

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|-----|--|-----|--|------|--|------|--|------|--|------|--|
| 1a. | | 1b. | | 7a. | | 7b. | | 13a. | | 13b. | |
| 2a. | | 2b. | | 8a. | | 8b. | | 14a. | | 14b. | |
| 3a. | | 3b. | | 9a. | | 9b. | | 15a. | | 15b. | |
| 4a. | | 4b. | | 10a. | | 10b. | | 16a. | | 16b. | |
| 5a. | | 5b. | | 11a. | | 11b. | | 17a. | | 17b. | |
| 6a. | | 6b. | | 12a. | | 12b. | | 18a. | | 18b. | |

Level 2

| | | | | | | | | | | | |
|-----|--|-----|--|------|--|------|--|------|--|------|--|
| 1a. | | 1b. | | 7a. | | 7b. | | 13a. | | 13b. | |
| 2a. | | 2b. | | 8a. | | 8b. | | 14a. | | 14b. | |
| 3a. | | 3b. | | 9a. | | 9b. | | 15a. | | 15b. | |
| 4a. | | 4b. | | 10a. | | 10b. | | 16a. | | 16b. | |
| 5a. | | 5b. | | 11a. | | 11b. | | 17a. | | 17b. | |
| 6a. | | 6b. | | 12a. | | 12b. | | 18a. | | 18b. | |

Level 3

| | | | | | | | | | | | |
|-----|--|-----|--|------|--|------|--|------|--|------|--|
| 1a. | | 1b. | | 7a. | | 7b. | | 13a. | | 13b. | |
| 2a. | | 2b. | | 8a. | | 8b. | | 14a. | | 14b. | |
| 3a. | | 3b. | | 9a. | | 9b. | | 15a. | | 15b. | |
| 4a. | | 4b. | | 10a. | | 10b. | | 16a. | | 16b. | |
| 5a. | | 5b. | | 11a. | | 11b. | | 17a. | | 17b. | |
| 6a. | | 6b. | | 12a. | | 12b. | | 18a. | | 18b. | |

10a. Additional Resources: The [101 Series](#)

Mod 1

We highly recommend using the Chemistry and Physics 101 Series as an **optional resource**. You can purchase them from Amazon, Christian Book Distributors, or get them streamed for one year.

You might want to do only one this year and one next year, or neither.

CHEMISTRY 101: Do #1 Lesson. Write 10 interestables (interesting concepts). Star the best 2.

PHYSICS 101: Do #1 Lesson. Write 10 interestables (interesting concepts). Star the best 2.

The resources below are optional.

Use the numbered section below and the back of this sheet for your answers.

10b. Additional Resources: Creation/Evolution

Getting an early introduction to the powerful science substantiating the Creation story is life changing!

Watch: [Noah's Ark Fact or Fiction](#) CMI 28 min. (This is involved. Watch it 5 minutes at a time if necessary.)

Write 10 great interestables from this video on the back and star the best two.

10c. Additional Resources: Select Crash Course Videos #1

BIOLOGY INSIGHTS: [CRASH COURSE BIOLOGY #1 Carbon Everywhere 10m](#)

Write 10 interestables (interesting concepts). Star the best 2.

10d. Additional Resources: Select Crash Course Videos #2

CHEMISTRY INSIGHTS: [CRASH COURSE CHEMISTRY #1 The Nucleus 10m](#)

Write 10 interestables (interesting concepts). Star the best 2.

10e. Read Books: It can be great fun to cozy up on Fridays and read Science. We highly recommend [Creation Magazine](#). [Answers Magazine](#) is also good. We have some books listed on our [BOOKS PAGE](#) (Log in). We especially like the highly visual science books like those dealing with Creation Evolution. The [Wonders of Creation \(older books\)](#) series is great. Write 10 interestables (interesting concepts). Star the best 2.

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