

FLUID DYNAMICS!

Student Notebook of Aerodynamics and Hydrodynamics!
First Timers



Learn more about Fluid Dynamics than you imagined possible. You'll never look at swimming and flight the same!

You'll see dolphins, boxfish, seals tigers, noses and more as unfathomably complex marvels, engineered by the Creator of all things—
As a wonderful gifts of His great love to you!

Science

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CROSSWIRED Science **Quick Start Info**

1. Be sure to be logged in when you are using the downloadable Student Notebooks. The printable Student Notebooks will help you schedule and navigate every lesson of the year (The online calendars on the website are for those using CWS to supplement only). These printable Student Notebooks are the only way to effectively access the online lessons and videos.

2. There are 3 Student Notebooks for Year One:

Fluid Dynamics – Global Topic

Sound – Global Topic

Mighty Feathers – Major Topic.

These combine to provide a full year of very exciting curriculum!

Bio/Chem-Physics – This class for high level students and Biology students has its own curriculum.

3. There are 4 levels for each Student Notebook

Early Learners: K-1st grade.

Beginners: 2-4th grade.

First Timers: 5th grade and up

Advanced: Higher level middle school students and High School Biology. This is used for Second Timers.

4. You do not need to Print the Student Notebooks. You can save money and use them electronically and use a regular notebook to record your student's work. If you print them, consider having an outside source print for you to save you time.

5. The Lesson page for 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 "Fluid Dynamics Student Notebook Printable" accesses these lessons 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.

6. Keep Connected. Don't miss our emails! Join our CrossWired Science Community Group and/or the CrossWired Biology-Chemistry-Physics Facebook Group if you have a high school student. If you don't receive emails, notify us at contact@crosswiredscience.com to get on on the email list.

7. Use your U-Choose & Reading lessons to enrich your program this year. Reading lessons are every Friday. We believe kids should read good science. U-Choose has 8 lessons in each 3-month Printable. The first one is near the beginning of the 3-month Printable and the other 7 are toward the end. These can be done at any time. The Reading Lessons and U-Choose lessons have many options to customize your program.

Every Friday is Reading Day. If you want our recommended *Christian Heroes Then & Now* books (which are excellent for family read-alouds and student reading of all ages), we offer them from YWAM with Free shipping and at \$10 under Amazon. Find them under the menu selection "[SHOP](#)". Support YWAM. Buy from us.

8. Watch two videos at the top of each lesson page or on the home page of CrossWiredScience.com.

How To Begin

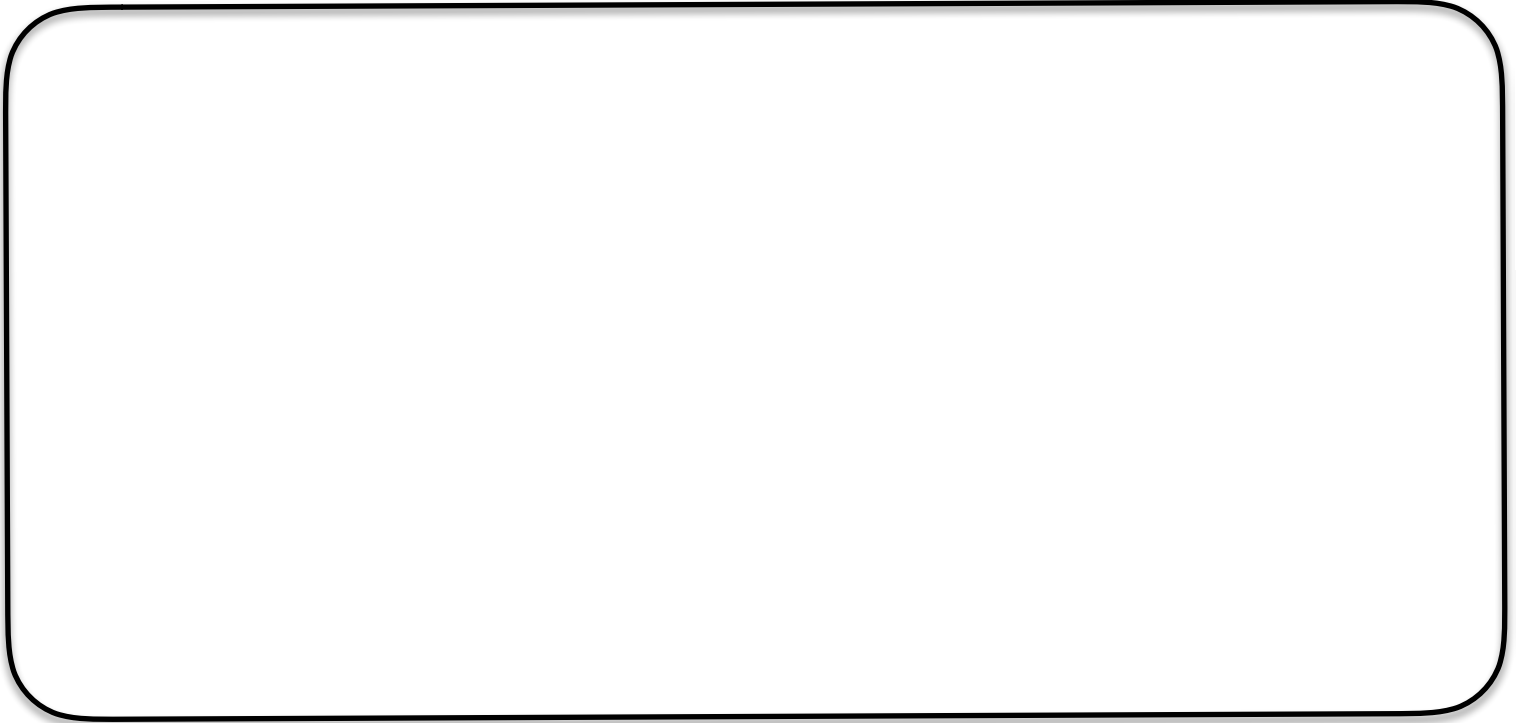
Teaching Multiple Ages

9. We recommend 1 -2 weekly "Power-hours" with your children. This is a special time when you spend 15, 30, 45 or 60 minutes with your children and go over the CWS material and learn alongside your children. This is fun for everyone and is especially effective for your younger children.

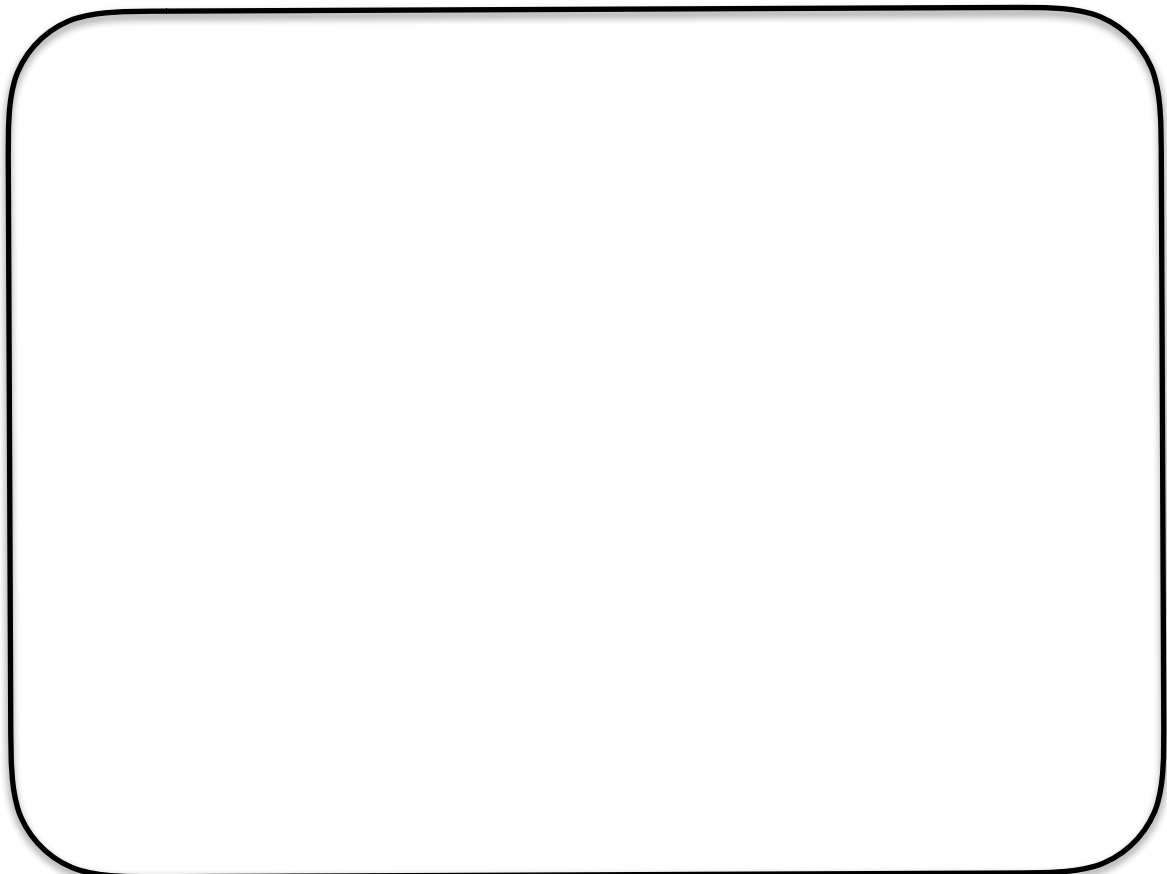
1. Core Videos 1 & 2 (15 minutes)

Watch these two Fluid Dynamics Core Videos twice. Draw a picture about a fun fact, or write down a few interesting facts about each video. (Be sure to be logged in to watch the videos!)

Fluid Dynamics and Bernoulli



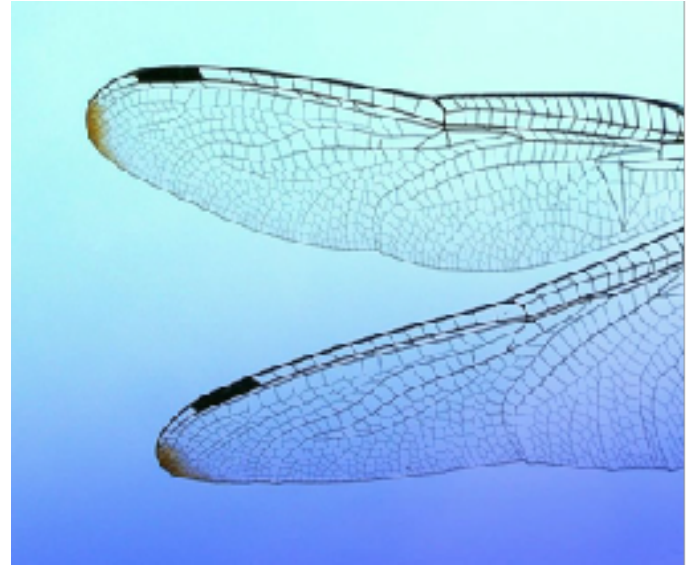
Wrights and Foils



2a. Devotion: (10 minutes)

Read this devotion in Teen Devotions #1. Write several personal applications. For younger children, we suggest using the book "Indescribable" Louie Giglio.

Teen Devo: Doubts and Prayer



2b. Dragonfly Wing Drawing (10 minutes)

Draw a Dragonfly Wing!

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.

[The Secret Of Backward Flight](#)

3. Two Links (15 minutes)

Watch the 2 links below. Make a mind map about each .

Google "Science mind maps" for examples or refer to the example below. You do not need pictures like this example unless you want. [MIND MAPS](#)

Young Fox Hunting In Snow (3 minutes)

Slow Flipping Cat Physics (6 minutes)



"Great is our Lord ...His understanding is infinite.

Psalms 147:5

God effortlessly made *all* His insects perfectly.

He created the DNA sequences to build dragonfly wings with just the right materials in just the right places.

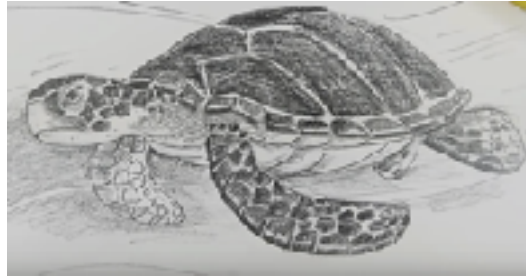
Trust the beauty and love of God to use His infinite wisdom and intelligence to put all the right pieces together in all the just-right ways to make your life a masterpiece of His working. He knows how to create praise in you. (Isaiah 57:19) He is able to amazingly do this through the daily situations of your life. Remember Joseph.

4. Draw a Sea Turtle. (15 minutes)

Pick one, click on it, and follow the directions to draw it.



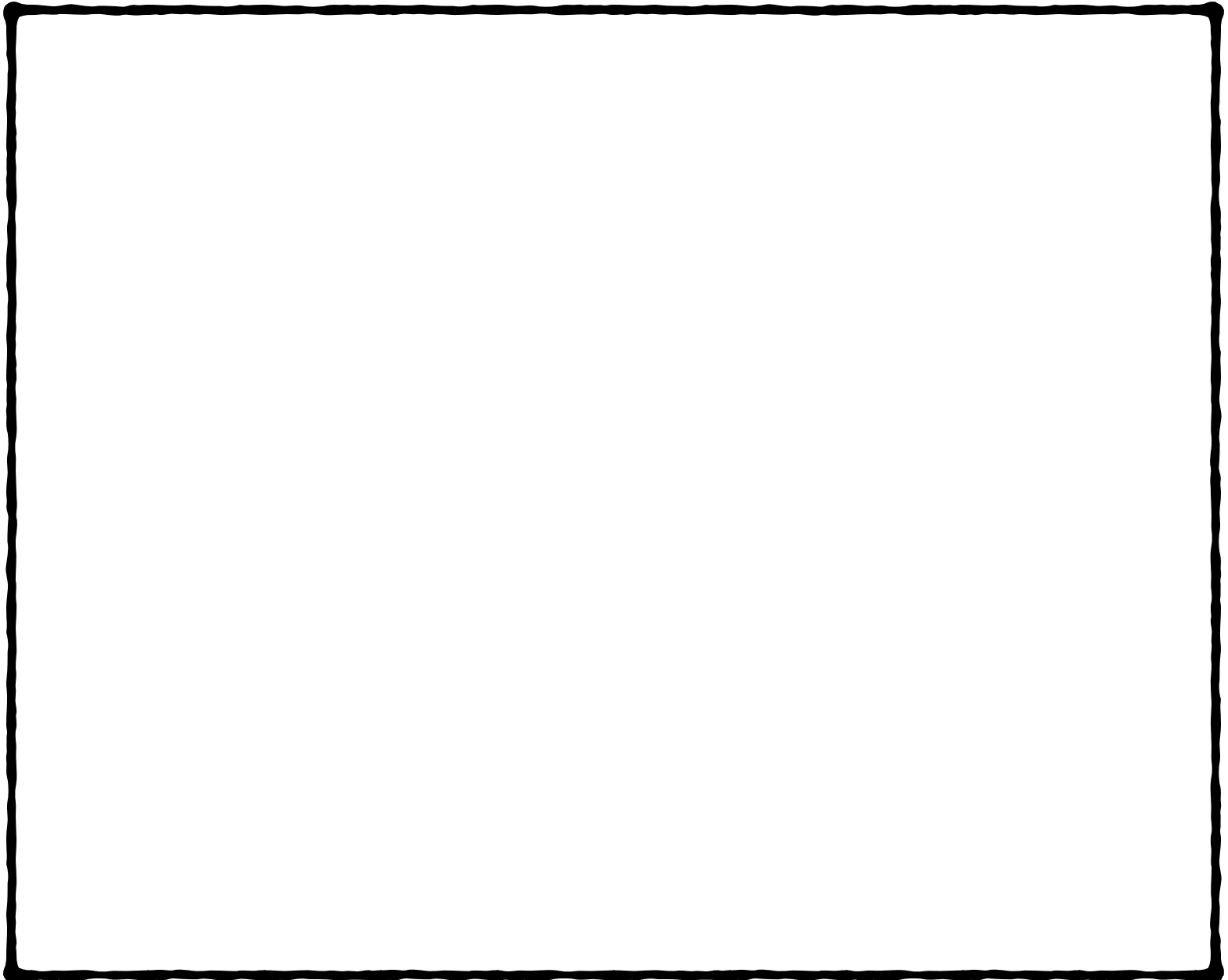
A. *Colored Sea Turtle*



B. *Pencil Sea Turtle*



C. *Cartoon Sea Turtle*



1. Core Videos 3 & 4 (15 minutes)

Watch the 2 Fluid Dynamics (FD) Core Videos for today twice. Then, write THE two *most* interesting facts about each. Using key words or a picture for each concept is acceptable. Know what a “venturi” is in a carburetor.

Feathers & Carb Venturis



A large, empty rounded rectangular box for taking notes on the 'Feathers & Carb Venturis' section.

Planes, Whiskers and Alulas

A large, empty rounded rectangular box for taking notes on the 'Planes, Whiskers and Alulas' section.

***“My heart is steadfast, O God.
I will sing, I will sing praises with my soul.”—Psalms 108:1***

When you encounter something difficult or a need of others, remember the elegant landings of birds. The birds of the world are equipped by their Maker to have alula feathers on the front edge of their wings. These 3-5 feathers give them *elegant* landings as they move outward at just the right moment to create vortices—tiny swirls of air—which give them extra lift as they slow to land. Trust God to help you “land” in great ways when you try to do good things for others’ sakes and when you work on problems you’d rather not have. Praise God now for the wonder of who He is, *before* you see results. Be steadfast in your praise. He doesn’t change. This gives courage, joy and wisdom from God as you go forward—and it brings victories which cause praise to spring up within you. “I will also lead him, and restore comfort to him...creating the praise of the lips.”— Isaiah 57:18,19 God knows what good to do for you to create deep, very happy praise in you.

2a. Devotion: (10 minutes)

Read this devotion in FD in Devotion #1. Write several personal applications.
(For younger children, we suggest using the book "Indescribable" Louie Giglio.)

Petty and More Petty (See at the bottom)

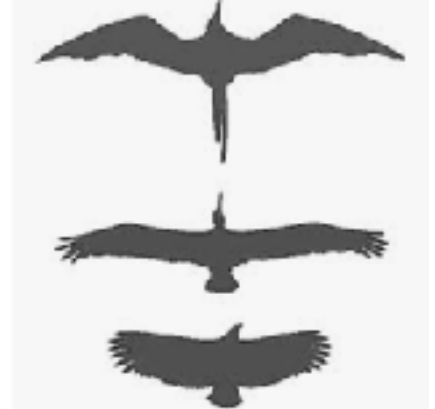
Super-Speed Pointed

These are falcon wings.
Falcons hit 240 mph in dives.



Long Pointed

High speed wings which are longer than the bird's body.
Terns have these wings.



Skinny Long

Long skinny wings used for soaring and flapping.
Pelicans have these.

Fat Wide

Soaring wings, great for riding thermals.
These are the wings of hawks and eagles.

2b. Draw Bird Wing Shapes (10 minutes)

Draw the shapes of bird wings.
Use the silhouettes above. Be sure to label them.

Check out more on Bird Wings!

Cornell has a great Bird department.
[*Birds and their Wing Shapes - Cornell Lab of Ornithology*](#)

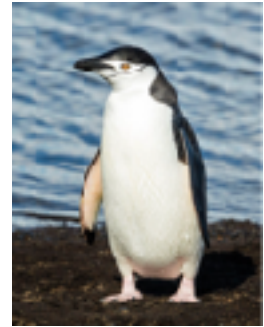
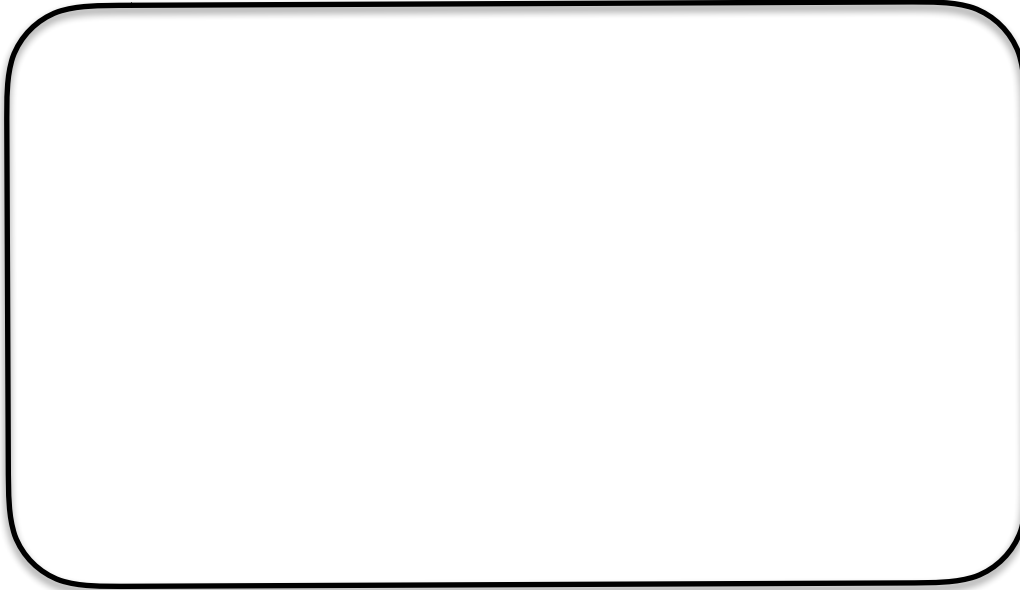
3. Two Links (15 minutes)

DAY 2

Page 3

Watch the 2 “Older” links below. Make a mind map about each. (The younger are fun, also.)
Google “Science mind maps” for examples or refer to the example below. You do not need pictures like this example unless you want. **MIND MAPS** **NOTE: WHENEVER YOU DON'T HAVE ENOUGH SPACE, USE THE BACK.**

Younger: *Wild Chameleons In Florida* (4 minutes) Older: *Arecibo Radio Telescope* (7 minutes)

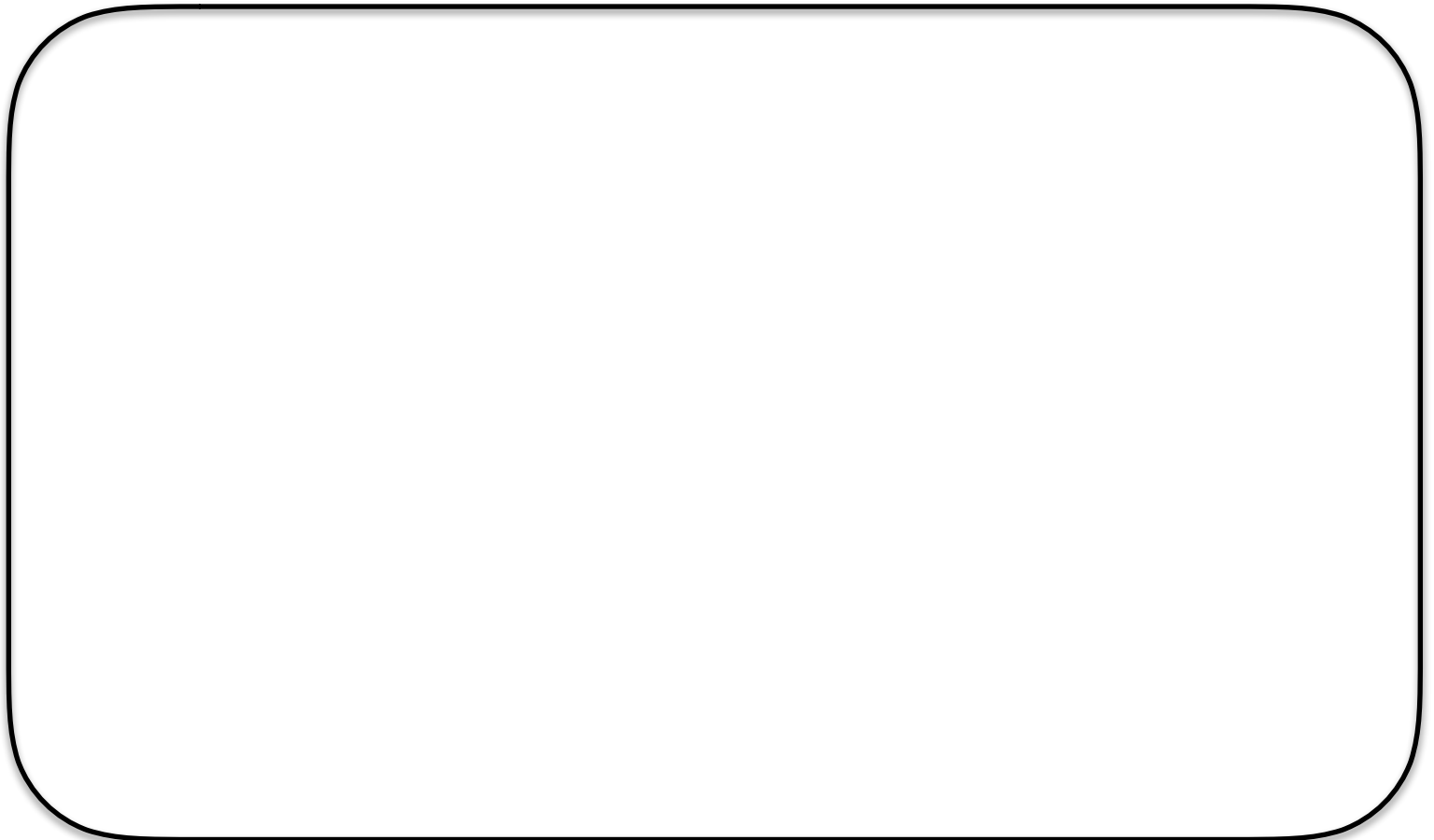


Chinstrap Penguin

Andrew Shiva / Wikipedia / CC BY-SA 4.0

Younger: *Emperor Penguins: Dan* (11 minutes)

Older: *On-Board ISS* (6 minutes)



4. Draw a Seal. (15 minutes)

DAY 2

Page 4

Pick one, click on it, and follow the directions to draw it.



1. *Pencil Seal*



2. *Baby Seal*



3. *Cartoon Seal*

"You have searched me and known me..."

"Lord, you have examined me; you have known me."—Psalms 139:1

The God of all Creation....the God who created the DNA codes that build every bird, every fish and every water-living mammal is the God who thinks about you. He is attentive to every circumstance in your life. He is aware of the tiniest changes in every circumstance.

The harbor seal can track a fish a football field away by detecting fine movements of water turbulence left by the fish minutes before! When God created the whiskers, the vibrissae, of the harbor seal, He knew it was important that His seal would turn them perpendicular to the water turbulence the seal is tracking.

God had to write on the DNA code the directions to apply the code for muscle building in exact dimensions for the movement of each whisker. He also had to put in the code for attaching these muscles to the brain neurons. He also had to put in the code the reading of the sensors that detect water movement and directions of what to do with the whiskers and how to turn them perpendicular to the water flow.

This is amazing. THIS God is the one who knows intimately the changing circumstances of your life. Bring your needs AND desires to Him hourly. His true desire is to share the details of your life with you and to profoundly help you and bless you in the small and large details of your life.

Watch the 2 Fluid Dynamics Core Videos (listed below) twice. Then, write THE two *most* interesting facts about each. (Be sure to be logged in to watch the videos!)

Hummers & Dolphins & AA's



Box Fish and Penguins

***“Because he has loved Me, therefore I will deliver him;
I will set him securely on high, because he has known My name.
He will call upon Me, and I will answer him; I will be with him in trouble;
I will rescue him and honor him.” –Psalms 91:14,15***

God took two difficult places on earth, the Antarctic and the swirling waters of coral reefs and worked exquisitely in creating the Boxfish and the Emperor Penguin which can navigate them with ease.

As you follow God, you will take on challenges which are greater than you. But, like the difficulties of the Boxfish and the Emperor Penguin were not difficult challenges to Him, you'll see your difficulties are not difficult to God in the slightest either.

As you call upon God, and the Creator of the boxfish and the penguin will help work His surprisingly unique and wise solutions for you. Sometimes He will do it so amazingly that you will stand in awe of Him.

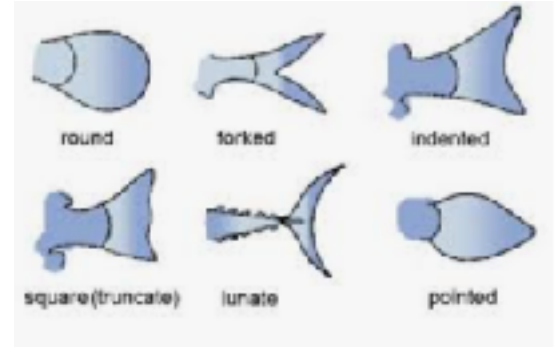
“But when he sees ...the work of My hands, in his midst... he will stand in awe of the God of Israel.”—Isaiah 29:23

2a. Devotion: (5 minutes)

Read this devotion in Sci-Devotionals. Write several personal applications.
(For younger children, we suggest using the book "Indescribable" Louie Giglio.)

Also, answer the five questions at the bottom of the devotionals. You'll have to do this tomorrow because you cannot save your answers. (The "quiz" involves both devotions.)

Brain at the Speed of Light



All kinds of amazing fish tails

4b. Draw Fish Fins (15 minutes)

Draw and color the caudal fish fins (the tail fins) which you see above. Find a fish with each one.

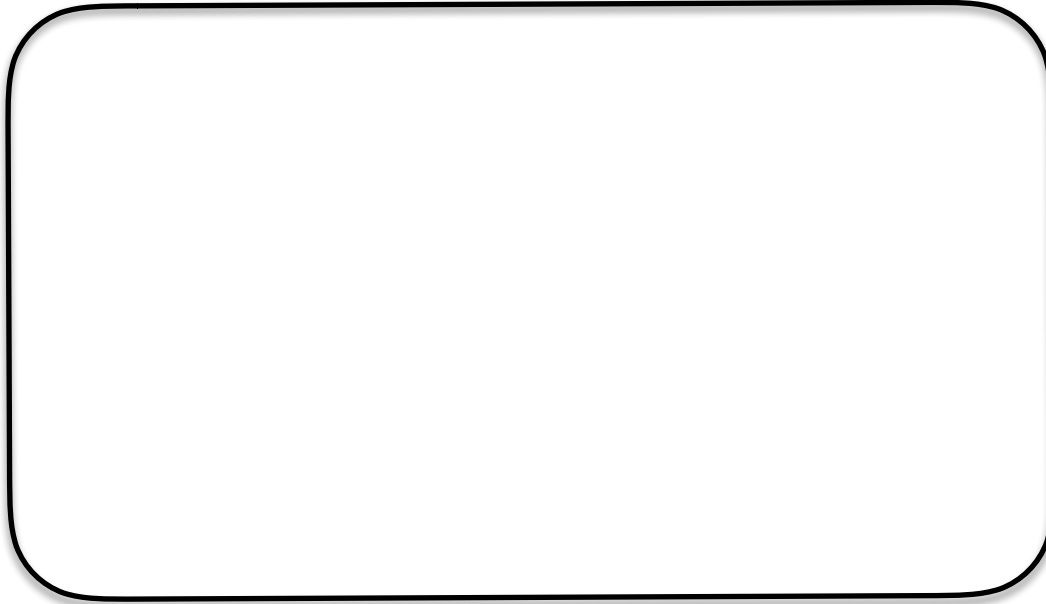
A large, empty rectangular box with a black border, intended for drawing and coloring the caudal fish fins shown in the diagram above.

3. Two Links (15 minutes)

Watch the 2 “Older” links below. Make a mind map about each .
Google “Science mind maps” for examples or refer to the example below. You do not need pictures like this example unless you want. [MIND MAPS](#)

Younger *How Recycling Works!* (4 minutes)

Older: *Most Radioactive Place* (6minutes)



“Walk in love” –Ephesians 5:2

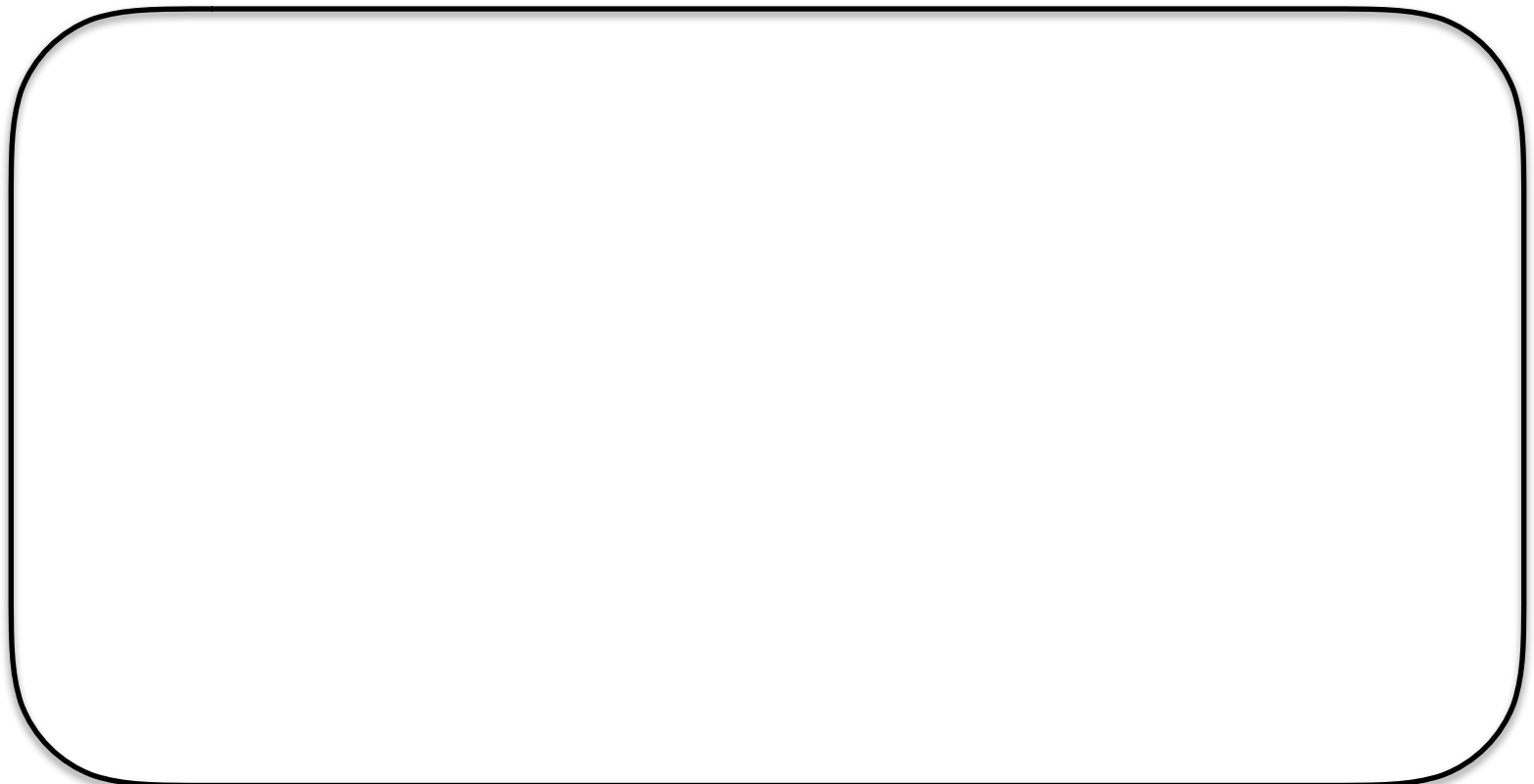
God shows His love through the beauty of birds like the toucan.

He also shows the beauty of His love through the beauty of His love moving in your heart to bring specific thoughtful blessings to others. Part of “walking in love” each day involves **kind encouragements and blessings** God wants you to give others.

To “walk in love” also means if someone is being selfish or crabby, to do your best to forgive and love. When you do this, God understands your efforts to be a peacemaker.. **He will help you.**

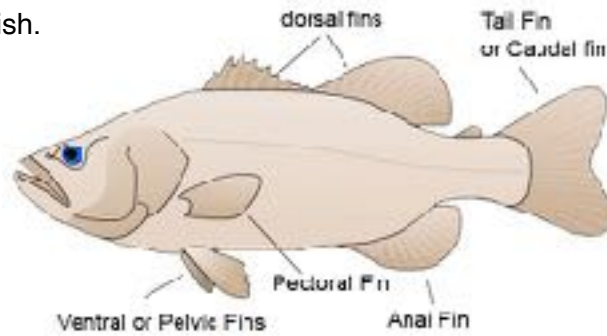
Younger: *Coconut Breakfast!* (9 minutes)

Older SED: *Backwards Brain Bicycle*



4. Draw a Fish (15 minutes)

Draw and label all the fin types of a fish.
Draw a second fish if you want.



***“Praise the Lord in song for He has done EXCELLENT things.” WOW!!
Isaiah12:5***

**When God exerts His power, He doesn’t just exert power.
He exerts His power in excellent ways that bring superbly excellent results.**

We see this in the ways He made His creation.
There are many ways we’ll need God to help us, and help us to help others.

All these need His help, His creativity and His wisdom...
Seek God daily for His wisdom and help. This brings His excellent results.

Read: *A Million Little Ways* by Emily Freeman

1. Core Videos 7 & 8 (15 minutes)

Watch the 2 Fluid Dynamics (FD) Core Videos for today, twice. Then, write THE two *most* interesting facts about each. Using key words or a picture for each concept is ok.

Nose Aerodynamics

Dog Slobs and Cats



“...He created the stars also...” Genesis 1:16

God shows His power through His creation of the stars. Our galaxy has about 200 billion stars, which is enough to give everyone on earth 30 stars. One star is so big that a million earths will fit into it! Thirty stars is unbelievable!

When you hear something like “God put the right tongue-lapping speeds to drink water into the DNA code for all different-sized cats from kittens to tigers”—you are getting a little idea of how thorough God is. **He thinks of EVERYTHING.**

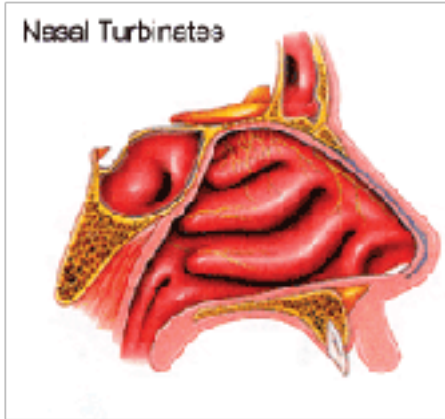
As you continue walking with God, He will work greater miracles and show you that He is thinking about tiny things in your life even more than you are. God’s tiny blessings can be surprisingly good.

2a. Devotion: (5 minutes)

Read this devotion in Sci-Devotionals at the bottom. Write several personal applications.

Also, answer the five questions at the bottom of the devotionals. You'll have to do this tomorrow because you cannot save your answers. (The quiz involves both devos.)

Roots and Extraordinary Wisdom



4b. Draw the Nose Turbinates (10 minutes)

The turbinates are inside your nose. They are weird boomerang-shaped bones covered with skin. They guide the air into your lungs and spin it so it gets warm and steamy as it goes into your lungs. This helps your lungs absorb oxygen. They also help you smell! Draw them from the picture above.

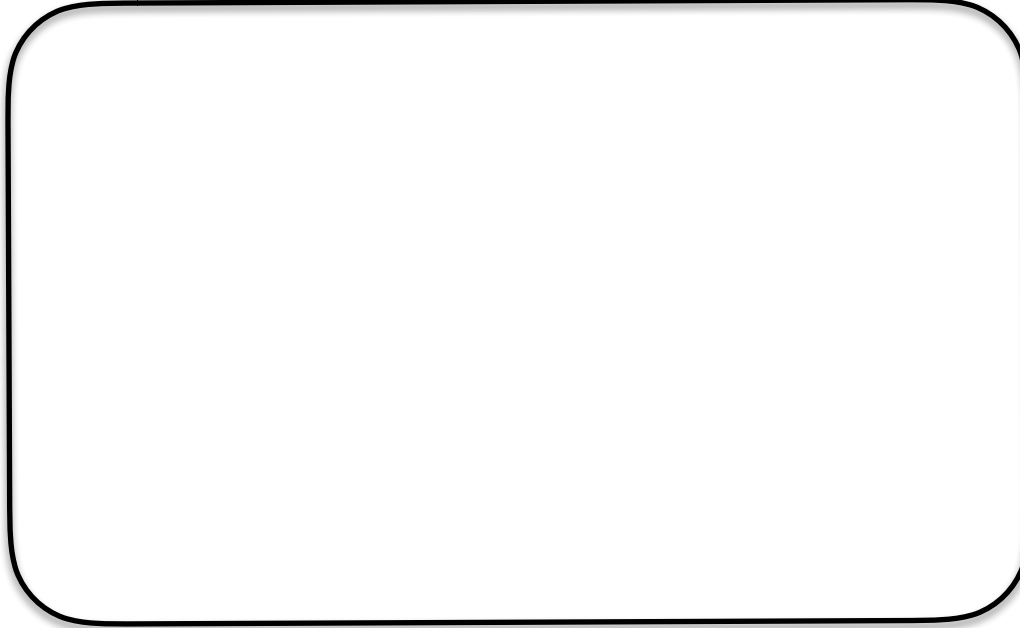
3. Two Links (15 minutes)

Watch the 2 “Older” links below. Make a mind map about each .

Google “Science mind maps” for examples or refer to the example below. You do not need pictures like this example unless you want. [MIND MAPS](#)

Younger: **Buddy Davis Explores Cave** (3 minutes)

Older: **Caribou & Wolves Using UV Vision** (4 minutes)



**“Be anxious for nothing ...”
–Philippians. 4:6**

God shows His amazing ingenuity through crazy creatures like the box fish.

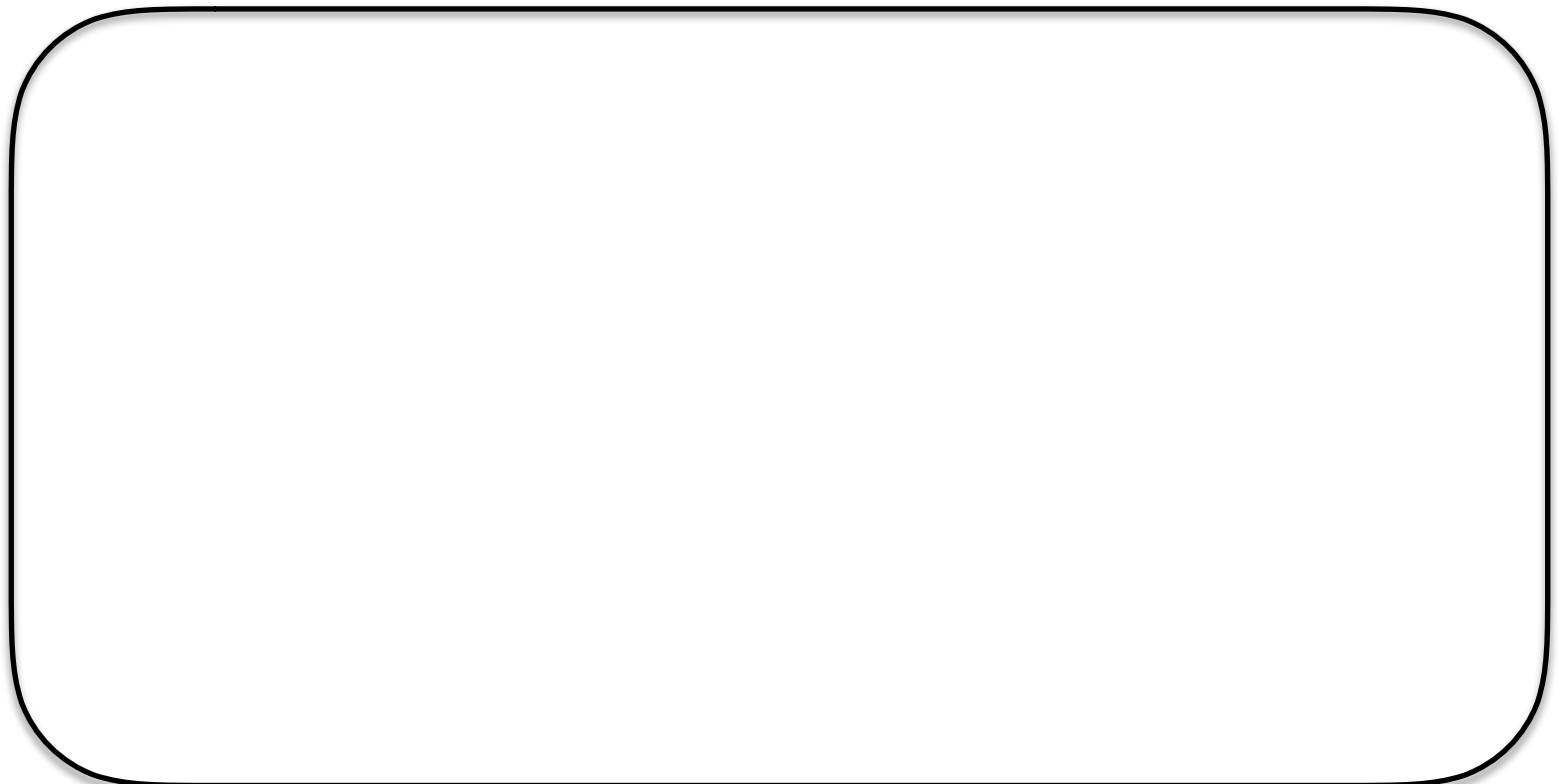
We thought the box fish was just cute and a bit funny looking –and he is....but we never imagined that he’s actually quite hi-tech and hydrodynamic–in ways we didn’t understand.

When you’re being squeezed by tough things in life, **continually** give God your concerns about the “what if’s?” and “what about’s?”.

Like with the box fish, He is working in ways you don’t expect which WILL bring unexpected beauty into your life.

Younger: **Sloth Vs Sloth!** (6 minutes)

Older: **Fly To The Space Station** (10 minutes)



4. Draw a Dolphin. (15 minutes)

DAY 4

Page 4

Pick one, click on it, and follow the directions to draw it.



1. *Cartoon Dolphin*



2. *Colored Dolphin*



3. *Pencil Dolphin*

“After you have suffered for a while...the God of all grace, who has called you to His eternal glory in Christ, will confirm, strengthen and establish you.”

1 Peter 4:10

God created beauty in motion like how an eagle soars or how a dolphin leaps. You can tell by these things that God is love like it talks about in 1 John 4:8. You can trust that this love of God will break through when He gives you “joy in the morning” as you see the remarkable good things He does.



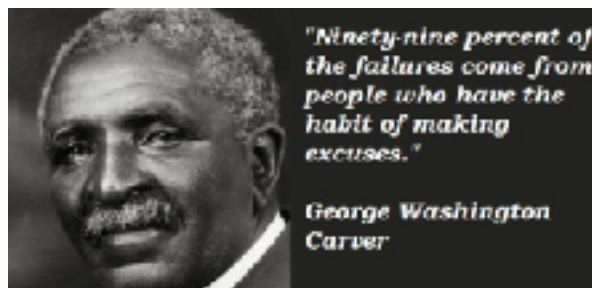
Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER.* By **J. Benge** p.1-35. **NOTE:** We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).

Title

Pages read





This is a Science-Free-For-All Lesson!

The **U-Choose** lesson contains truckloads of great ideas. Summarize the projects or **Field Trips** you choose here. Be sure to add a picture or two (or a dozen) here, too.

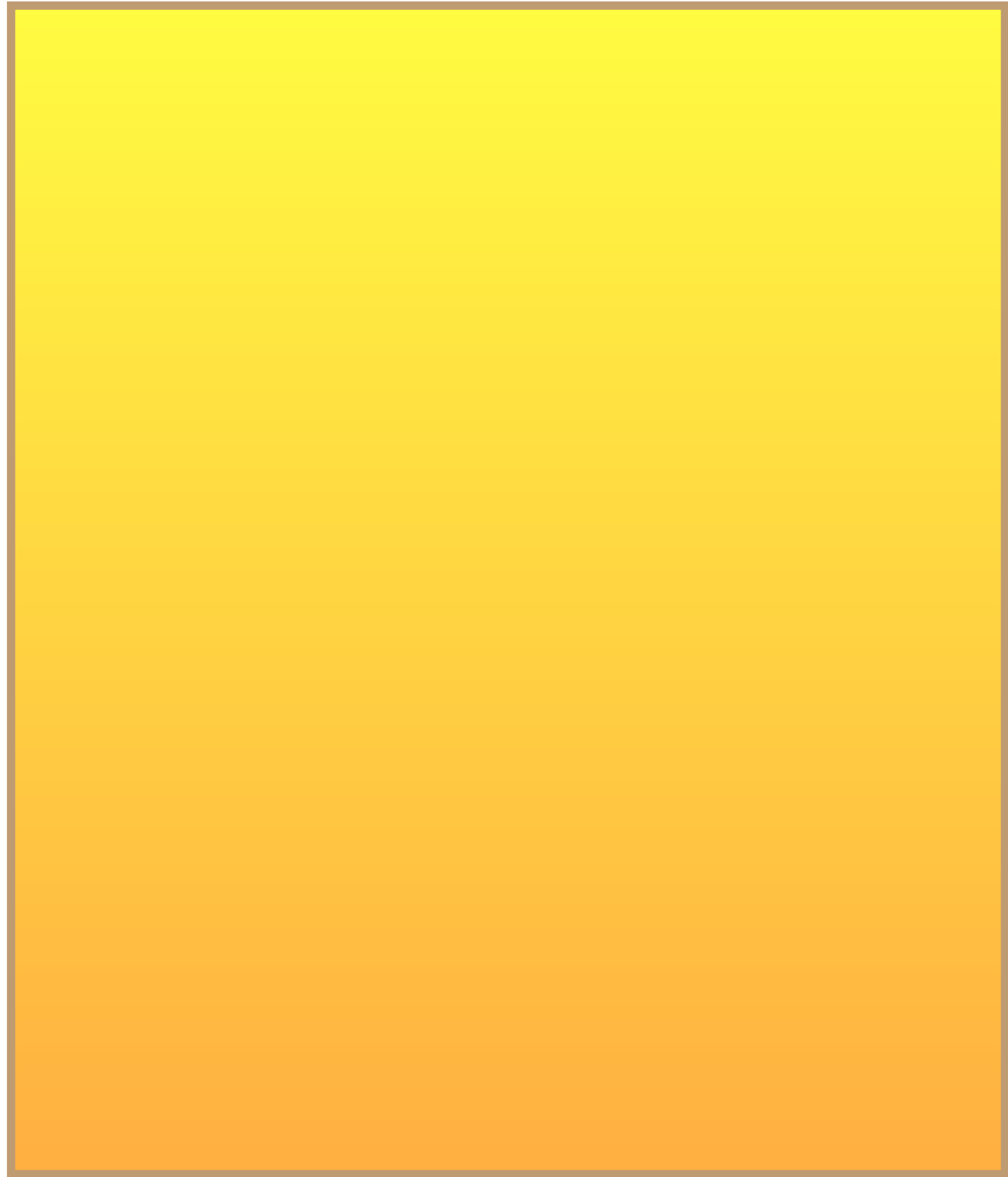
Go For Whatever U-Want! Field Trips included!

NOTE: This is your first U-Choose and Field Trips. There are 7 more of these near the end of this Printable.



Title

U-Choose & Field Trips



Today is a dissection day. It's so fascinating!

There are four different dissections detailed in the [Experiment lessons](#): **Fish, Starfish, Shark and Squid**. Choose any two. You will do one today and one later. Where to get supplies and directions to do the dissections are found in the Experiment Journal pages in each dissection.



A fun idea is to bring a fresh fish home from the market and dissect it, or buy two types and compare them. You can even cook it and eat your way through the dissection!

Use the boxes below for photos of your dissection or make drawings of different parts of your dissection and label these parts.

Our multi-year goal is to make you an expert anatomist of the animals you chose.

My Dissection:

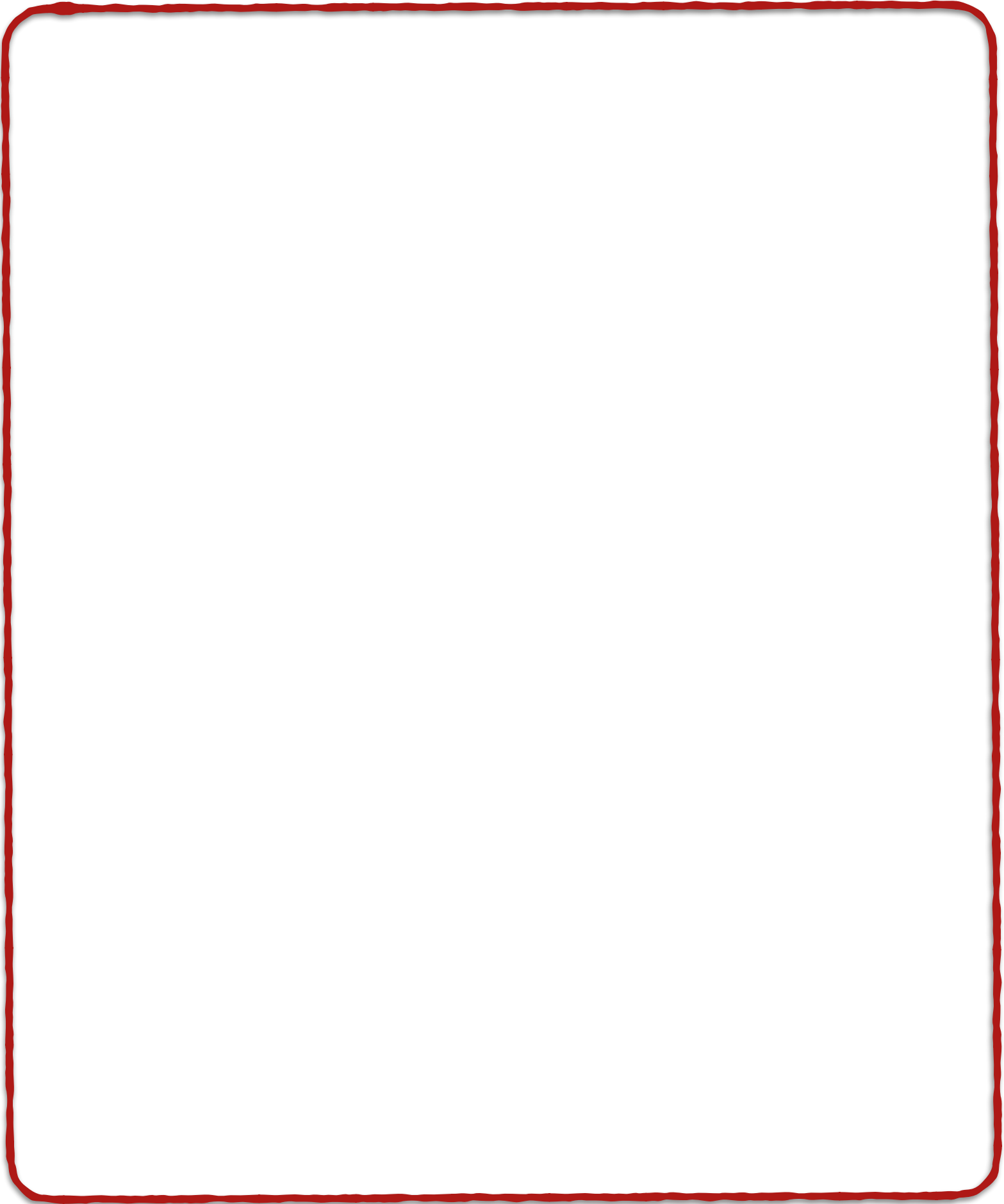
Date:

A large, empty rectangular area with rounded corners, outlined in a thick red border, intended for students to provide photos or drawings of their dissections.

My Dissection (more):

DAY 7

Page 2



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

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 sheets below. This is explained in [How To Do Links](#).

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](#)

Watch 45-60 minutes of Links you chose from this group.

Write 2 great facts from 3 of your favorite Links.

Link 1:

Link 2:

Link 3:



Above is a Link Lesson. These two pages are info about Link Lessons. We call it a link Lesson, but technically we ought to call it a Linked Video lesson, but we like "short" better. So this is your first "Link Lesson"!

If you are a Level 2 or 3 student, you should watch at least 45 minutes of videos. If you are a level 1 student, you can just do 30 minutes.

Here are the directions to remember.

1. In each session you must watch at least two Level 1 videos,

This is regardless of the level of student you are. (See reasoning for this below on the next page.)

2. Write the number of the lesson of Links in the box we provide for every link. (ie: 3a.1,3)

There are two lessons of General Links and one of Unit Links in the Global Topic Lesson Page. General Links cover any subject and Unit links cover the Global Topic. See below for the Link Lists where you record what links you watch. Notice that there are 3 Link List Recording Sheets. Each has extra spaces.

3. We will always tell you the Link List you are to get your link selection from for each lesson.

See that at the top of the third page below that it says Links–General 1–Lesson . The General 1 means that it is in the first lesson of "General Links". The symbol tells you that this is the first Link lesson in this printable for General 1 Links.

4. There is a separate recording page for each set of the 3 sets of links, General 1, General 2 and Unit Links.

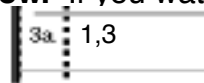
You will do many lessons on Links, but you will always come back to these pages to record those you have seen. (The Record pages are those below that have a LOT of boxes on them.)

5. Every Link has a number. Write this number in the Link Lesson box.

When you go into any of the lessons on Links, you will see that every one has a number with an "a" or "b" by it. 1a, 1b, 2a, 2b, 3a, 3b, etc. You write the Link Lesson number that you viewed the link in.

For instance, this is Lesson #1 for links (see this red box > Links–General 1–Lesson . This means you will write a "1" by any links you watched fo this lesson. Say you watched 3a. You would put a number 1 behind the number in the box.

6. You are allowed to watch Links only twice for "credit" now. If you watched 3a for the Link Lesson 3 also, your first Link list look like this 3a. 1,3. Like this>



7. Whenever you watch anything two times, lightly circle the numbers with a pencil.

8. WRITE YOUR NUMBERS SMALL. AS THE YEARS GO BY, YOU WILL AGAIN REVIST THESE LINKS. YOU WILL NEED TO BE ABLE TO WRITE AT LEAST 6 NUMBERS IN THE BOX BY THE LINK NUMBER.

9. Put a zero in the boxes of the Links you watched for lesson 1-4 in this printable.

For instance, if you watched 6b in the 4th Fluid Dynamics lesson, you would write a 0 behind it: 6b. 0 . *You watched 8 Links in the first 4 lessons . Put the 8 0's in the first Link Record List.

(Go to Day 2 page 3 to see an example of the links this is talking about.)

What Level Links Do I Watch? Everyone watches two Level 1 videos each Link Lesson. Why?

This is a little question with a BIG answer!!

You can choose the videos you want to watch. You can watch any level of links, no matter what level you are. But you must watch at least 2 Level 1 Videos every Link Lesson. This means the following.

Here's what we consider a really big deal. If you are an AP Biology or AP Chemistry student, we want you to watch L-1 videos, too. In fact you are required to watch at least 2 every session. Why would we do this. Several really good reasons.

1. We can all learn from most every Link we give you.

All of us at CWS learn from all 3 levels of Links.

2. It's important that you higher level students join hands with younger ones,

whether they be your own brothers and sisters or others at your school or maybe a school you are working with.

It's incredibly important that we all serve those younger than ourselves. Jesus said, "Let him who is greatest among you be servant of all."

Being able to love and reach out to this younger than yourself is critical...

3. Watching things young students watch and doing it regularly gives you shared times with youngers.

It could be your own siblings...it could be other kids. It helps you to understand how they think. It will also help you to learn more and more about the fantastic skill of communicating to people of all ages.

4. You learn about film and animation techniques that will more than likely help in many things as you grow older.

Because society has moved where everyone can be a producer of multi-media, we can say with nearly 100% certainty that you will be astonished with how God uses skills here to do significant things in your life in the future.

5. It opens the doors for ministry with kids of all ages.

And we at CWS believe that everyone should be involved with ministry to children in some capacity. Even Jesus was.

6. You will probably have children someday. This will help you be a better lover of your own children.

As you grow older and you have children of your own, you will be astonished how involved the whole process is to raise kids to adulthood. At this point in your life, you will send us chocolates and flowers thanking us for forcing you to be involved with "little's" of all ages.

7. It is soooo fun and such a blessing to be involved with loving kids.

It really is. We don't want you to miss out on one of the great joys of life.

With all that said, you can launch into your first Link Lesson. You'll love these lessons!

Level 1



General Links 1 Viewing Record Sheet

[General Links 1 Hyperlinks](#) Log into Parent user to access these.

| | | | | | |
|-----|-----|------|------|------|------|
| 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. |

Level 1



General Links 2 Viewing Record

[General Links 2 Hyperlinks](#) Log into Parent user to access these.

| | | | | | |
|-----|-----|------|------|------|------|
| 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. |

Level 1



Unit Links Viewing Record

[Unit Links Hyperlinks](#) Log into Parent user to access these.

| | | | | | |
|-----|-----|-----|------|-----|------|
| 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 2.3

| | | | | | |
|-----|------|------|------|-----|-----|
| 1a. | 1b. | 11a | 11b. | 21a | 21b |
| 2a. | 2b. | 12a | 12b. | 22a | 22b |
| 3a. | 3b. | 13a | 13b. | 23a | 23b |
| 4a. | 4b. | 14a | 14b. | 24a | 24b |
| 5a. | 5b. | 15a | 15b. | 25a | 25b |
| 6a. | 6b. | 16a | 16b. | 26a | 26b |
| 7a. | 7b. | 17a. | 17b. | 27a | 27b |
| 8a. | 8b. | 18a. | 18b. | 28a | 28b |
| 9a. | 9b. | 19a. | 19b. | 29a | 29b |
| 10a | 10b. | 20a | 20b. | 30a | 30b |

Level 3

| | | | | | |
|-----|-----|-----|-----|-----|-----|
| 1a. | 1b. | 5a. | 5b. | 9a. | 9b. |
| 2a. | 2b. | 6a. | 6b. | 10a | 10b |
| 3a. | 3b. | 7a. | 7b. | 11a | 11b |
| 4a. | 4b. | 8a. | 8b | 12a | 12b |

Today is Variety Experiment Day! So fun!

You have 3 experiments to do today. Look for them here: [Mini Experiments](#). Add a few comments below about your experiences with them. The wind bag can be purchased from the web location listed in the experiment. It is also in the experiment Pak for Mighty Feathers. You may substitute other experiments if you desire.

Build the paper rocket from the video. If you get the aerodynamics right, you will be astonished. It flies the length of a football field!

The World's Best Paper Plane & Rocket— —AMAZING!

Wind Bag and Paper



The Concorde's Delta Wings

Ball, TP & Blowers



Read a Science book or magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

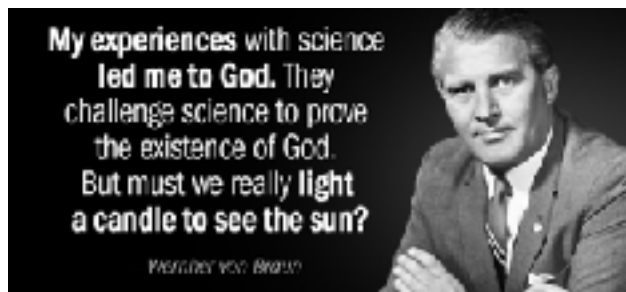
- Short essay
- Key words
- Mind map or drawing, etc.

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER**. By **J. Bengtson** p.1-35. NOTE: We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).*

Title

Pages read

A large, empty rectangular area with a green border, intended for recording the title and pages read.



Werner Von Braun was in charge of NASA for 10 years. He is responsible for the Apollo Moon Rockets—the HUGE Saturn 5—and landed the first men on the moon with Apollo 11 on July 20, 1969.

1. Build a Smash Book! 2 hours+

Your goal for the next two days is to build a **Smash Book on Fluid Dynamics**.

You can keep it broad, center in on any topics in the **Core Videos**, or add anything else you can find dealing with **Fluid Dynamics**.

The link below gives the official description of a **Smash Book**, but here's our take on it.



The Rebel Scrapbook

A Smash Book is a scrapbook on steroids. You can basically do whatever you want and smash it all together.

You can add parts of cut-out newspaper articles, magazines etc. Then add every kind of yarn, pipe cleaners, stars, toothpicks and glitter—basically anything that you'd use in a scrapbook. But there are several big differences.

1. YOU CAN ADD ANYTHING YOU WANT. IT JUST HAS TO SMASH TOGETHER.

You could add feathers, claws, owl pellet bones, etc. You could even add a nest if you wanted! But you'd have to do quite a job squeezing it! (Elephant step on it?) Probably, realistically, you'd want to add some of the straw and small sticks of a nest in it...making it more smashable. Smash-inees is key!

2. YOU CAN LET THINGS HANG OUT OF THE PAGES

Tidiness isn't a rule with smashbooks. Things can go outside the pages. Things can hang out. Papers can shoot past the book edges.

3. YOU CAN USE ANY BOOK YOU WANT TO.

You can get an old snazzy book, photo album, composition book or encyclopedia and begin popping all kinds of things on the pages. You can rip out all the pages but 20 and go crazy decorating and adding cool info onto these.

4. SUBJECTS CAN GO ANY ORDER YOU WANT AND THEY CAN BE TOTALLY MIXED TOGETHER.

Tight organization is NOT necessary. You can throw in 2 pages on nests then 10 on bird bills, then come back to 3 on nests and then off to birds wings. You can even come back to nests 10 more times as you explore new things.

The fun of this is that you can concentrate on making everything rich and fun and creative...and not spend all your time carefully organizing and reorganizing things.



Visit this website for ideas!

[Smashbooking](#)

Have fun!

Over the next 2 days, you will research Daniel Bernoulli and do experiments related to the Fluid Dynamics law, Bernoulli's Principle. These experiments are packed with fun. Some are simple, others are much more involved. They are found here:

[Bernoulli's Bonus Experiments](#).

DO ALSO: Links—[General Links 1](#) –Lesson #1b (30 minutes)

Do 30 minutes of [General Links 1](#) as part of your first Link Lesson. (Choose which ones to watch.) The rest of lesson 1 was the Links we assigned to you already. Record the Links you watch on the correct Link List Record (General Links #1 Viewing Record— which is a few sheets behind this one.) **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](#)



Daniel Bernoulli Info

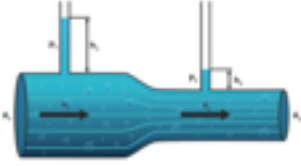
List 10 very interesting facts about the life of Daniel Bernoulli You can look at the Experiment Journal pages ([Bernoulli's Bonus Experiments](#)) or use other sources.

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

Visit these websites for ideas!

[Famous Scientists: Daniel Bernoulli](#)

[Famous People: Daniel Bernoulli](#)



Bernoulli's principle has a surprising amount of application in our lives. We'll look some of these applications here.

Facts About Bernoulli's Principle

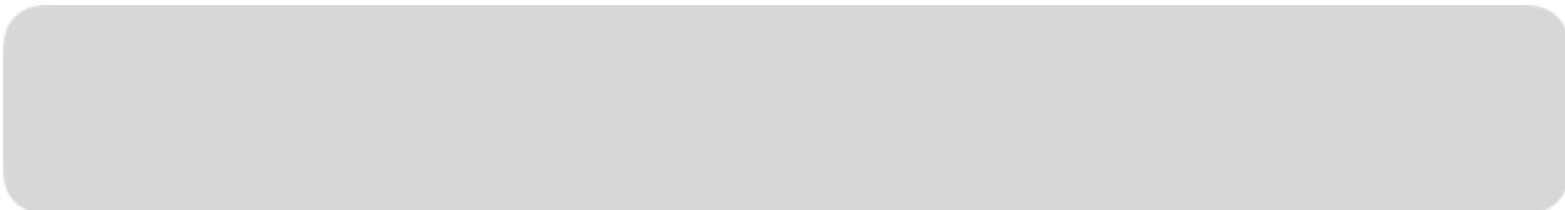
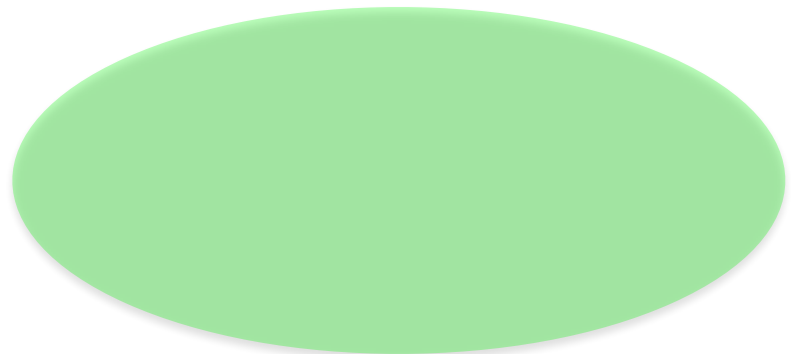
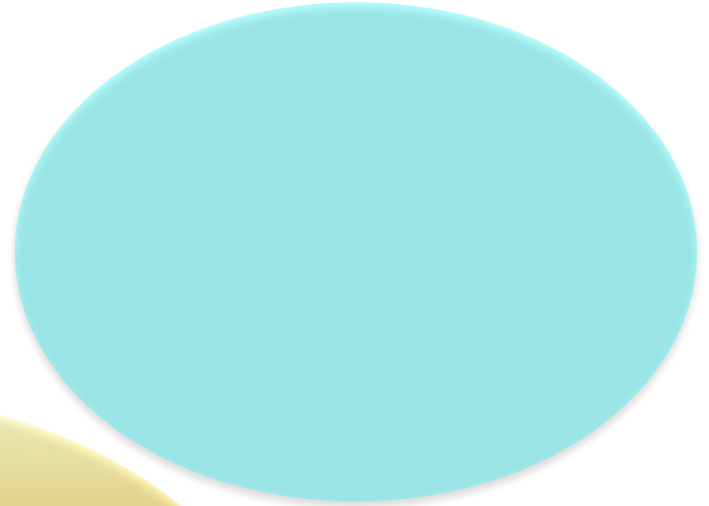
List 10 interesting facts about the Bernoulli's Principle and its applications from these Experiment Journal pages – [Bernoulli's Bonus Experiments](#) – or from other sources such as the videos mentioned in the Journal pages.

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

Visit this webpage from NASA for ideas!

[NASA and Bernoulli's Principle](#)

List your favorite Bernoulli's Principle's Experiments that you did from the dozens listed on the Journal pages: *Bernoulli's Bonus Experiments*. Describe them and tell your results. Use the back of this page if you need to.



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

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 sheets below. This is explained in [How To Do Links](#).

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](#)

Watch 45-60 minutes of Links you chose from this group.

Write 2 great facts from 3 of your favorite Links.

Link 1:

Link 2:



Link 3:



Read a Science book or magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER. By J. Benge p.1-35. NOTE: We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).*

Title

Pages read

A large, empty rectangular area with a green border, intended for students to write the title of the book and the number of pages read.



The MASSIVE Saturn 5 rocket carried Neil Armstrong to the moon in Apollo 11 in June of 1969.

Warner Von Braun was responsible for its construction.



1. Gold Dig 1 (15-90 minutes)



An alternative to doing 2 or more of Gold Dig lessons is to watch "Absolute Genius" Videos found in [General Links 1 Hyperlinks](#). Be logged into Parent User.

Title:

Gold Dig1: Bones

The Gold Dig **"MAJOR TOPIC"** for Fluid Dynamics is "Bones". This is the first of 5 Gold Digs seen on the **LESSON PAGE**. It's a wild and exciting journey into hundreds of amazing ways God has designed our bones. (Scroll down on the Lesson page until you see GD:Bones 1)

DIRECTIONS:

Very Young Students: Read about 3 pages of the Gold Dig to them for 15 minutes. Explain it to them as you are reading. Begin where you leave off each day you do it. Review the previous day by asking questions. You will only complete 1 or 2 Gold Digs during these lessons. SEE NOTE LEFT TOP about "Absolute Genius" videos.

Young Students: Read the material for 15-30 minutes (or have it read to you) and draw the 2 best concepts here and 2 more on the back, (or on another sheet), for 4 pictures total. Do not take the quiz unless you feel you are able to. You will only finish 1 or 2 Gold Digs in the 5 Gold Dig lessons.

Older students: Read First Timers Gold Digs and take the quizzes at the bottom. Title and draw 2 pictures of the most interesting concepts found in this Gold Dig in the boxes on the left. NOTE: You must finish the entire quiz in one sitting. A way to do this is read the Gold Dig one day, then take the quiz the next day.

Biology students: Repeat Directions for Older Students just above this. NOTE: You must finish the entire quiz in one sitting. A way to do this is read the Gold Dig one day, then take the quiz the next day.

Title:

Today is a “General Links 2” Lesson where you pick what Links to watch.

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 sheets below. This is explained in [How To Do Links](#).

IMPORTANT: The General Links 2 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 2 Hyperlinks](#)

Watch 45-60 minutes of Links you chose from this group. Write 2 great facts from 3 of your favorite Links.

Link1:

Link 2:



Link 3:

Today is a Reinforcement day. Be creative. [Reinforcement Page](#)

The purpose of the reinforcement lessons is to reinforce the Global Topic that is being studied.

For instance, you could do a **5-minute puppet show** with emoji faces drawn on milk cartons. Or you could **act out** with a friend or sibling being the DNA of different animals talking about their tasks. You could be more serious and do an **intense investigation** about a topic, or design a **multimedia project** showing something specific taught.

You could do a **3-d Flat Montage** about a subject not listed in the Experiment pages, or **teach a little kid's lesson** about some of the things you are learning. **Making a game or running a game** on the facts is also a-ok! Anything is great....just review or expand on a lesson.

Give a summary of what you do below in the boxes. Add pictures on the back of the sheet. You might want to put this in a sheet protector. This page is loaded with ideas: [Reinforcement Page](#)

See [Reinforcement Page](#) for more ideas.

Title

Date:

“Fluid Dynamics Scavenger Hunts” are meant to be fun and challenging. These can be done individually or as teams of two or more. Parents can chose separate teams or you can make it a family affair! You can have unlimited time or be racing against the clock. A topic or topics is selected and each race can go to 10 or 20 items.

We’ve assigned several topics that might be easy and fun for you. Look for the ones by the apple 🍏 next to them below. Look over the list of “Races” and then read the next gray box and we’ll explain how to do this.

OPTIONAL: For younger students, this activity may be done with a sibling or a parent.
NOTE: These may be done many times with many different subjects.

The Fluid Dynamics Scavenger Hunt Races!

1. Names of Species of Penguins and Pictures of Them 🍏
2. Box Fish Facts
3. Applied Bernoulli’s Principle Examples (new ones)
4. New Facts about Orville and Wilber Wright
5. Very Different Flight Patterns of Birds
6. Alula Feathers’ fascinating info
7. Facts about Hummingbirds 🍏
8. Dolphin Swimming fascinating facts
9. Facts about Penguins 🍏
10. Facts about Dolphins 🍏
11. Nose Turbinates’ fascinating info
12. Wild Truths About Fluid Dynamics
13. Fish Swimming Interestables (fascinating facts) 🍏
14. Bird Flight Interestables (fascinating facts) 🍏



How To Do It:

On the pages following you will see a couple sheets to use.

You are assigned a topic or topics. You will then begin a mad scramble with your team to find 10 or 20 examples of what your teacher or parent assigns from computer searches.

PICTURES AND WRITTEN:

Most of the Races involve pasting screen shots from websites or videos onto the sheets below or sheets of your own making. There is also some writing that you need to add—either the name of something or its function or some details about it. **NOTE: YOU MAY ALSO DRAW THE PICTURES.**

NEVER WRITTEN ONLY: ALWAYS HAVE IMAGES

No topics can have writing only. Even technical topics like “Bird Eye Interestables” ought to have some great screen shots as well as info.

When you are done, print your sheets and put them into your CrossWired Science notebook.

YOU NEED:

You need at least one computer per team. You need to make a sheet of your own on a document like Pages for Macs or whatever you like to use for PC’s. The document you chose must have the ability to shrink and expand images. (The ones below can be used if you first shrink your images and put them on one sheet, print it and cut your images out and glue or tape them on the sheets below.)

PRINT THEM OUT. KEEP THE FUN FOREVER.

You may opt to crowd all your color screen shots on one document and print them on one sheet. Then you can cut them out and tape them onto a Race Sheet. You could then put your paper into a sheet protector and put them in your CWS notebook for an inexpensive keep-forever treasure.

HOW TO DO SCREEN SHOTS OF SINGLE ITEMS ON A PAGE

For a mac:Hold COMMAND SHIFT 4 and drag to give custom screen shots. PC users may have to do the screen shot and crop the image.

GENERAL USE SHEET

We included a blank sheet at the end of this activity. Use it if it will work for you

IMPORTANT PARENT/TEACHER NOTE:

By increasing the search number to 20 items, it is easier to get to deeper critical thinking and real hunting. Ten “finds” is often easy; but 20 great finds of any one topic make diligent searching necessary.

Self-Paced Students

If you are not part of a class but are on your own, you must do 3 hunts. Chose three of the “Appled” ones on the first page of this activity. Do this many of the following...complete with screen shots. You may do other apples ones if you prefer. (Or other ones if you desire)

2. Box Fish Facts 🍏 (10 examples)
8. Dolphin Swimming Fascinating Info 🍏 (20 examples)
13. Fish Swimming Interestables 🍏(fascinating facts) (10 examples)

SH Races Topic

Names:

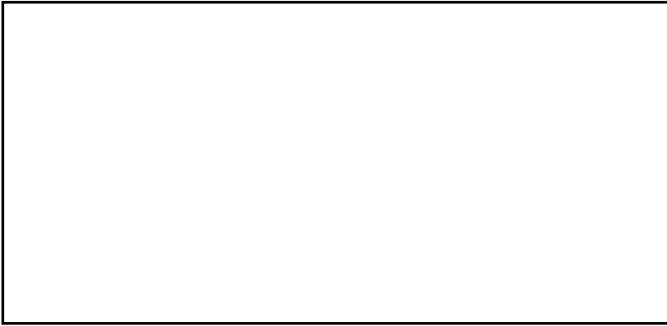
Date:

Screen shots or drawings

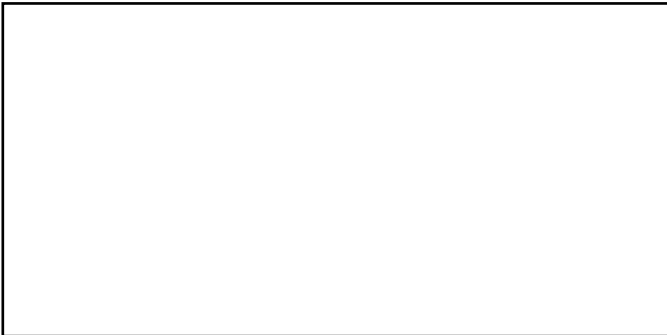
1.



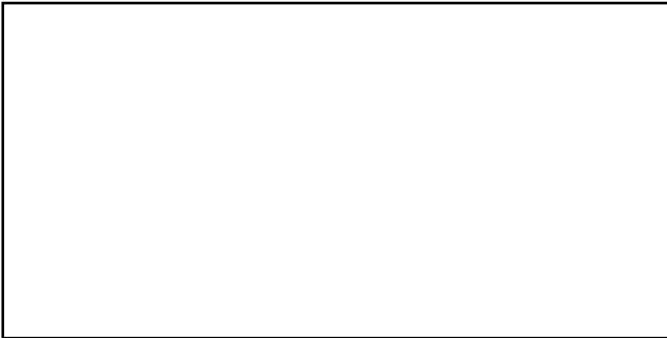
2.




3.



4.



5.



SH Races Topic

Names:

Date:

Screen shots or drawings

6.




7.



8.



9.



10

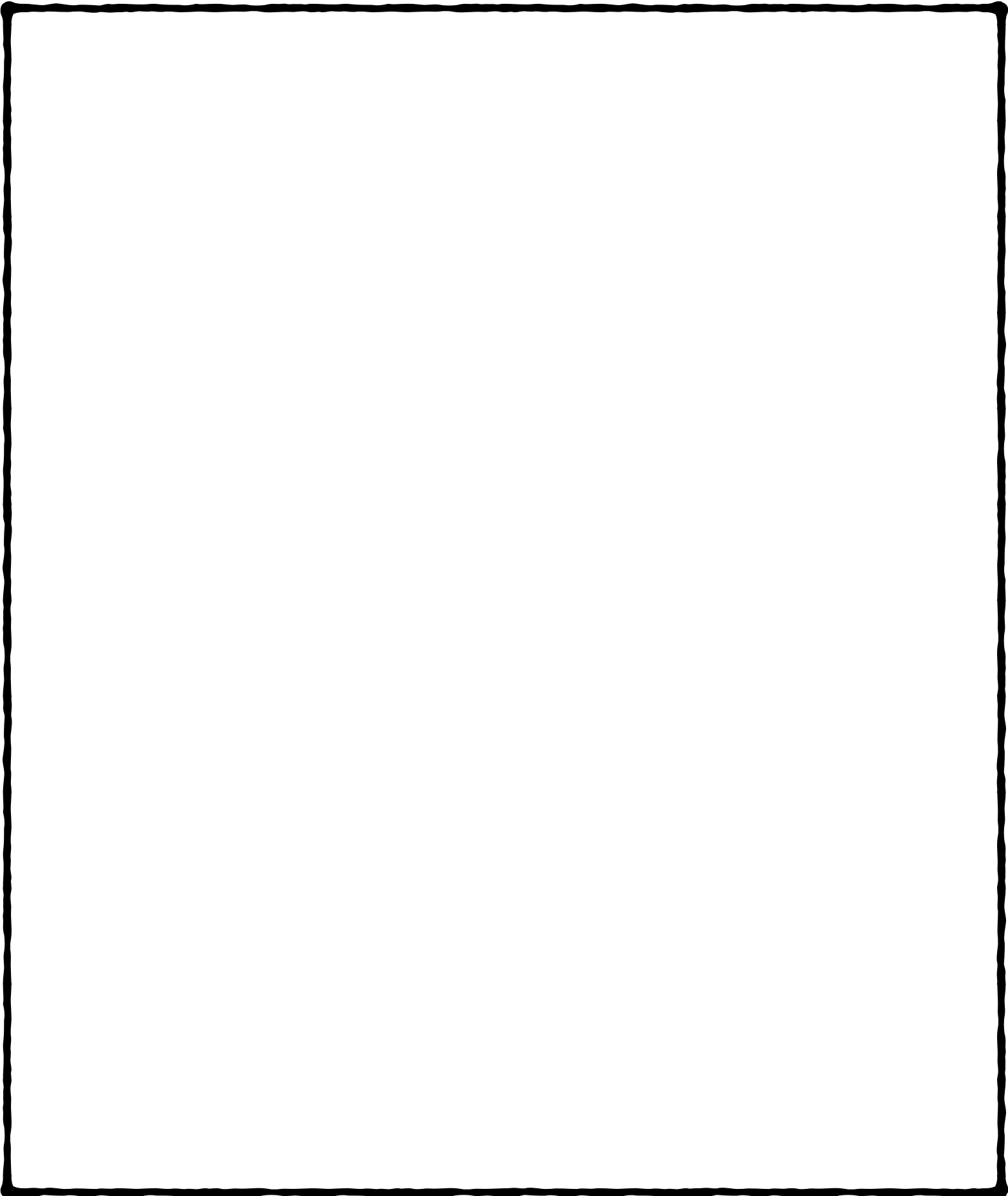


SH Races Topic

Names:

Date:

Use this sheet if you want to vary your image sizes according to the size of your screen shots.





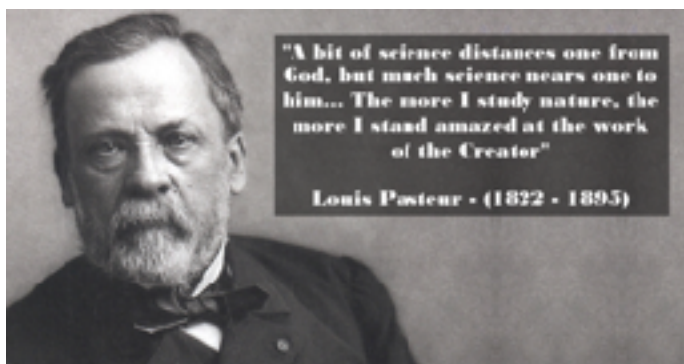
Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

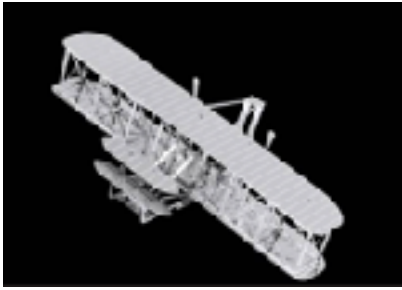
- Short essay
- Key words
- Mind map or drawing, etc.

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER.* By **J. Bengtson** p.1-35. **NOTE:** We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).

Title

Pages read





1. Take the First Timers Quiz 20 minutes

Watch the 2 Fluid Dynamics (FD) Core Videos for today twice:
[FD and Bernoulli](#)
[Wrights and Foils.](#)

After the second time, **take the quiz at the First Timer's Level.** Try to take the quiz without looking back in the video. It is ok if you do, but first see how much you remember simply by watching the Core Videos two times more than before.

2. Read and Record a Short Devotional 10 minutes

Read a [CWS On-Site Devotional](#) and apply to your life. (You chose which one)

Crosswired Science has a number of Devotionals here:

[CWS On-Site Devotionals](#)

- a. Choose and read one and write the title below.
- b. Write down 2 ways that it applies to your life on the lines below.

3. Fluid Dynamics Acrostic 1 (20 minutes)

The Rules:

You've learned a lot about Fluid Dynamics. Here's a chance to show how much you know!



Take every letter below and find an important word or phrase that begins with it.

“Easies” aren't allowed. What are easies?

An “easy” is any easy word to start your answer. An example is “I” for “I like dolphin fins.” It is not ok to start a phrase with an easy word like this. Rather find great words for each letter below. An example of a great word phrase for the letter “N” below is, “Nose Turbinates”.

Look for exciting or interesting words or phrases for each letter.

Can you get them all?

F

L

U

I

D

D

Y

N

A

M

I

C

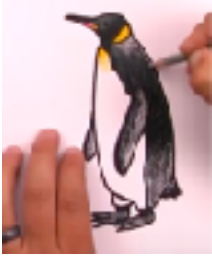
S



2. Drawing: Emperor Penguin

(15-30 minutes)

Pick one, click on it, and follow the directions to draw it.



1. Colored Penguin



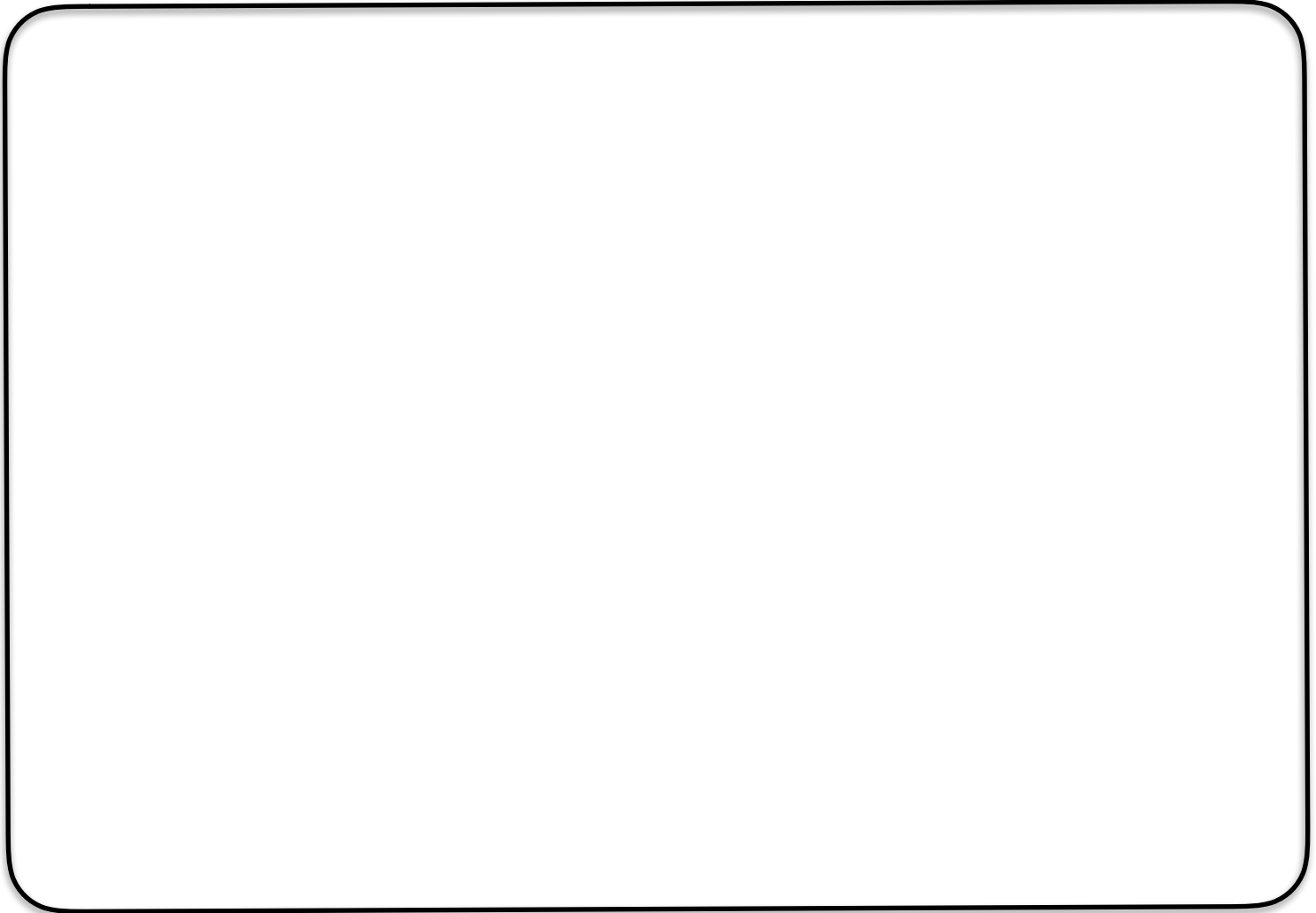
2. Dad with Baby



3. Cartoon Penguin



4. Detailed Penguins





1. Take the First Timers Quiz 20 minutes

Watch the 2 Fluid Dynamics (FD) Core Videos for today twice and take the First Timer's quiz.

- [Hummers & Dolphins](#)
- [Boxfish and Penguins](#)

2. Read and Record a Short Devotional 10 minutes

Read a [CWS On-Site Devotional](#) and apply it to your life.

Crosswired Science has a number of Devotionals here:

[CWS On-Site Devotionals](#)

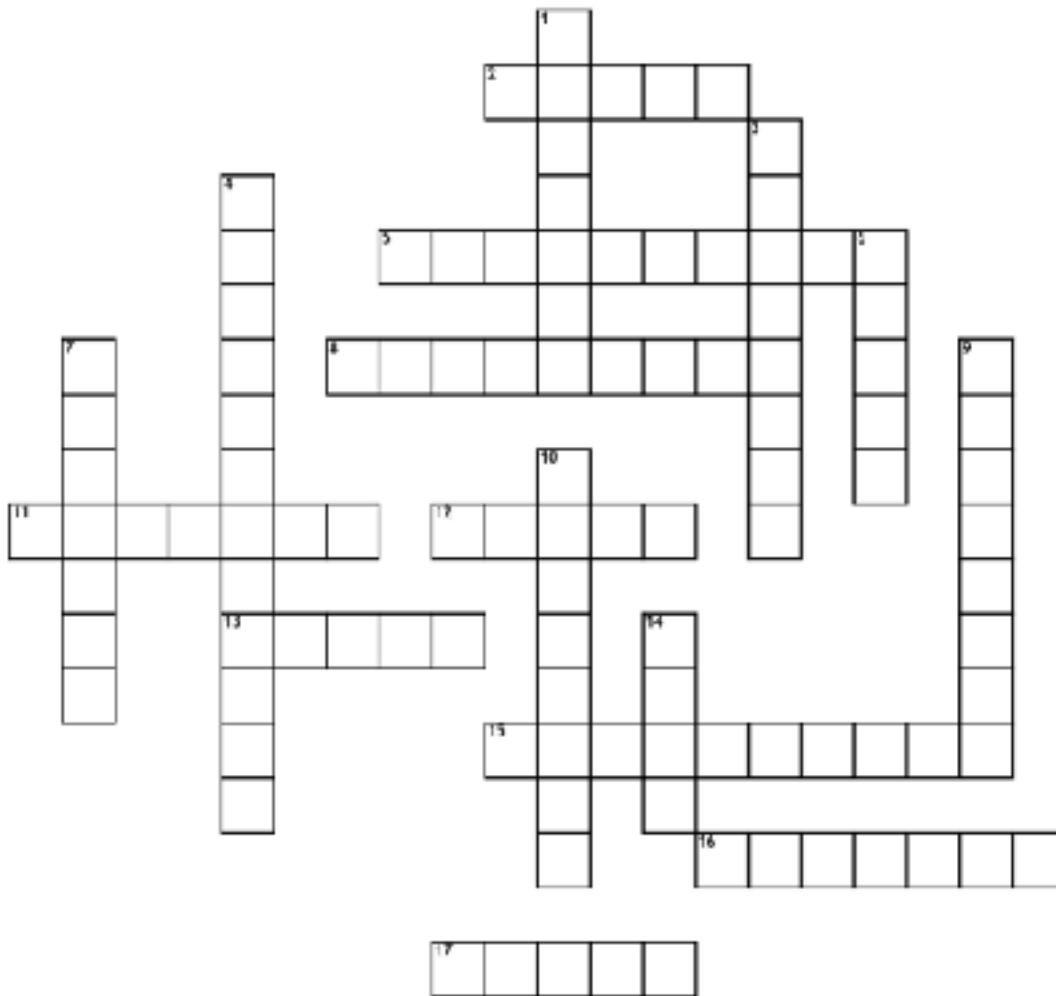
- Choose and read one and write the title below.
- Write down 2 ways that it applies to your life on the lines below.

Give this Crossword Puzzle a try.

(For the answers, they are in the CrosswiredScience.com "Parent Section".

NOTE: The questions are repeated on the next page in an easier-to-read format.

Fluid Dynamics FT #1



These questions are on the next page a little larger.

Across

2. The Wright Brothers used two big propellers to power their plane. They were _____ feet across.
5. H_____ are used to keep boats above the water.
8. The Wright's 1903 flight at _____, N. Carolina was no easy task.
11. Where it gets narrower towards the top of the carburetor is called the v_____.
12. This is something we do and dogs do to smell better. It is a DNA brain-wired instinct.
13. These are the parts of a feather that you can zip together. These are big enough to see.
15. This person was a Swiss biologist, mathematician and physicist. His B_____ principle says that an increase in a fluid's speed results in a decrease in the fluid's pressure.
16. All feathers are made of k_____ protein.
17. This part of a feather is the rachis. This is the common name for the clear, hard, straw-like part of a feather.

Down

1. After showing their plane in Europe, the Wrights flew around the Statue of _____.
3. The seal mentioned in the core videos does fish tracking by turning its w_____ perpendicular to the water-turbulence trail of a fish.
4. Penguins make these to create a bubble tunnel to swim faster through.
6. This fish has a top fin (the dorsal fin) that has fibers in it that stiffen the fin. It works like the ropes that stiffen a ship's mast.
7. _____ penguins have over 90,000 feathers.
9. The male Anna's hummingbird has an unusual mating ritual using sound it makes with its _____.
10. There are many estimates of how high a dolphin can jump. Many people think they can reach _____ feet.
14. There are feathers on the front edge of bird wing. These can stick out help them to help birds l_____ better.

These questions are the same as on the previous page only larger.

Across

2. The Wright Brothers used two big propellers to power their plane. They were _____ feet across.
5. H_____ are used to keep boats above the water.
8. The Wright's 1903 flight at _____, N. Carolina was no easy task.
11. Where it gets narrower towards the top of the carburetor is called the v_____.
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1. Take the First Timers Quiz 20 minutes
Watch the 2 Fluid Dynamics (FD) Core Videos for today twice and take the First Timer's quiz.
[Nose Aerodynamics](#)
[Dogs Slobs & Cats](#)

2. Read and Record a Short Devotional 10 minutes

Read a [CWS On-Site Devotional](#) and Apply It
Crosswired Science has a number of Devotionals here:
[CWS On-Site Devotionals](#)

- a. Choose and read it and write the title below.
- b. Write down 2 ways that it applies to your life on the lines below.

3. Drawing: Tiger (15 m)

DAY 24

p.2

Pick one, click on it, and follow the directions to draw it.



1. Cartoon Tiger



2. Standing Tiger



3. Sitting Tiger



4. Pencil Tiger

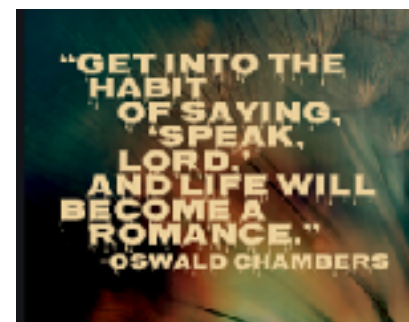
A large, empty rounded rectangular box intended for the student to draw their chosen tiger.

**“In the beginning was the Word, and the Word was with God,
and the Word was God. He was in the beginning with God
All things came into being through Him,
and apart from Him nothing came into being that has come into being.”**

—John 1:1-3

Jesus Christ is the same One through whom the Universe was created.
He is before all things and “*in Him all things hold together.*”

He wants to guide you into all He has for you to do and to experience. Your part involves seeking Him every new day, walking with Him, loving and forgiving others, keeping all areas of your life surrendered to Him and trusting Him in new things and in difficulties.





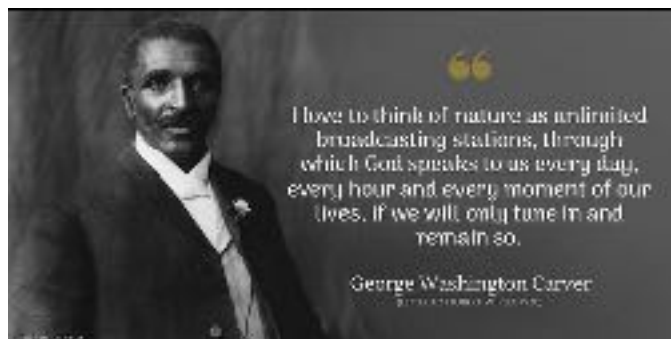
Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER.* By **J. Benge** p.1-35. **NOTE:** We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).

Title

Pages read



1. Gold Dig 2 (15-90 minutes)



Gold Dig 2: Bones

The Gold Dig **"MAJOR TOPIC"** for Fluid Dynamics is "Bones". This is the first of 5 Gold Digs seen on the **LESSON PAGE**. It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

DIRECTIONS:

Very Young Students: Read about 3 pages of the Gold Dig to them for 15 minutes. Explain it to them as you are reading. Begin where you left off each day you do it. You will only complete 1 or 2 Gold Digs during these lessons. SEE NOTE LEFT TOP about "Absolute Genius" videos.

Young Students: Read the material for 15-30 minutes (or have it read to you) and draw the 2 best concepts here and 2 more on the back, (or on another sheet), for 4 pictures total. Do not take the quiz unless you feel you are able to. You will only finish 1 or 2 Gold Digs in the 5 Gold Dig lessons.

Older students: Read First Timers Gold Digs and take the quizzes at the bottom. Title and draw 2 pictures of the most interesting concepts found in this Gold Dig in the boxes on the left. NOTE: You must finish the entire quiz in one sitting. A way to do this is read the Gold Dig 1 day then take the quiz the next.

Biology students: Repeat Directions for Older Students just above this. NOTE: You must finish the entire quiz in one sitting. A way to do this is read the Gold Dig 1 day, then take the quiz the next.

Title:

Title:

Today is a “General Links 2” Lesson where you pick what Links to watch.

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 sheets below. This is explained in [How To Do Links](#).

IMPORTANT: The General Links 2 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 2 Hyperlinks](#)

Watch 45-60 minutes of Links you chose from this group.

Write 2 great facts from 3 of your favorite Links.

Link1:

Link 2:



Link 3:

***It's time to do some Research!***

Learn more about anything you have learned in Fluid Dynamics lessons. You can learn more about dolphins hydrodynamics, boxfish, jet wings, plane control systems, how birds fly, how fish swim, how dragonflies or other insects fly or anything else you want to study.

Subjects to study may be found here under the letter "C" **RESEARCH TOPICS** .

You have 8 U-Choose lessons in this Global Topic. If research is a love of yours, there are many opportunities to continue it in the U-Choose lessons or the Big Project, the 4-week project at the end of these notebook pages.

Write new discoveries in the boxes below and add pictures.

Title**Date:**

A large, empty rectangular area with a brown border, intended for students to write their research findings and add pictures.

Research #1 (continued)



Title

Date:

A large, empty rectangular area with a thick brown border, intended for writing the research details.

Today is a dissection day. So fascinating!

You have four different dissections which are detailed in the [Experiment lessons](#): Fish, Starfish, Shark and Squid. Choose any two. Where to get the supplies and how to do the dissections are all in the Experiment lessons.



A fun idea is to bring a fresh fish home from the market and dissect it, or buy two types and compare them. You can even cook it and eat your way through the dissection!

The box on this page and the next is for you to put pictures in that you have taken or to draw different parts of what you discover and to label these parts. Do a nice job, then come back and do another dissection this year or in another year and add to the additional details you discover.

Our multi-year goal is to make you an Expert Anatomist of the animals you chose.

My Dissection:

Date:

A large, empty rectangular box with a thick red border, intended for students to draw or photograph their dissections.

My Dissection:



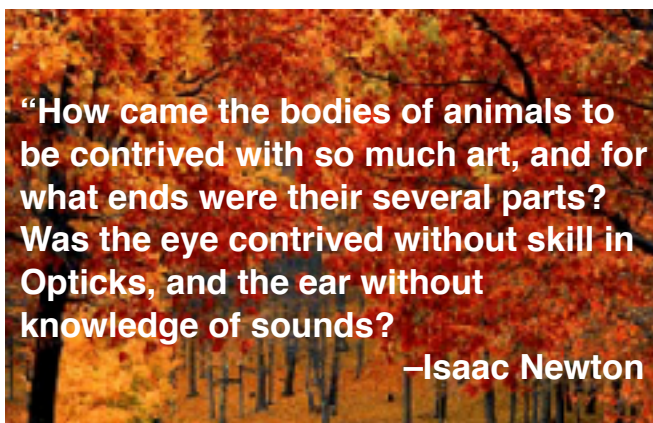
Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER**. By **J. Bengt** p.1-35. NOTE: We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).*

Title

Pages read



“How came the bodies of animals to be contrived with so much art, and for what ends were their several parts? Was the eye contrived without skill in Opticks, and the ear without knowledge of sounds?”

—Isaac Newton

1. Gold Digs 3 (15-90 minutes)



Directions:

See previous directions in Gold Digs 1 or 2. (See Day 26)

Picture Title:

A large, empty rounded rectangular box with a thick black border, intended for drawing or writing.

Picture Title:

A large, empty rounded rectangular box with a thick black border, intended for drawing or writing.

Today is a “General Links 2” Lesson where you pick what Links to watch.

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.

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Watch 45-60 minutes of Links you chose from this group.

Write 2 great facts from 3 of your favorite Links.

Link1:

Link 2:



Link 3:

Today is a Reinforcement day. Be creative. [Reinforcement Page](#)

The purpose of the reinforcement lessons is to reinforce the Global Topic that is being studied.

For instance, you could do a **5-minute puppet show** with emoji faces drawn on milk cartons. Or you could **act out** with a friend or sibling being the DNA of different animals talking about their tasks. You could be more serious and do an **intense investigation** about a topic, or design a **multimedia project** showing something specific taught.

You could do a **3-d Flat Montage** about a subject not listed in the Experiment pages , or **teach a little kid's lesson** about some of the things you are learning. **Making a game or running a game** on the facts is also a-ok! Anything is great...just review or expand on a lesson.

Give a summary of what you did below. Add pictures on the back and put this in a sheet protector.

See [Reinforcement Page](#) for many more ideas.

Title

Date:

Large empty rounded rectangular box for writing the summary and adding pictures.

1. Gold Digs 4 (15-90 minutes)



Directions:

See previous directions in Gold Digs 1 or 2. (See Day 26)

Picture Title:

Picture Title:



Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!


- Short essay
- Key words
- Mind map or drawing, etc.

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER**. By J. Benge p.1-35. NOTE: We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).*

Title

Pages read

Large empty rounded rectangular box for recording reading information.



I always pray for God's guidance in my life and he always provides it. He opens the right doors he shuts the right doors. And I have tremendous faith in him. He just guided my career in an amazing way.

- Benjamin Carson -

1. Gold Digs 5 (15-90 minutes)



Directions:

See previous directions in Gold Digs 1 or 2. (See ie. Day 26)

Picture Title:

Picture Title:

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

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 sheets below. This is explained in [How To Do Links](#).

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Watch 45-60 minutes of Links. *These are **Unit Links** which relate to the Global Topic “Fluid Dynamics” or the Major Topic, “Bones”.* **Write 2 great facts from 3 of your favorite Links.**

Link1:



Link 2:

Link 3:

***It's time to do some Research!***

Learn more about anything you have learned in Fluid Dynamics lessons. You can learn more about dolphins hydrodynamics, boxfish, jet wings, plane control systems, how birds fly, how fish swim, how dragonflies or other insects fly or anything else you want to study.

Subjects to study may be found here under the letter "C" **RESEARCH TOPICS** .

You have 8 U-Choose lessons in this Global Topic. If research is a love of yours, there are many opportunities to continue it in the U-Choose lessons or the Big Project, the 4-week project at the end of these notebook pages.

Write new discoveries in the boxes below and add pictures.

Title**Date:**

A large, empty rectangular area with a brown border, intended for students to write their research findings and add pictures.

Research #2 (continued)



Title

Date:

A large, empty rectangular area with a brown border, intended for writing the research title and date.

3. Fluid Dynamics Acrostic #2 (20-30 minutes)

The Rules:

You've learned a lot about Fluid Dynamics. Here's a chance to show how much you know!



Take every letter below and find an important word or phrase that begins with it.

“Easies” aren't allowed. What are easies?

An “easy” is any easy word to start your answer. An example is “I” for “I like dolphin fins.” It is not ok to start a phrase with an easy word like this. Rather find great words for each letter below. An example of a great word phrase for the letter “N” below is, “Nose Turbinates”.

Look for exciting or interesting words or phrases for each letter.

Can you get them all?

H

Y

D

R

O

&

A

E

R

O

D

Y

N

A

MICS :)

5. Fluid Dynamics: Origami (60 minutes)

Have some fun making some Fluid Dynamics creatures! Make at least 2.

This video shows how Origami is being used to design science equipment: [ENGINEERING WITH ORIGAMI](#)



Seal



Black Seal



Penguin



Tiger



Tiger Face



Sea Turtle



3-D Penguin



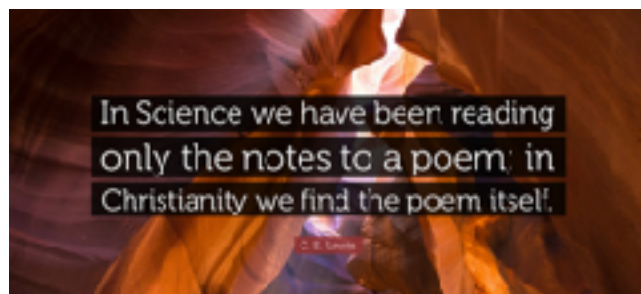
Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

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Title

Pages read



SUPPLIES

- Scissors
- Glue
- Tape
- Creative Stuff

We're watching you. No messing around!



PROCEDURE

An Overview

YOUR GOAL IS TO DO A STUDY ON BOTH THE FINS AND THE DIFFERENT METHODS GOD HAS GIVEN FISH TO MOVE THEMSELVES—SPECIFICALLY THE DIFFERENT MOVEMENTS OF THEIR BODY AND THEIR FINS. Today's activity is to build what we call a 3-d Flat Model. It is the "experiment" in Fluid Dynamics Experiment Lesson with the titled "Fish and Swim Patterns 3-D Flat Model". We summarize it here, but greater details are on the journal pages you go to if you click the icon. There you will also see many examples. You need to look at these.

You may build your 3-d flat model on the next 4 pages in this printable, or you may get heavier weight paper and build one page or many pages with this paper type. The montage should be gathered from your photos, magazines you cut out, or screen shots you gather and print from the web—or all three. This montage can take between 1 and 10 hours. You can make it 1 page or many, depending on the size of the images you chose to use. Very small images might use 1 page.

1. Getting Your Base. Your "base" is the 4 pages following or different weights of paper or?

You'll possibly be putting your creation into a sheet protector and putting it into your Sci-notebook. Your "base"—whether it be paper, heavy card stock paper, plastic, a thin sheet of wood, piece of metal, or plastic—has to fit into a sheet protector. You can keep your "base" rectangular (8"x11") or cut it into shapes that you tape into place in a sheet protector.

If you want larger images, you can have two or more 8"x11"bases and put them in sheet protectors back-to-back. (All this is if you opt to not use the following pages in this printable.)

2. Spiffing up Key Images

In this 3-d model, you will have many KEY images on the "base" that you will "spiff up."

3. Adding Picture Details

Make your images of anything or all things about birds. You can copy these, print these or freehand sketch, paint or draw these. You can even add additional pics you get from the web. For resizing an image, do this. (Command shift 4 on a Mac gives you a cutting screen-shot tool on the Mac. Pasting a screen shot on a "Pages" or "Google Docs" page gives you the ability to shrink/expand it. If your screen shot image has a strange "bar" attached to the bottom when you drag it into a Pages document on your computer, drag it from your desktop **onto the white border around your paper** (in Pages). **DON'T DROP IT IN THE MIDDLE OF THE PAGE.**

PROCEDURE

4. Snazzing It Up

Once you get all your desired images and they are the size you want and are printed and cut out, THE NEXT GOAL IS TO PASTE OR TAPE THEM INTO PLACE AND DECORATE AND SNAZZY UP YOUR CREATION AND MAKE EACH PART “3-d”. Do this by having many of the parts rising 1/16”-3/32” off the paper.

NOTE: If you chose to make a collage over the next 4 pages we provide in this printable, making it 3-d can be skipped. Unless you can put the “3-d” images into a sheet protector, it’ll be tough to keep them from being damaged.

If you chose to not make it 3-d, then still add many creative touches, like using varieties of paper, materials etc. You may also add drawn pictures that you make. Or glitter or a 1000 things

5. Snazzying Up The Details

You could make some “fun parts” of your 3-d Flat out of home-made shrink-dinks, others out of torn tissue paper or aluminum foil. Anything goes. You can use spaghetti pieces, thin wire, yarn, pipe cleaners or ribbon for lines and other decor.

Candy sprinkles, colored sugar, m&m’s, colored sand, cooked-cut-dried pasta can add fun if you glue them on... You can also add string, cut pen parts, hardened beads of hot glue, pipe cleaner pieces, puff balls, glitter paint, UV paint made from markers (see UV Experiment), etc.

6. Cleverly Raising the Images

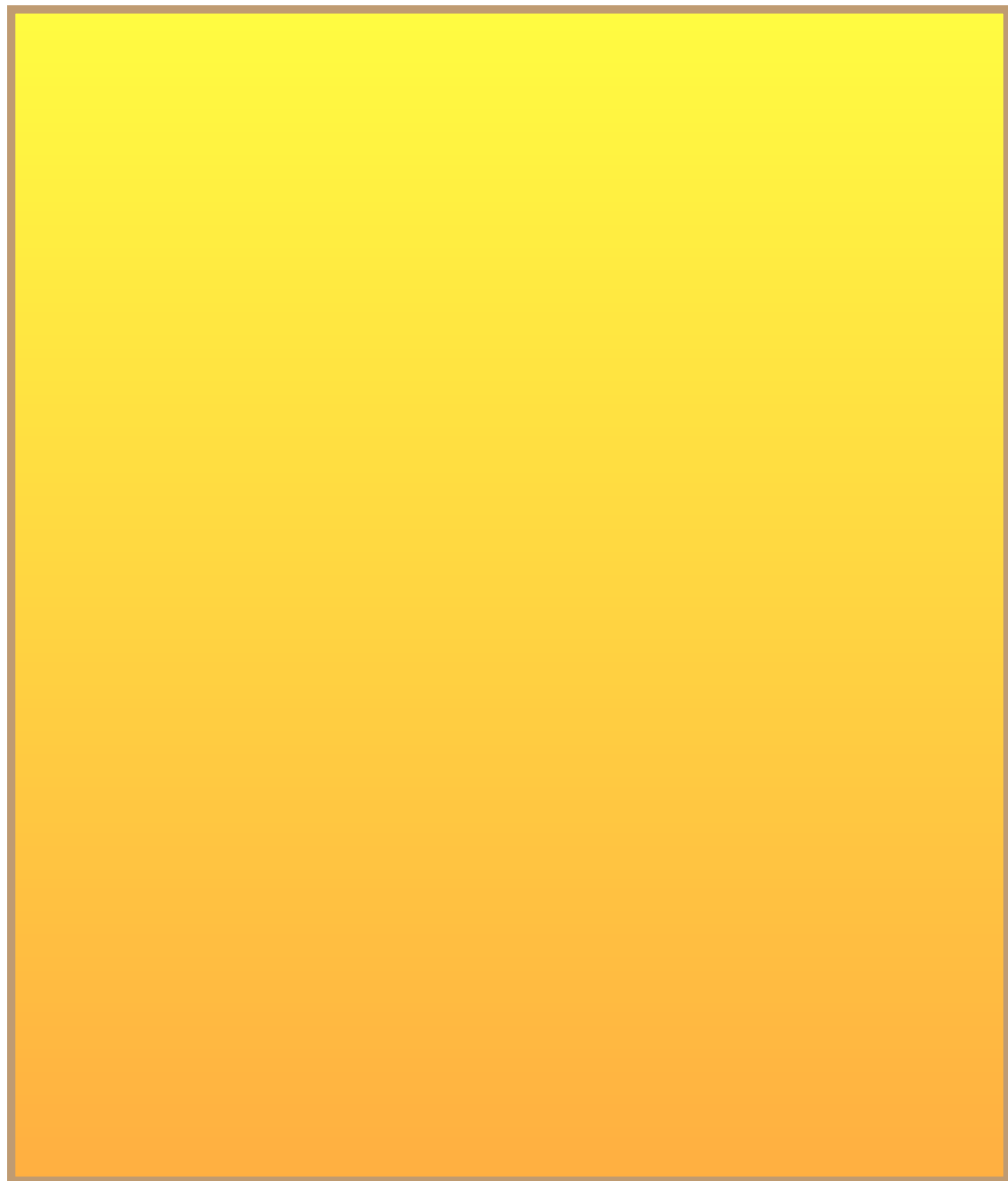
Lift some of your pics by putting a small piece of styrofoam from a hamburger carton from a fast food place behind it. You can use foam you can buy from a craft store.. You could cut 10 pieces of aluminum foil to raise it 1/8 inch or fold paper to make springy parts. You can add widows like an Advent calendar. You can make borders for images out of pipe cleaners, or cut aluminum foil etc.

7. Adding the Short Important Info

Cleverly add information by short key written bits. For example, you could say “Shape = bunch of grapes” and point to the lungs of a bird. You can print these, calligraphy them or draw them.



Be brave! Tell your group or family what your creation is all about!



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

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Watch 45-60 minutes of Links. *These are **Unit Links** which relate to the Global Topic “Fluid Dynamics” or the Major Topic, “Bones”.* **Write 2 great facts from 3 of your favorite Links.**

Link1:

Link 2:



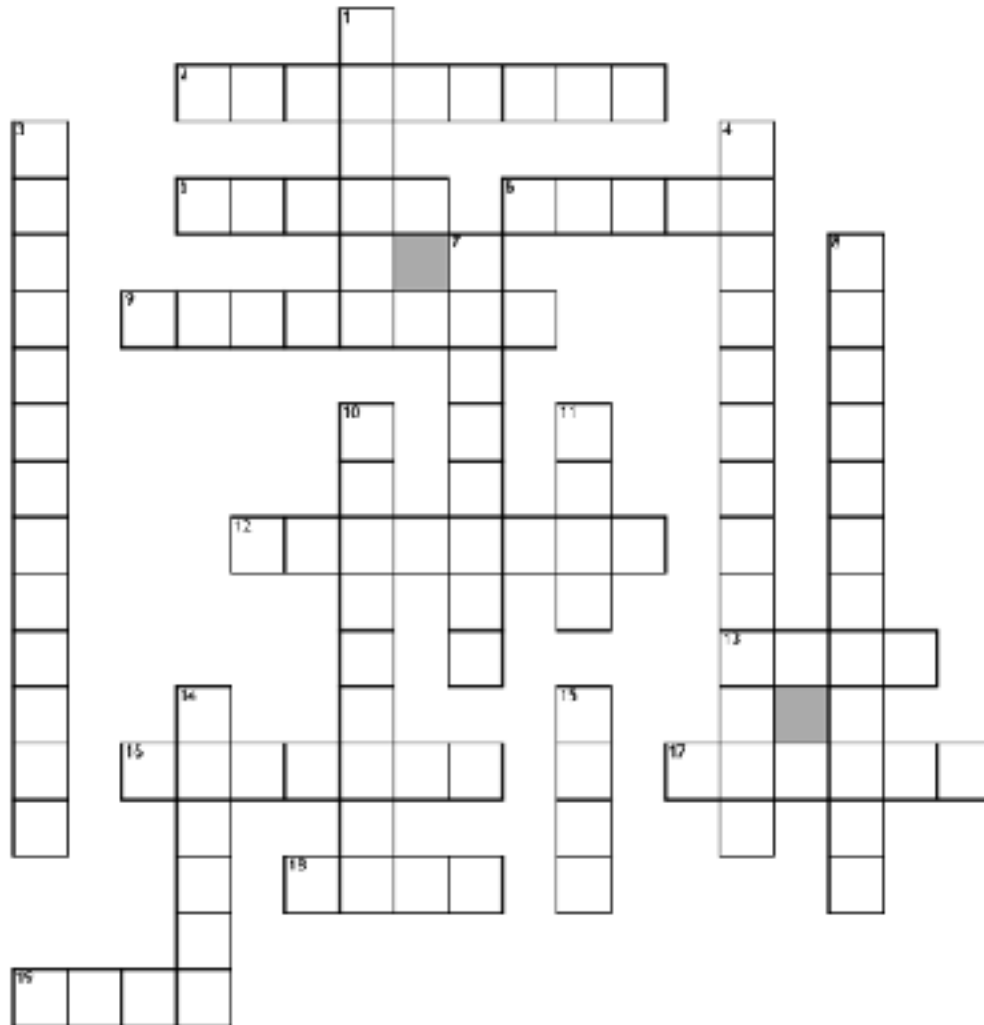
Link 3:

Give this Crossword Puzzle a try.

(For the answers, they are in the CrosswiredScience.com "Parent Section".

NOTE: The questions are repeated on the next page in an easier-to-read format.

Fluid Dynamics FT #2



These questions are on the next page only larger.

Across

2. This is the other name for whiskers like a seal's whiskers.
5. This animal's horn is made of the same protein that feathers are made of.
6. _____ feathers help birds to land elegantly.
9. Water sticks to the cat's tongue because of a _____.
12. Little air or water "tornadoes" are called what? Birds, boxfish and all swimmers and flyers have to deal with these.
13. This part of a cat's paw is made of the same substance as a feather is.
16. The p_____ feathers for flight are found at the end of wings.
17. _____ Bernoulli was born in 1740. He lived at the same time as George Washington.
18. The harbor _____ is perhaps the best fish tracker of the sea. It uses the stirring of the water the fish makes to track it.
19. The mother penguin places her egg on the male's _____.

Down

1. Scientists are studying hi-tech tongues, elephant _____ and octopus tentacles in hopes of making soft robots.
3. Studying how a turtle or a dolphin swims is part of the science of h_____.
4. Bernoulli was a Swiss m_____ that developed a principle that describes the speed air flowing and its pressure.
7. _____ can jump between 16 and 20 feet high.
8. A _____ is the study of air in motion. Engineers use this branch of science to build better planes.
10. Three t _____ bones in your nose help with guiding the air flow inside your nose.
11. S _____ dogs have well-developed nose turbinates which make long, hard treks much easier.
14. The _____ Brothers invented the first effective airplane in 1903.
15. The bottom of an airplane wing has _____ pressure than the top of the wing.

1. CWS Fun: Crossword Puzzle #2. (25 m)

These questions are the same as on the previous page only larger.

Across

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14. The _____ Brothers invented the first effective airplane in 1903.
15. The bottom of an airplane wing has _____ pressure than the top of the wing.



1. Take the Second Timers Quiz

Watch twice the two Fluid Dynamics (FD) Core Videos for today, [FD and Bernoulli](#) & [Wrights and Foils](#). After the second time, **take the quiz at the Second Timers Level**. Try to take the quiz without looking back in the video. It is ok if you do, but first see how much you remember simply by watching the Core Videos two more times.

(To get to the Second Timers Quiz: Have the website open. Click "Curriculum" in the top menu bar. Click "Second Timers. Click Fluid Dynamics. Find the lessons below. The quiz will be "Second Timers level.")

2. Watch an "Absolute Genius" link + 5 Great Facts 30 minutes

[General Links 1](#) has 6 Absolute Genius Videos in it. [General Links 2](#) has 3. You Tube has more. Watch one and put 5 great Facts on the next sheet. If one is not available to you, watch other biography videos that are 30 minutes long (or several on the same person that total 30 minutes,)

Write your fascinating facts on the sheet following.

3. Read and Record a Short Devotional 10 minutes

Read a [CWS On-Site Devotional](#) and Apply It

Crosswired Science has a number of Devotionals here: [CWS On-Site Devotionals](#)

- a. Choose and read it and write the title below.
- b. Write down 2 ways that it applies to your life on the lines below.

Devotional Title:



Scientist:

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[General Links 1 Hyperlinks](#) [General Links 2 Hyperlinks](#)

1.

2.

3.

4.

5.



This is a Science-Free-For-All Lesson!

The **U-Choose** lesson contains truckloads of great ideas. Summarize the projects or **Field Trips** you choose here. Be sure to add a picture or two (or a dozen) here, too.

Go For Whatever U-Want! Field Trips included!



Title

Read a Book (60 minutes)



Read a book or a magazine for one hour. Choose a way to record something about your reading. Reading aloud as a family is great!

- Short essay
- Key words
- Mind map or drawing, etc.

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER. By J. Bengtson p.1-35.* NOTE: We offer these five great books at \$10 under Amazon with free shipping from YWAM. See [PURCHASE BOOKS](#).

Title

Pages read





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Title

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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 sheets below. This is explained in [How To Do Links](#).

IMPORTANT: The General Links 2 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. [Unit Links Hyperlinks](#)

Watch 45-60 minutes of Links. *These are **Unit Links** which relate to the Global Topic “Fluid Dynamics” or the Major Topic, “Bones”.* **Write 2 great facts from 3 of your favorite Links.**

Link1:



Link 2:

Link 3:



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Watch the 2 Fluid Dynamics (FD) Core Videos for today twice.

[Carb Venturis & Super Feathers](#)
[Planes, Whiskers & Alulas](#)

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Read a Book (60 minutes)



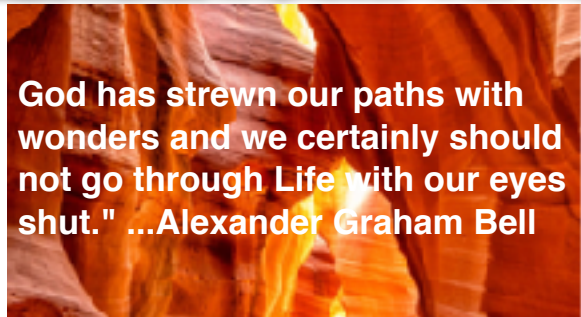
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Title

Pages read



God has strewn our paths with wonders and we certainly should not go through Life with our eyes shut." ...Alexander Graham Bell



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Link 2:

Link 3:



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[Hummers & Dolphins](#)

[Boxfish & Penguins](#)

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Watch 45-60 minutes of Links you chose from this group.

Write 2 great facts from 3 of your favorite Links.

Link 1:

Link 2:



Link 3:



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Watch the 2 Fluid Dynamics (FD) Core Videos for today twice.

[Nose Aerodynamics](#)

[Dog Slobs & Cats](#)

After the second time, **take the quiz at the Second Timers Level.** Try to take the quiz without looking back in the video. It is ok if you do, but first see how much you remember simply by watching the Core Videos two more times.

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Title

Pages read

**“DNA was engineered
genius beyond genius.”
George Caylor**



This is the Science Project for this Year.

All scientists have projects they are working on. It's what science is all about. If you are 5 or 18, it's a great idea to have a Big Project each year. Why?

A "Big Project" gives you the chance to rigorously pursue something you are interested in. It gives the opportunity to deeply experiment with some ideas you have. For some, it gives them the chance to "shadow" an occupation they are very interested in, like being a vet, helping in a lab, or being a ranger. For others, it can mean thoroughly investigating interests they have or going on incredible field trips.

It can mean learning all you can from a dozen websites dealing with something you want to be a specialist in. Or it can involve learning great amounts in filming, animation and other film and photo software programs for science films you want to do. It can also mean doing such fun things as caving, digging dinosaur bones, or rafting the Grand Canyon and learning Creation geology.

In so many ways, having month-long projects each year can be life-shaping. Pray about what the Lord would have you do. He will take you places you never dreamed!

These sheets are identical to those in Sound.

If you want to do 2 months of special projects, use both sets of paper work. If you only want to do one month, discard one set.

Be sure to look at the many ideas in Reinforcement, Research, U-Choose and Field Trip lessons.

If your child is very young, their project can be helping an older sibling.

My Project:

Date:

- Shadow a Science Occupation. (see above)
- Investigate different websites like Smarter Every Day or Brave Wilderness. Make a website of your own.
- Learn software like Adobe Photoshop, After Effects, and Illustrator and use them to make projects to show the wonders God's Creation.
- Go on mind-blowing Field Trips.
- Science Seminars or Enter a Science Fair.
- Help with Creation evangelism.
- Read Sci-Biographies. ("Benge" are Great)
- Do more Research and Reinforcement.
- Master Puppetry and use it in Science Camps
- Concentrate on "power" experiments like making Borax and other crystals, making a laser- sound transmitter, building your own sound system, etc.
- Investigate an audio resource like Jonathan Parks.
- Do Science camps around your city during school breaks. Try going with a team into poor areas. Do them in other countries.
- Plan and perform Science exhibitions for large groups with Christian messages.
- Help college campus Creation outreaches.
- Read 50 articles, watch 30 videos from Creation ministries, or read 5 Creation-themed books..
- Listen to 50 Creation messages or podcasts.
- Check many other ideas under U-Choose,

Watching Links Each Week: Directions for Parents

- 🍏 On each week of your project month, watch thirty minutes of Links from this Global Topic. Pick what you feel are the best 30 minutes of videos.
- 🍏 For the General Videos, you may chose from either General Links 1 or General Links 2. For Unit videos, select from Unit Links. You can access these by the [LESSON PAGE](#).
- 🍏 Have your child chose videos and watch them and then either draw some pictures about them or tell you what they liked and you or your child record this in the boxes below.
- 🍏 Use 1 printable page per lesson. Use both sides if necessary. (There are 4 below)
- 🍏 Star or highlight the best two concepts from each Link. Put a #1 by the best concept.
- 🍏 Log into Parent user and go to Parent/Teacher tab to access Hyperlinks

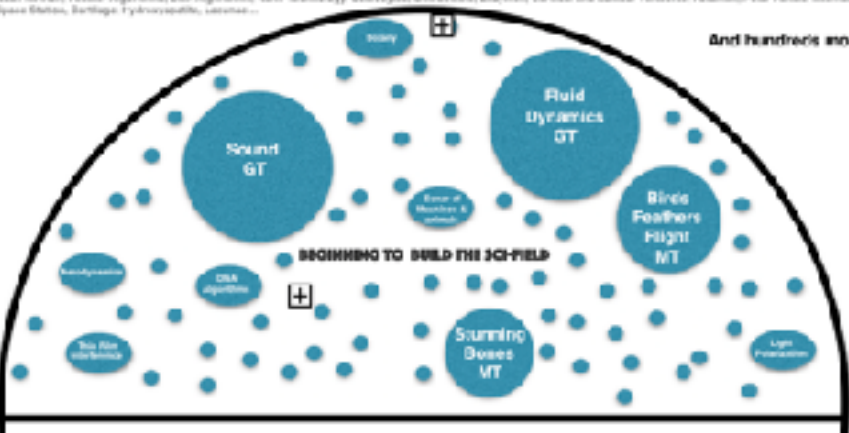


The Link Plan

| | | |
|-------|-----|--------------------------|
| 60-65 | WK1 | Links in General Links 1 |
| 65-70 | WK2 | Links in General Links 1 |
| 70-75 | WK3 | Links in General Links 2 |
| 75-80 | WK4 | Links in General Links 2 |

MINI-TOPICS for CWS Vr. 1: Acoustics, Hydrodynamics, Bernoulli's Principle, Vortices, Subatomic and Quantum Flow, Fluid Dynamics, Solids and Matter, Single Atoms and Hairs, Angiolar hyperostomatous, Penguin Pyroostomatous, Gopher Hydrostomatous, Ice Types and Stern Patterns, Bird Flight, Insect Flight, Alan Turing, Six Fish Swimming, Animal Navigation, Drinking, Water Immersion, Bone Transfers of People and Animals, Corollaries, Corollaries and long Procedures, Corollary Division, Six, Small Rivers, Labyrinthine Architecture, Air, Gas, Pressure, Motion & Motion Characteristics, Labyrinthine, the space station, hydrodynamics, three sound is sound transfer through solids, Liquids and Gases, Ultrasound, Intraocular Corollary, Microphones, Vocal Chords, Vocal Making, Larynx, Babble Crying, Newton's Work, Corollary, Sonograms, Speakers, Animal Insect Hearing, Corollary, Lion Fibers, Alligator Intraocular, History of Sonar, Dolphin Sonar, Bat Sonar, Orienting by Sound (non-sonar), Sonar, Backscatter, Submarine, Squirrels, Spine, Fish, Snails and Earth, White Snails, Playful Intraocular, Intraocular Division, Corollary, Intraocular Division, Sonar, Laser, Sound, Resonance, Fuel, Heating, Acoustic, Acoustic, Block of Resonance, Rubber Growth, Dead Sea Snail, Snake, Snakes, Spinyfish, Milk, Earthworm, Structural Polys, Su-Motor, Mass, Surface, Feather, Algorithms, DDT, Algorithms, New Technology, Corollary, Corollary, Enzymes, Corollary and Long, Corollary, Passover, Polar Points, Intraocular Space Station, Surface, Hydrodynamics, vortices...

And hundreds more!



Why Do This? *Building the Field*

You are “building the field” of critical mini-concepts in your child’s mind.

For additional info, look for the diagram on the left called “Building the Field” in the linked page given above.

Link-Notes General Links 1



See directions just above :Watching Links Each Week

1.

2.

3.

Link-Notes General Links 1



1 Month: Day 66 Page 4

See directions above :Watching Links Each Week

1.

2.

3.



See directions above :Watching Links Each Week

1.

2.

3.



See directions above :Watching Links Each Week

1.

2.

3.

