

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!

1. Watch & Write **1**: 2 Core Videos (15m)

DAY 1

p.1

Watch the 2 Fluid Dynamics 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.

FD and Bernoulli

Wrights and Foils



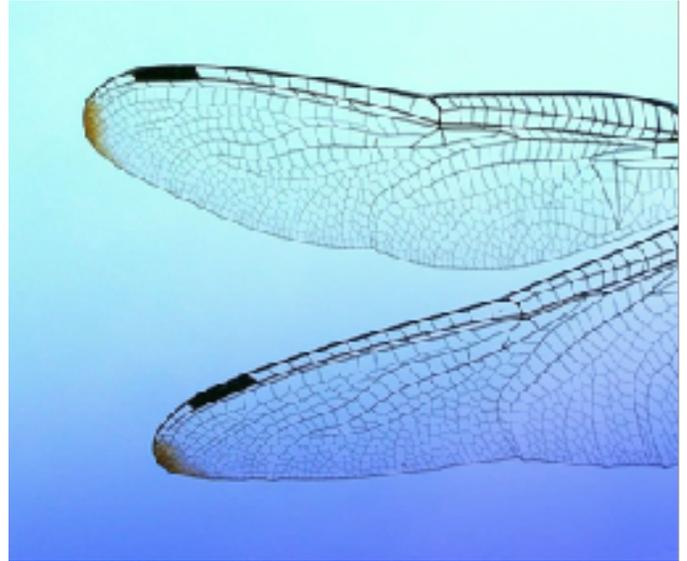
2a. Devotion: (10m)

DAY 1

p.2

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. Concept Drawing: Dragonfly Wing (15 min)

Choose and 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. Notice that the wing isn't shaped with a foil (wing bump) like our plane have. Lift is achieved by changing wing angles.

Look at the amazing spacing of the "cells" created by the ribbing in the wings. God created a masterpiece with light-weight strength in all the right places.

A large, empty rectangular box with a black border, intended for the student to draw a dragonfly wing based on the provided image and instructions.

3. Watch and Write: 2 Links (15 m)

DAY 1

p.3

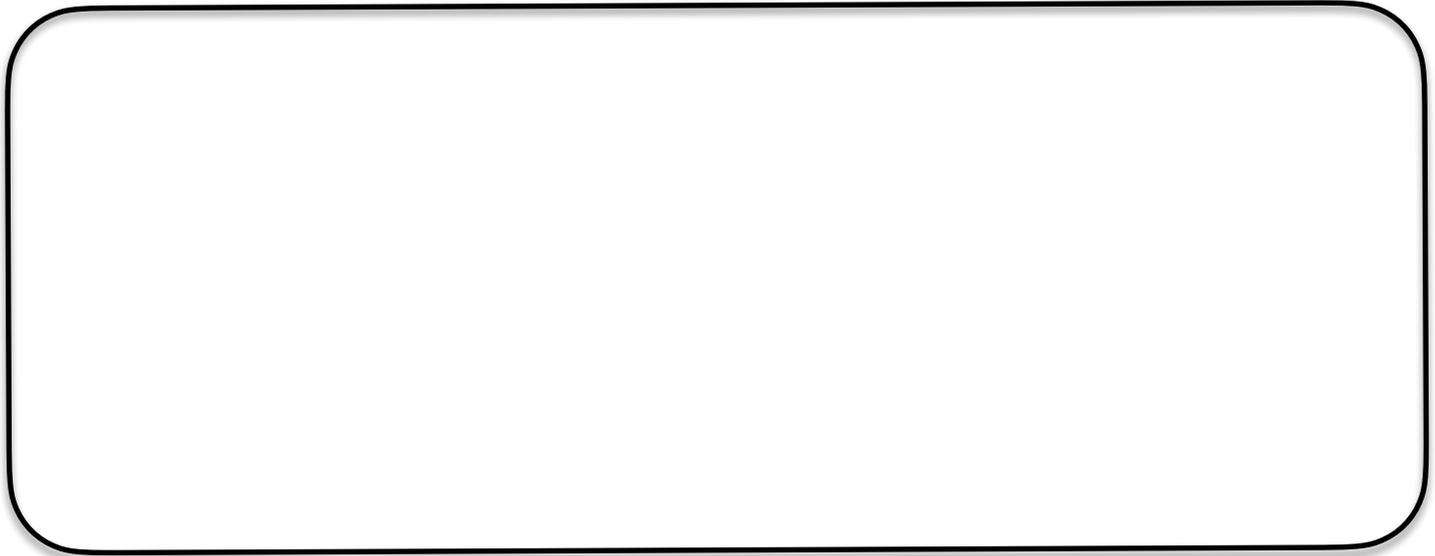
Watch the 2 links below. Make a mind map about each .

Google "Science mind maps" for examples. You do not need pictures like this example unless you want.

<https://www.mindmapart.com/chemistry-mind-map-jane-genovese/>

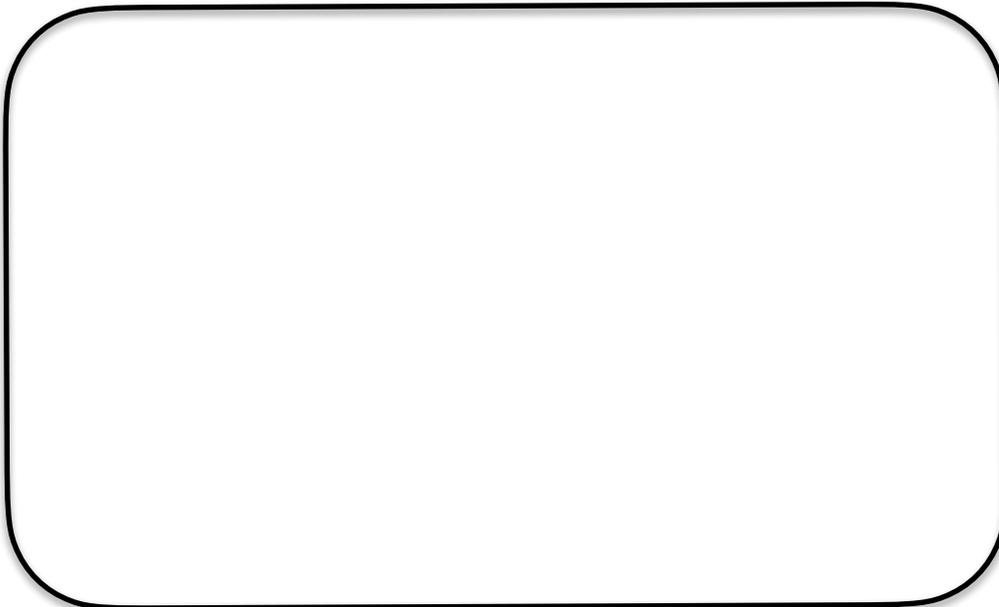
Younger Students: [Slimed By Giant Slugs!](#) (7min)

Older Students: [Young Fox Hunting In Snow](#)



Younger Students: [Your Body Human Body](#) (20min)

Note: Advanced = Gen.1 L3 1a. SED: [Slow Flipping Cat Physics](#)



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

Psalms 147:5

God effortlessly made *all* His insects perfectly.

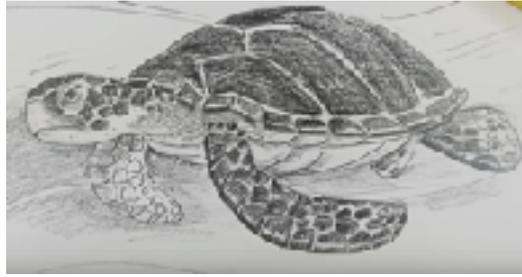
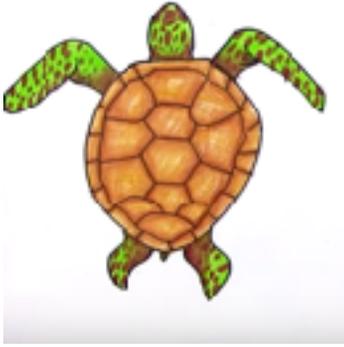
He created the DNA sequences to build dragonfly wings with just the right materials in just the right places.

Trust the beauty and love of God to use His infinite wisdom and intelligence to put all the right pieces together in all the right ways to make your life a masterpiece of His working.

4. Drawing: Sea Turtle. (15

DAY 1

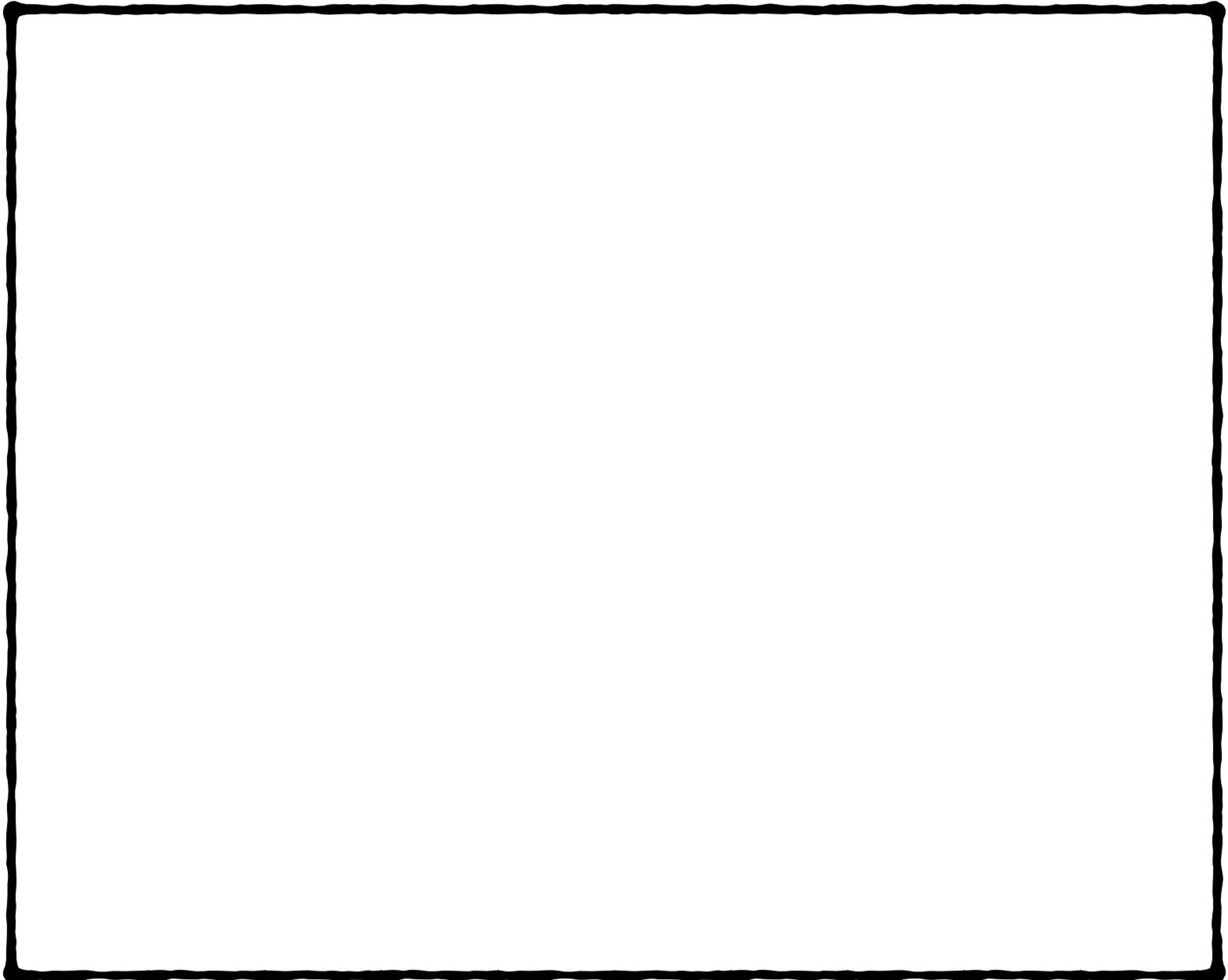
p.4



A. <https://www.youtube.com/watch?v=6DXTWTbd8G4>

B. <https://www.youtube.com/watch?v=jk12vNOycSg>

C. http://www.hellokids.com/c_21250/drawing-for-kids/draw-with-jeff/how-to-draw-a-sea-turtle



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.

Feathers & Carb Venturis



A large, empty rounded rectangular box for writing notes.

Planes, Whiskers and Alulas

A large, empty rounded rectangular box for writing notes.

“My heart is steadfast, O God.

I will sing, I will sing praises with my soul.”–Psalms 108:1

When you encounter something difficult, remember the elegant landings of birds.

The Birds of the world are equipped by the Maker to have alula feathers.

These give them perfect landings.

Trust God to help you land wonderfully

when you try amazingly good things for others' sake
or when you encounter problems you'd rather not have.

2a. Devotion: (10m)

DAY 2

p.2

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

Super-Speed Pointed's

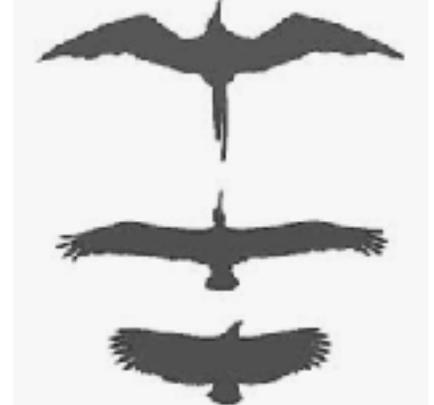
These are falcon wings.
Falcons hit 240 mph in dives.



Triangle Pointed's
High speed wings which are longer than the bird's body.

Skinny Fingers
Long skinny wings used for soaring and flapping.

Fat Fingers
Soaring wings, great for riding thermals.



2b. Concept Drawing: Bird Wing Shapes(10 min)

Draw: General shapes of Bird Wings!

Use the silhouettes above. Label them also.

Birds and their Wing Shapes - Cornell Lab of Ornithology

<https://www.birds.cornell.edu/k12/wp-content/uploads/2018/11/Bird-Wing-Types-Handout.pdf>

3. Watch and Write: 2 Links (15m)

DAY 2

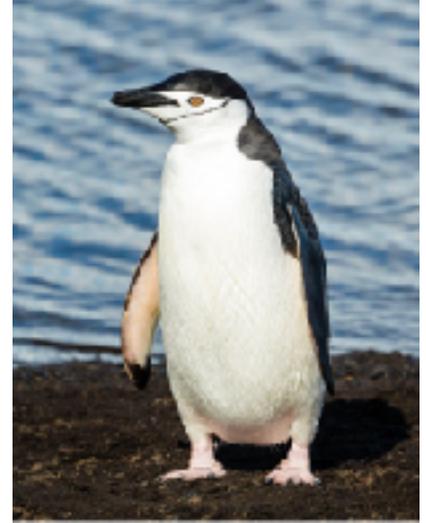
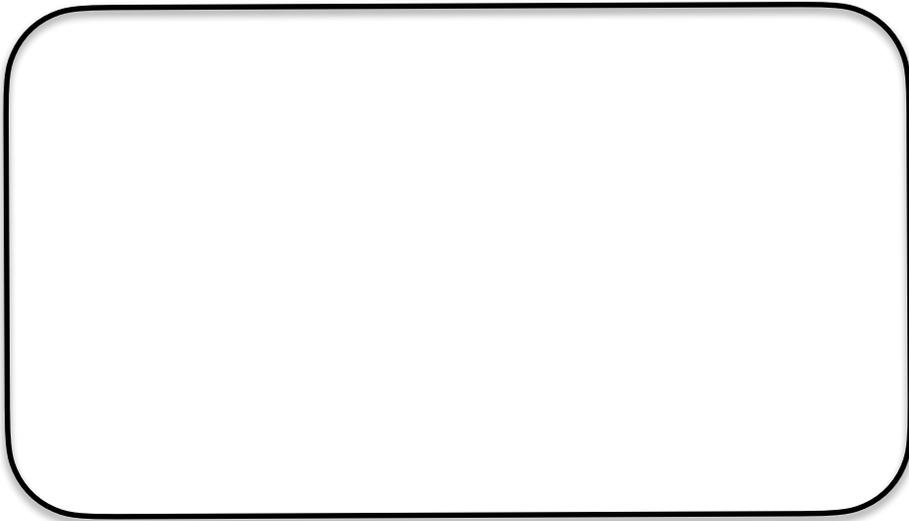
p.3

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

Google "Science mind maps" for examples. You do not need pictures like this example unless you want.

<https://www.mindmapart.com/chemistry-mind-map-jane-genovese/>

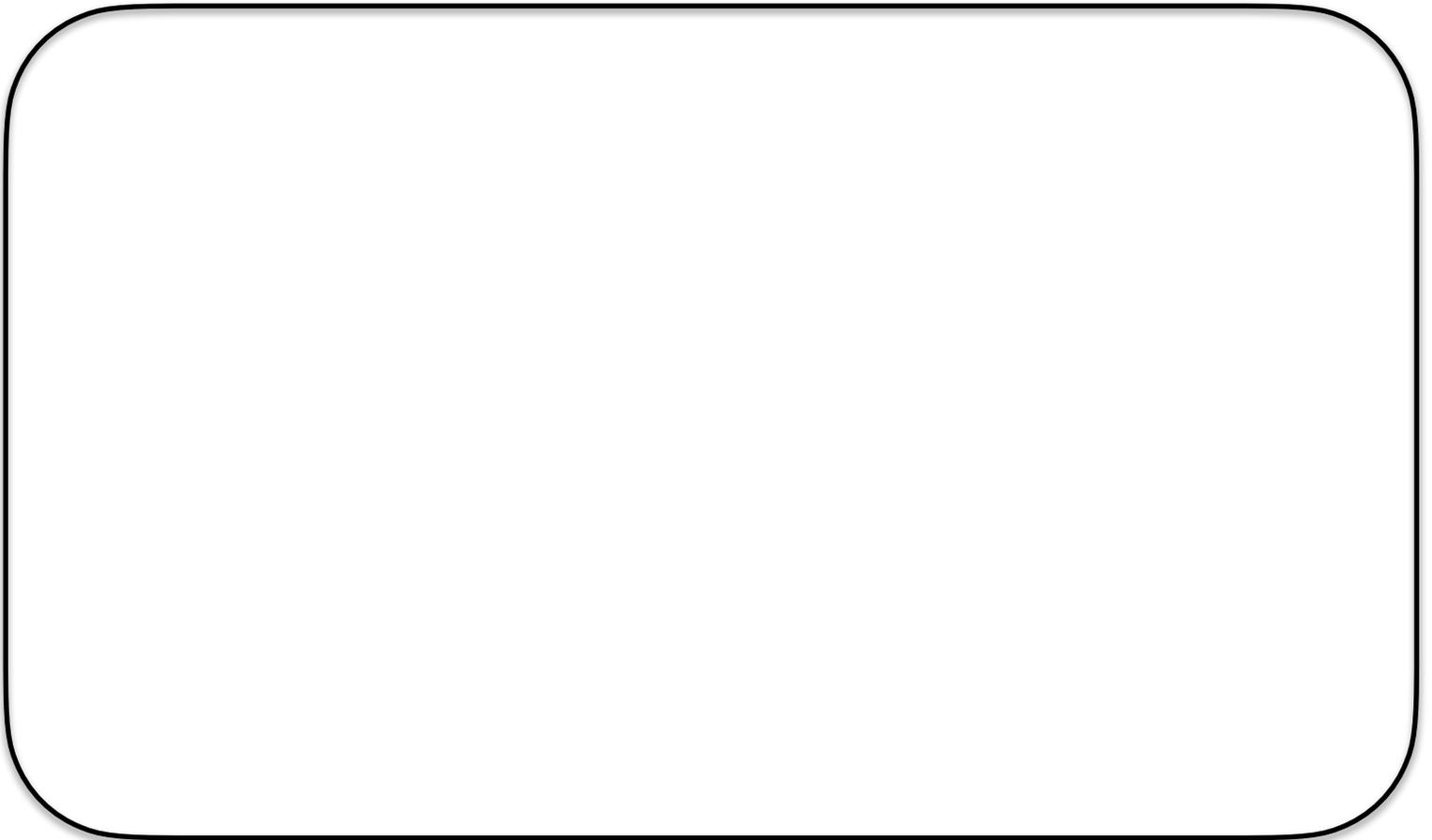
Younger Students: [Wild Chameleons In Florida](#) (4min) Older Students: [Arecibo Radio Telescope](#)



Chinstrap Penguin

Andrew Shiva / Wikipedia / CC BY-SA 4.0

Younger Students: [Emperor Penguins: Dan](#) (11min) **Note: Advanced** = Gen.1 L2 4b. NASA: [On-Board ISS](#)



2. Drawing: Seal (15 m)

DAY 2

p.4



1. <https://how2drawanimals.com/8-animals/76-draw-seal.html>

2. https://www.youtube.com/watch?v=Ast_PAO7qH8

3. <https://www.youtube.com/watch?v=rajOevqs3PI>

"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. When God created the whiskers, the vibrissae, of the harbor seal, He knew it was important that His seal to 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.

It's all so 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.

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.

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 Boxfish and the Emperor Penguin were not difficult challenges to Him, you’ll see your difficulties are not in the slightest either.

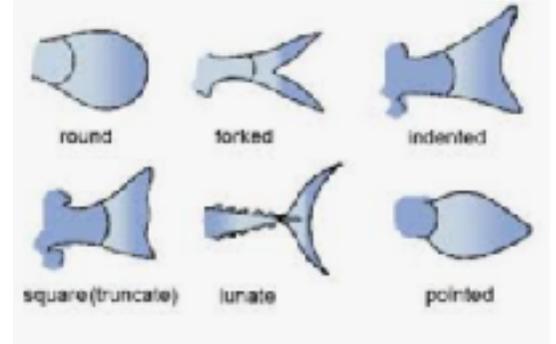
You will call upon Him and the Creator of the boxfish and the penguin will work His surprising solutions for you.

2a. Devotion: 5m

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 devos.)

Brain at the Speed of Light



<https://www.leisurepro.com/blog/explore-the-blue/fish-identification-guide-fish-anatomy-part/>

4b. Concept Drawing: Fish Fins 15m

Draw and color the types of caudal fish fins (the tail fin) which you see above.

A large, empty rectangular box with a black border, intended for the student to draw and color the different types of caudal fish fins shown in the diagram above.

3. Watch and Draw: 2 Links (20m)

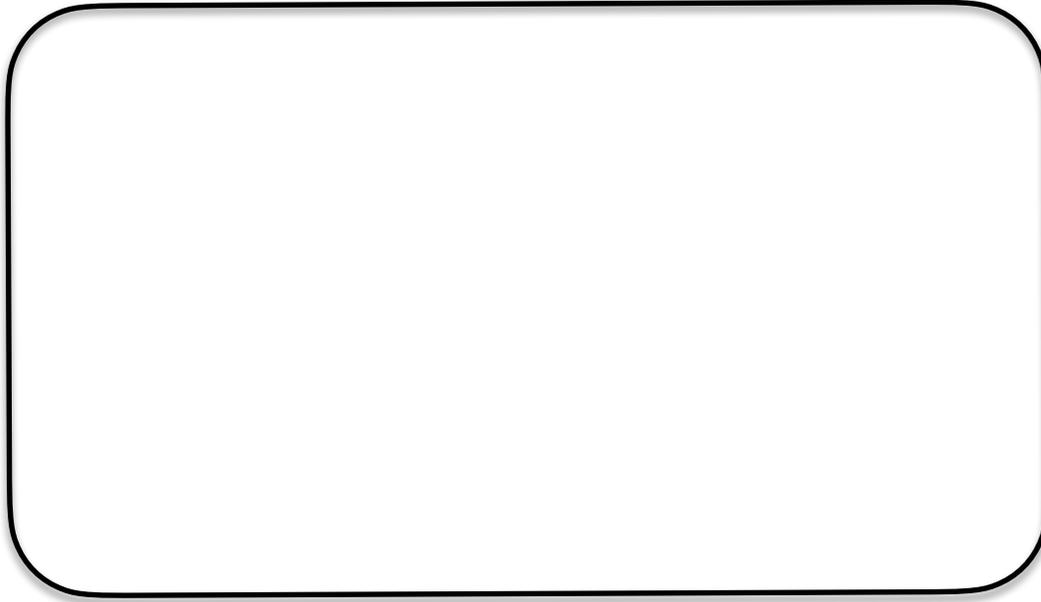
Watch the 2 links below. Make a mind map about each .

Google "Science mind maps" for examples. You do not need pictures like this example unless you want.

<https://www.mindmapart.com/chemistry-mind-map-jane-genovese/>

Younger Students: [How Recycling Works!](#) (4min)

Older Students: [Most Radioactive Place](#)



“Walk in love” ***–Ephesians 5:2***

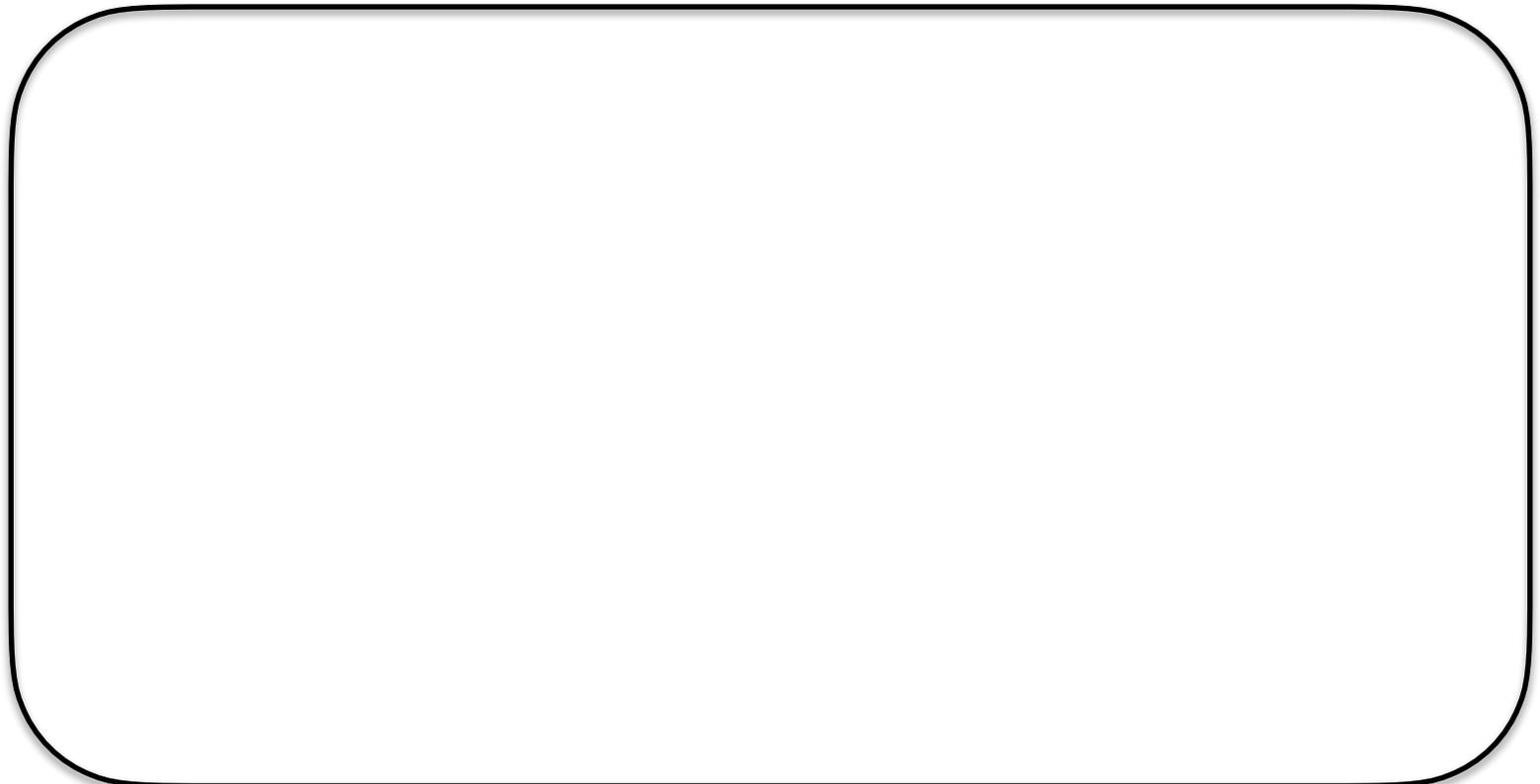
God shows His love through the beauty of birds like the toucan.

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” involves **kind encouragements** 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 Students: [Coconut Breakfast!](#) (9min)

Older Students: SED: [The Backwards Brain Bicycle](#)

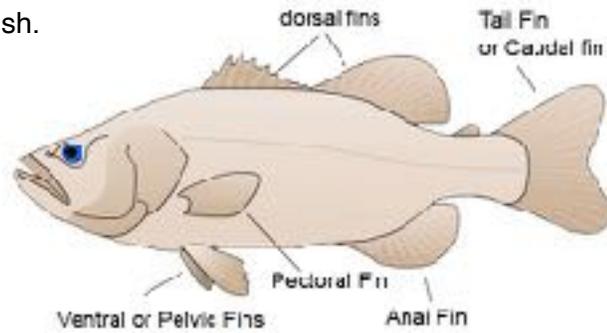


3. Drawing: Fish and Fins. (15 m)

DAY 3

p.4

Draw and label all the fin types of a fish.



“Praise the Lord in song for He has done excellent things.”
Isaiah 12:5

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

There are a million ways we'll need God to help us to help others.

All will need His help, His creativity and His wisdom...

Read: *A Million Little Ways* by Emily Freeman

1. Watch & Write **4**: 2 Core Videos (15m)

DAY4

p.1

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.

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, 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 for all different-sized cats from kittens to tigers”—you are getting a little idea of how thorough God is. ***He thinks of everything.***

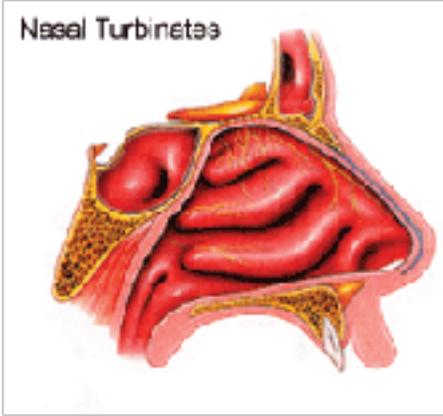
As you continue walking with God, He will work greater miracles and show you that He is thinking about things in your life even more than you are!

2a. Devotion: 5m

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 devos.)

Roots and Extraordinary Wisdom



4b. Concept Drawing: Nose Turbinates (15m)

Draw and color the air-guiding turbinates of the nose. Good luck! This may be tricky!

3. Watch and Draw: 2 Links (20m)

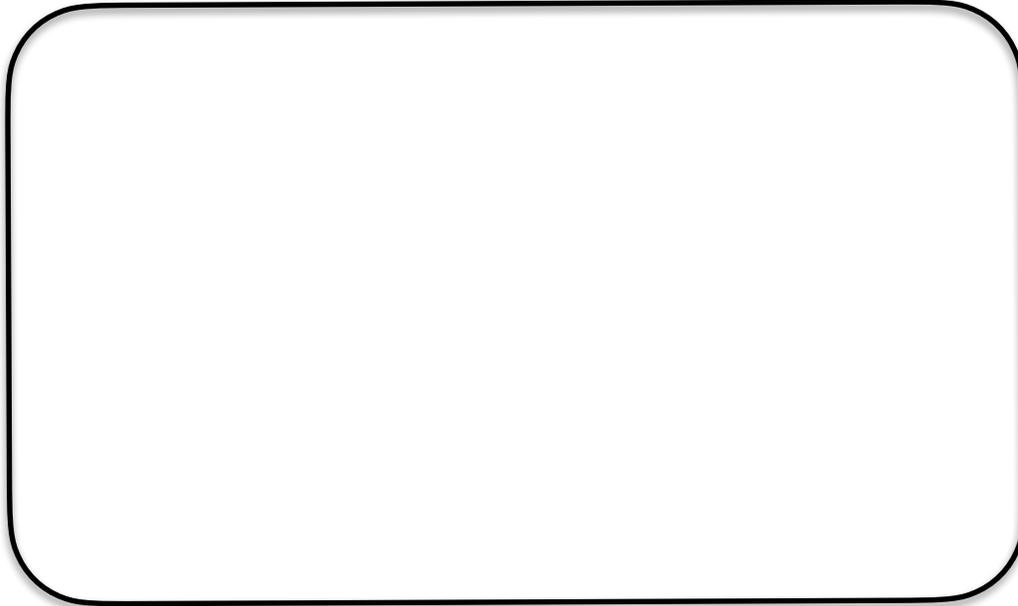
Watch the 2 links below. Make a mind map about each .

Google "Science mind maps" for examples. You do not need pictures like this example unless you want.

<https://www.mindmapart.com/chemistry-mind-map-jane-genovese/>

Younger Students: [Buddy Davis Explores Cave](#)

Older Students: [Caribou Spot Wolves Using UV Vision](#)



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

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

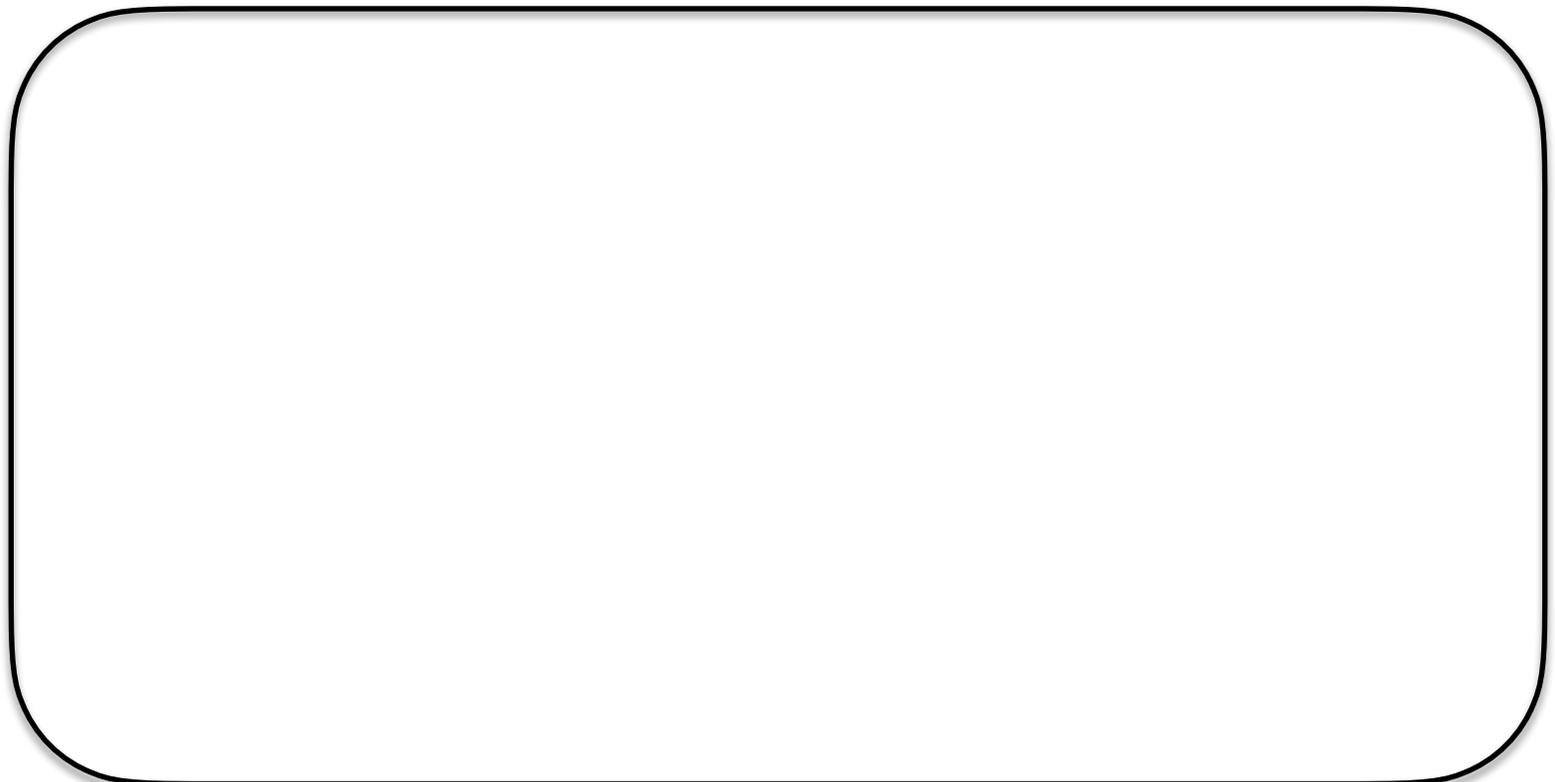
We thought this little guy was just cute and a bit funny looking –and he is...but we never imagined that he’s actually quite hi-tech and hydrodynamic–in ways we didn’t understand.

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 Students: [Sloth Vs Sloth!](#)

Older Students: [How To Fly To The Space Station](#)



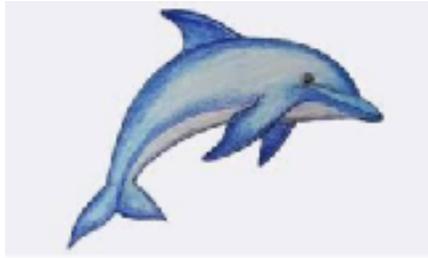
3. Drawing: Dolphin (15 m)

DAY 4

p.4



1. <https://www.youtube.com/watch?v=cgx6j-N7z8o>



2. <https://www.youtube.com/watch?v=IJLOK5V7KE>



3. <https://www.easy-drawings-and-sketches.com/draw-a-dolphin.html>

“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

Good 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.



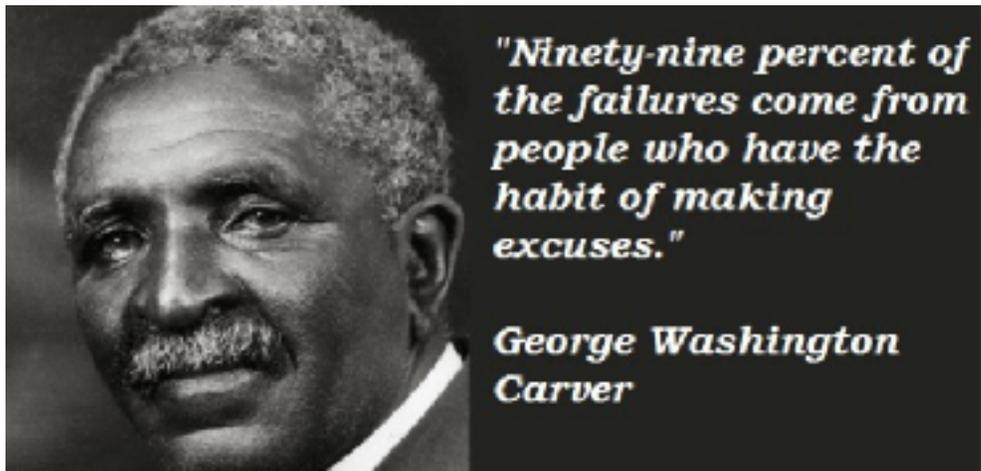
Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER**. By J. Bengtson p.1-35. Other options are always welcome. Mom, teacher is boss.*

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 Raiaing the Inmages

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.

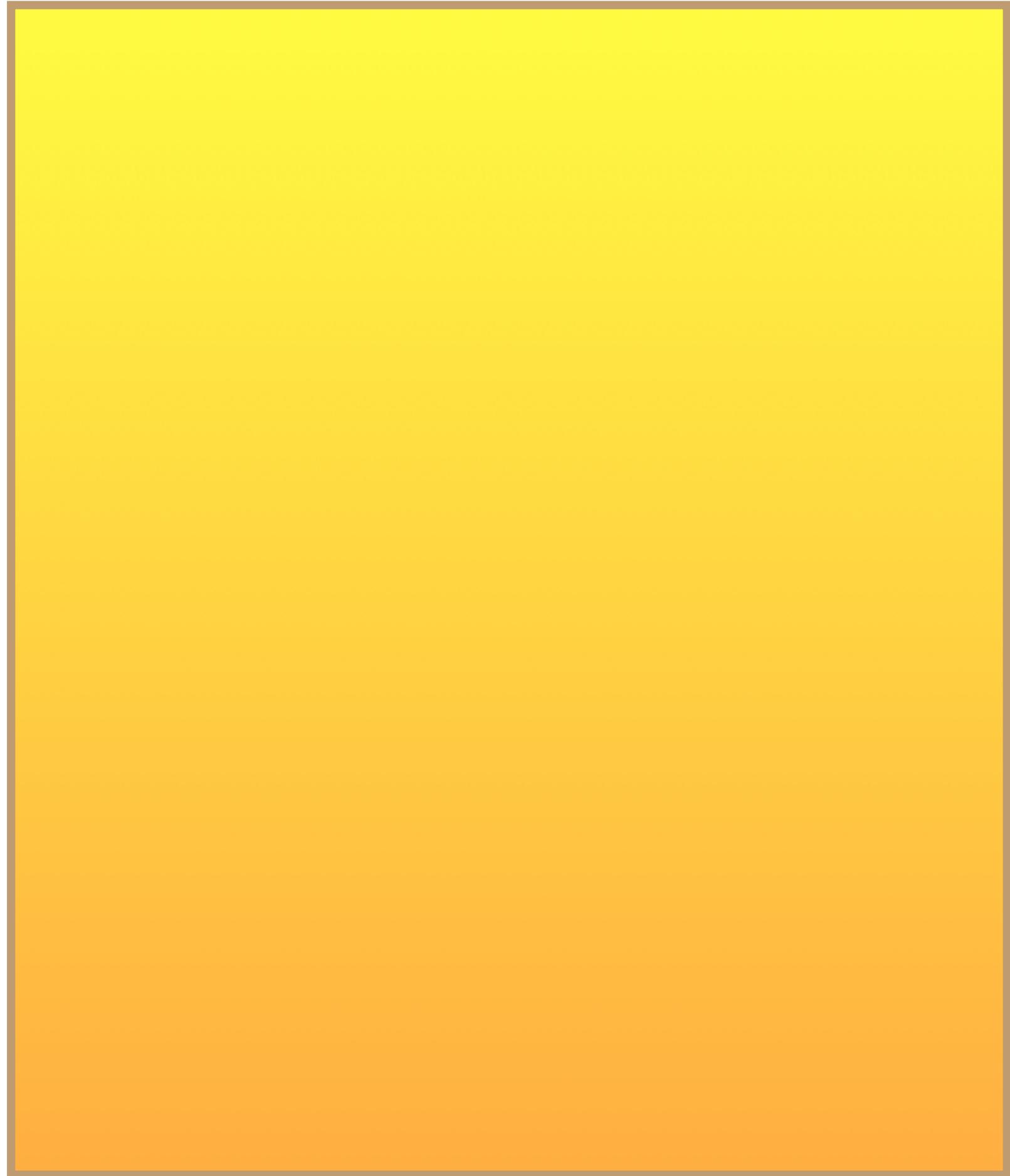
7. Adding the Short Important Info

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.

That’s it! Enjoy yourself and learn a ton! Get bonus points –a 5-10 minute oral presentation!

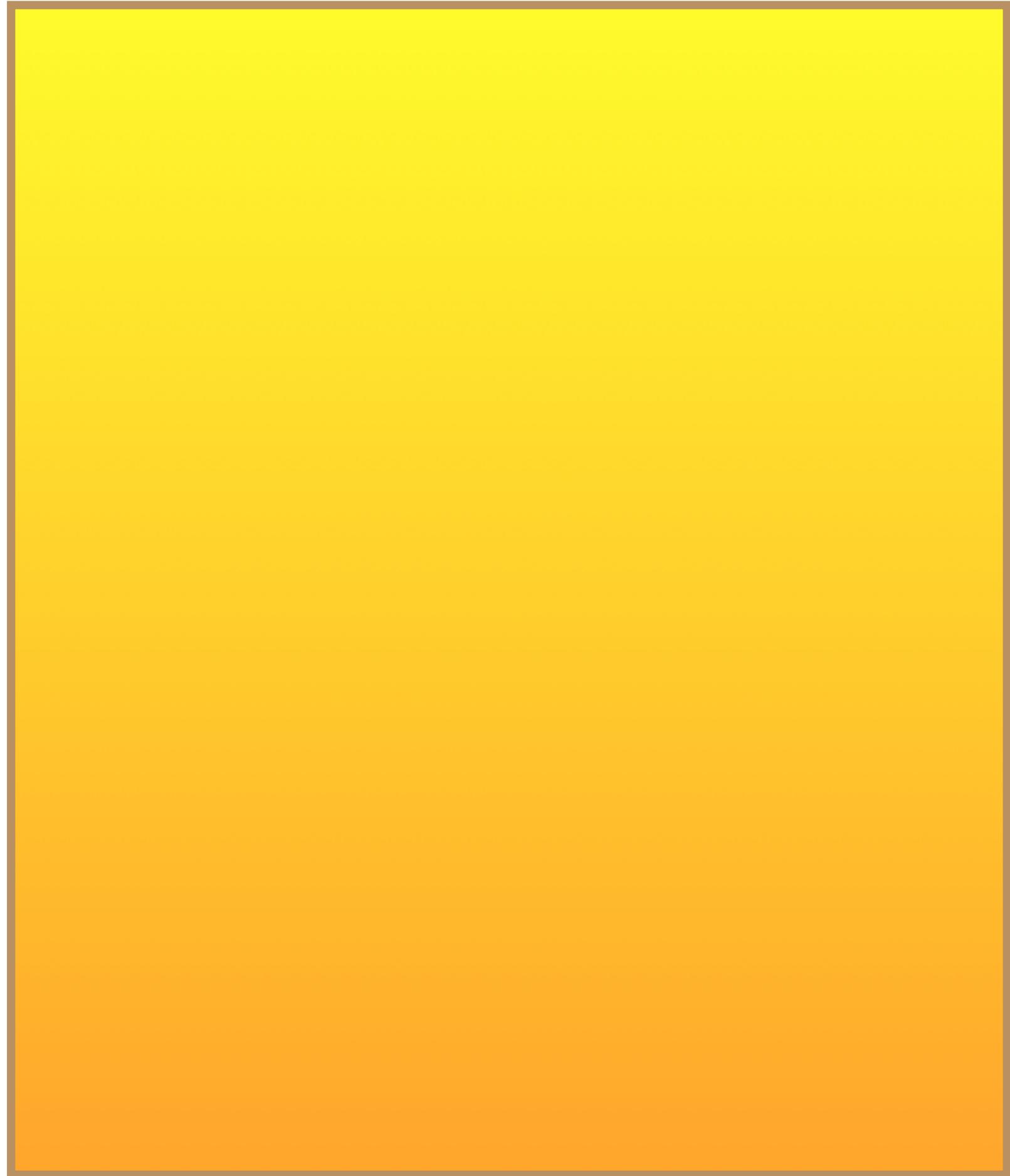


Be brave! Tell your group or family what your creation is all about!









Today is a dissection day. So fascinating!

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



You may buy a trout or other fish from the supermarket and dissect it. You can even cook it and eat your way through the dissection! You'll lose a little educational value, but hey, it can taste pretty good! You can always buy another fish from the store and hit again. Or just go out and go fishing—easy!

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 goal is to make you a Vet-Grade Anatomist of the animals you chose.

My Dissection: _____ **Date:** _____

My Dissection (cont):

DAY 7

p.2

A large, empty rectangular area with a thick red border, intended for a dissection report. The area is completely blank, providing space for the student to write their observations and conclusions.

This is a Link Lesson. These first 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 #1**. The **General 1** means that it is in the first lesson of "General Links". The symbol **#1** 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.

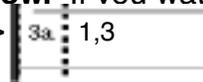
You will do many lessons on Links, but you will always come back to these pages to record those you have seen. (The Record pages are those below that have a LOT of boxes on them.)

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 #1**). This means you will write a "1" by any links you watched for 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!

Today is “Links”. Amazingly Interesting!

1. First read the two “Link Info Pages” right before this.
2. Watch Links in the Link Lesson that the title above says: Either “General Links 1” or “General Links 2” or “Unit Links” . Watch Links for the amount of time you’re told. Choose whatever ones you like, or do the ones assigned.
3. The number above tells you which Link Lesson this is. With a PEN, write this number very small in the correct Link box of the appropriate sheet of the Record Sheets (see below). Your goal is to watch most all links eventually and at least 2 L-1 Links each session.
4. You can watch favorite Links two times. If you do, record both sessions and circle the two numbers in pencil.
5. Pick 3 of your Links each session and write briefly the two best facts in them below. Star the one you think is most interesting.

NOTE 1: Put a post it that sticks out a little on one of the “Record Sheets”. You’ll refer to these sheets for years.

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:



General Links 1 Link List Record

L1

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.

L2

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.

L3

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.



General Links 2 Link List Record

DAY 8

p.5

L1

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.

L2

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.

L3

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.



Unit Links Link List Record

DAY 8

p.6

L1

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.

L2,3

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.

L3

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 Potpourri Experiment Day. So fun!

You have three experiments sections here. You can get details about them in either experiment lesson (They both have the same material in them.) Add a few comments here about your experiences with your little experiments. The wind bag is in the experiment Pak for Mighty Feathers... (See top of the Printable and in the Mighty Feathers Unit.) If you are in a "Booky mood" today, reprint the yellow sheets above used for the 3-D Fins and do "Feather 3-D Flat Model" in the Experiment Lesson "Box".

Build the rocket from the video. It is astonishing if you get the aerodynamics right, It will go a football field!

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

Wind Bag and Paper>



The Concorde's Delta Wings

Ball, TP & Blowers



Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER**. By J. Bengtson p.36-70. Other options are always welcome. Mom, teacher is boss.*

Title

Pages read

My experiences with science led me to God. They challenge science to prove the existence of God. But must we really light a candle to see the sun?

– Wernher von Braun



Wernher 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.

1. BUILD A SMASHBOOK! 2 hours+

DAY11,12 p.1

Your goal for two days is to build a Smashbook on Fluid Dynamics.

You can keep it broad or center in on any topics in the Core Videos or 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 Smashbook 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.

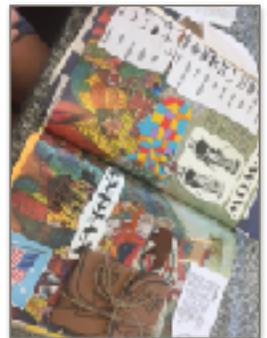
3. YOU CAN USE ANY BOOK YOU WANT TO.

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!

<https://www.muminthemadhouse.com/how-to-make-a-smash-book-scrapbook-for-kids-a-step-by-step-guide/>

Have fun!

1. Wind Bag and Bernoulli's Principle 2+ hours

DAY13,14 p.1

This assignment was begun in Mighty Feathers, Add to it. If you've done nothing on it or want to significantly add to what you've done already, combine these 2 lessons with the first U-Choose lessons in the third month of this printable.

DO ALSO: Links-General 1-Lesson #2 (30 minutes)

Do 30 minutes of Links as your 2nd Link Lesson>Record all on the first Link List Record.



This set of experiments is packed. Some are simple, others are much more involved. The windbag is a fun one that you need to purchase. It's in the Mighty Feathers Experiment Pak, if you have it.

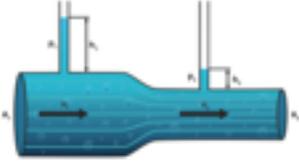
Daniel Bernoulli Info

List 10 interesting facts about the life of Daniel Bernoulli from the Experiment Journal pages or from other sources.

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

Visit these websites for ideas!

<https://www.famousscientists.org/daniel-bernoulli/>
<https://www.thefamouspeople.com/profiles/daniel-bernoulli-4716.php>



Bernoulli's principle is one of those science laws that has a surprising amount of application in our lives. We'll look some of these applications here.

Bernoulli's Principle: Concepts and Applications

List 10 interesting facts about the Bernoulli's Principle and its applications from the Experiment Journal pages 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 website from NASA for ideas!

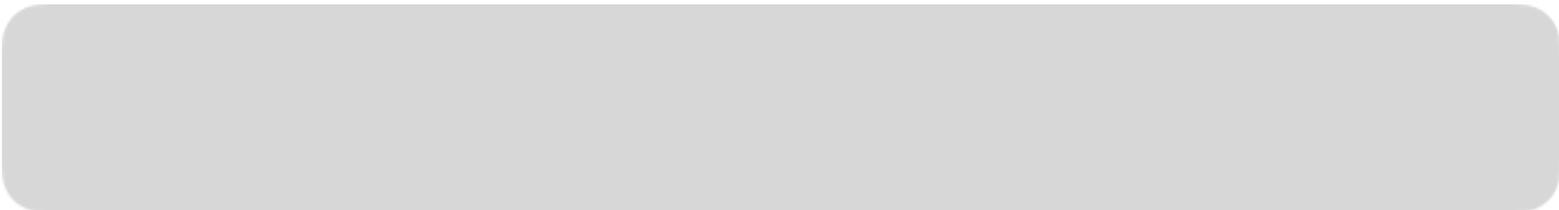
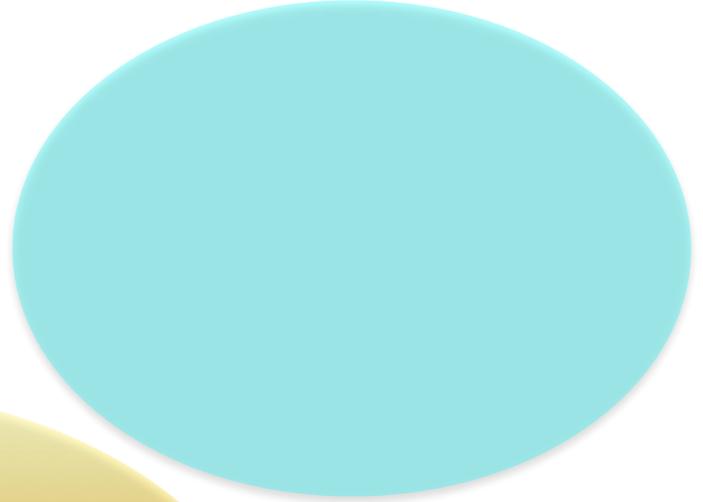
https://www.nasa.gov/sites/default/files/atoms/files/bernoulli_principle_5_8.pdf

Wind Bag and Bernoulli's Principle

DAY13,14

p.3

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



Today is Links. *Amazingly Interesting!* Here's how a Link Lesson works.

1. **First read the two "Link Info Pages"** in the lesson where **Link Lesson 1** is.
 2. **Watch Links in the Link Lesson** that the title above says: Either **"General Links 1 or 2"** Or **"Unit Links"** . Watch Links for the amount of time your instructor tells you. Choose whatever ones you like, or do the ones assigned.
 3. **The number above tells you which Link Lesson this is.** With a PEN, write this number very small in the correct Link box of the appropriate sheet of the Record Sheets (see below). Your goal is to watch most all links and at least 2 L-1 Links each session.
 4. **You can watch favorite Links two times.** If so record both sessions and circle the two numbers in pencil.
 5. **Pick 3 of your Links each session and write** briefly the two best facts in them. Star the one you think is most interesting.
- NOTE 1:** Put a post it that sticks out a little on one of the **"Record Sheets"**. You'll refer to these sheets for years.
- NOTE 2:** Leave room in each little Box for at least 6 little numbers. Reinforce the pages with stick-on hole reinforcers.

Save Awesome Genius Videos for later. Only 1 at the most here.

Link1:



Link 2:

Link 3:



Choose a way to record something about your reading.

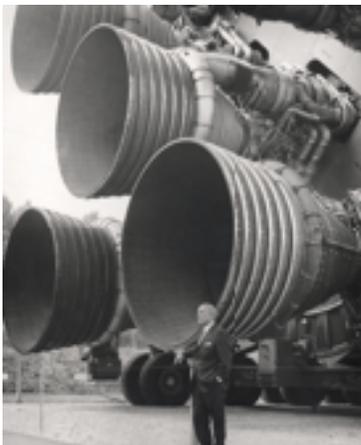
- Short essay
- Key words
- Mind map or drawing

*CWS SUGGESTION: Heroes of History: **GEORGE WASHINGTON CARVER.**
By J. Bengtson p.71-105. Other options are always welcome. Instructor is*

Title

Pages read

A large, empty rectangular area with rounded corners, outlined by a thick green border, intended for students to write their reading record.



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 Digs 1 \(60m+\)](#)



DAY 16

p.1

Parents Note:

An option for some is to watch "Absolute Genius" Videos in Fluid Dynamics General Links 1

Picture Title:

Picture Title:

GD1: Bones

The "Gold Dig" Theme for Fluid Dynamics is "Bones". It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

Directions

If you are older and Gold Digs is not too difficult, **Read FIRST TIMERS Gold Digs and take the quiz.**

Then title and draw 2 pictures of the most interesting concepts about this Gold Dig in the boxes on the left.

If you are younger, read the material for 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.

There are 5 lessons doing First Timers Gold Dig on Bones in this printable. Then for those of you who are older, there are 5 more lessons taking the quiz again at the Second Timer's level.

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:

Today is a Reinforcement day. Be creative.

The purpose of the reinforcement lessons is to reinforce any aspect of 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 the Experiment Journal pages in the Experiment lesson for more ideas.

Title

Date:

1. Fluid Dynamics Races 2+ hours

DAY19 p.1

“Fluid Dynamics Races” are meant to be fun and challenging. These can be done individually or as teams of two or more. You can have unlimited time or be racing against the clock. Your teacher will give you a topic or topics and make each a race to 10 or 20.

If you are doing this as classwork and not as a contest, we’ve assigned three topics for you. You’ll know which three by the apple by them 🍏. (See below also)

Look over the list of “Races” and then read the next gray box and we’ll explain how to do this.

The Fluid Dynamics 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 Info 🍏
9. Facts about Penguins
10. Truths 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 Ya Do It

On the pages following you will see a couple sheets to use.////// Self-paced students see note below.

Your teacher will assign you a topic(s). You will then begin a mad scramble with your team to complete 10 or 20 of what your teacher assigns.

PICTURES AND WRITTEN:

Most of the Races involve pasting screen shots into the sheets below or ones of your own making. There is also some writing, either the name of something or its function or some details about it.

WRITTEN ONLY:

No topics need 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 if you want to type onto it. The document you chose must have the ability to shrink and expand images. (the ones below cannot be typed onto.)

PRINT THEM OUT. KEEP THE FUN FOREVER.

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

SCREEN SHOTS

Hold COMMAND SHIFT 4 and drag to give screen shots on a Mac.

GENERAL USE SHEET

We included a blank sheet at the end of this activity in case you want to vary the size of your images.

IMPORTANT TEACHER'S NOTE:

By increasing the search number to 20 items it is easier to get to deeper critical thinking and real hunting. Ten “finds” is easy; but 20 greats 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, the “Appled” ones on the first page. You must do this many of each...complete with screen shots.

2. Box Fish Facts 10 🍏

8. Dolphin Swimming Fascinating Info 20🍏

13. Fish Swimming Interestables (fascinating facts) 10. 🍏

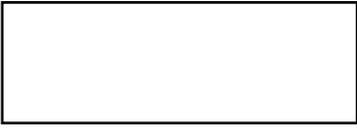
Bird Races Topic

Name:

Date:

Screen shots or drawings

1.



2.



3.



4.



5.



6.



7.



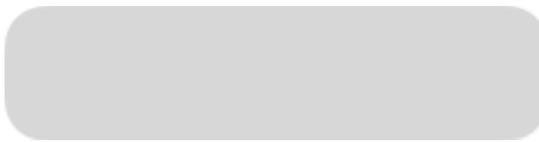
8.



9.



10.

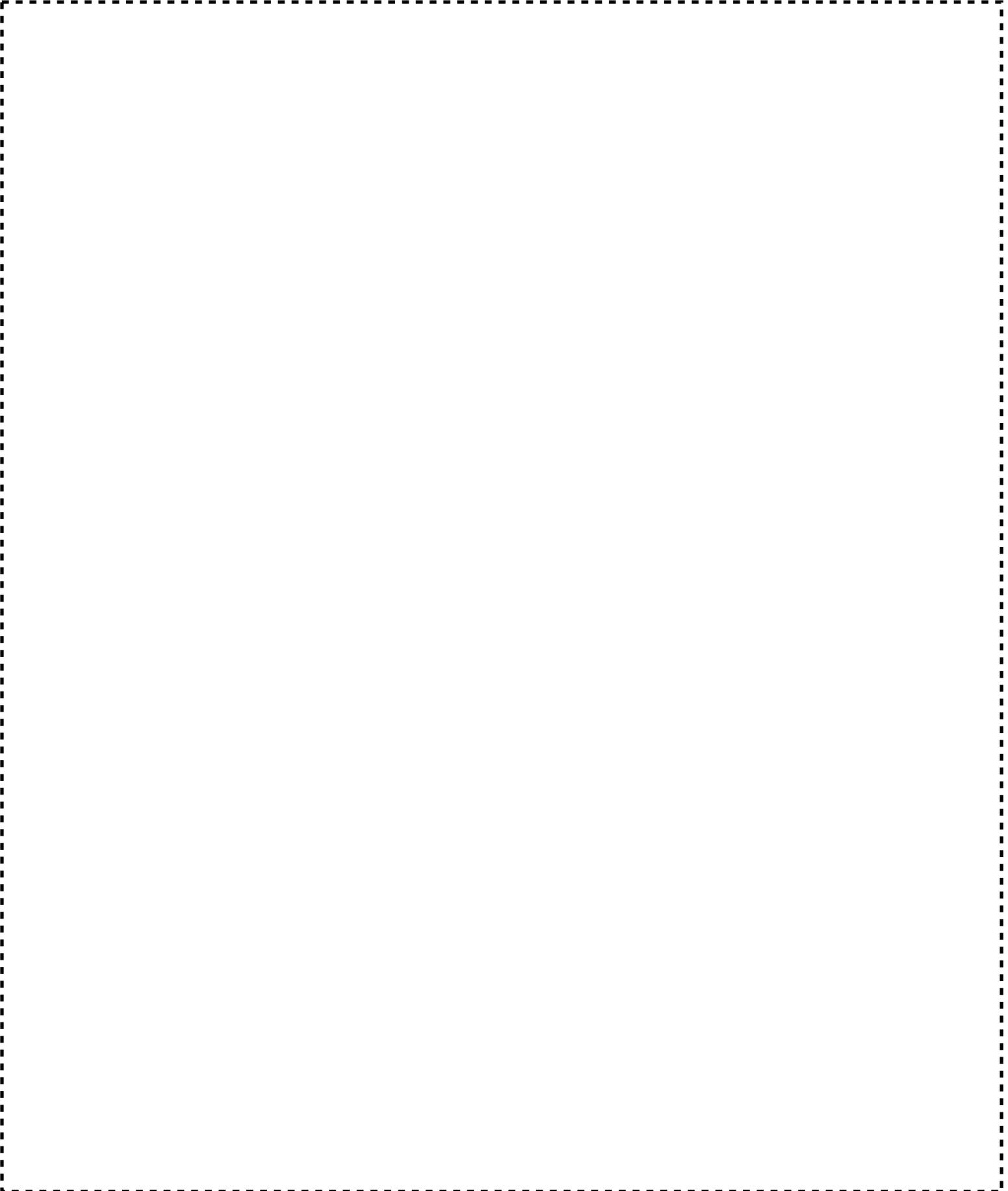


Bird Races Topic

Name:

Date:

This sheet is for you if you want to vary your image sizes





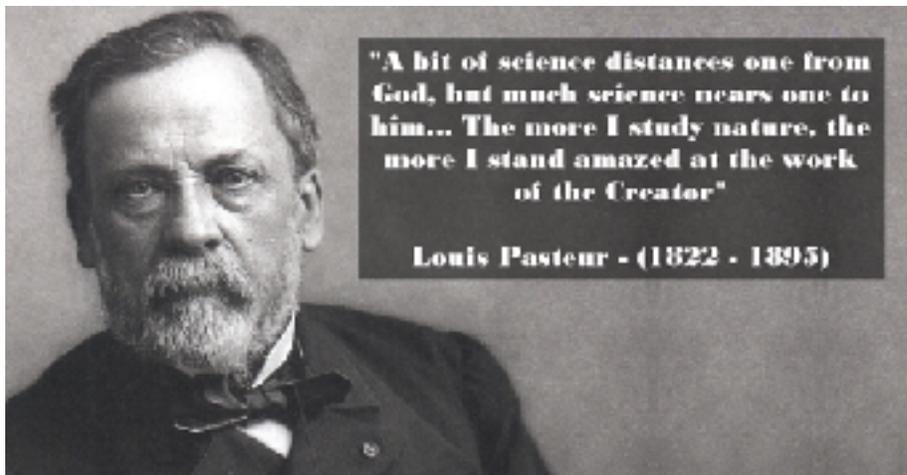
Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER. BENGE p.106-140. Other options are always welcome. Mom, teacher is boss.*

Title

Pages read



3. Fluid Dynamics Acrostic (20 m)

The Rules:

You've learned a great deal about Fluid Dynamics. But now's your chance to test your mastery of the eight core videos.



Take every letter below and tie a great concept to it. If you're Level 3, no "easies" allowed. If you're Level 2, you can have 4 "easies". What's an "easy"?

An easy is any one word answer like I for "I like fluid dynamics." What you are looking for is "interestables" exciting or interesting information for each letter. Are you up for the challenge?

NOTE: YOU MIGHT WANT TO WAIT ON COMPLETE THIS AS YOU FINISH CORE VIDEOS FIRST TIMER QUIZZES OVER THE NEXT WEEK.

F

L

U

I

D

D

Y

N

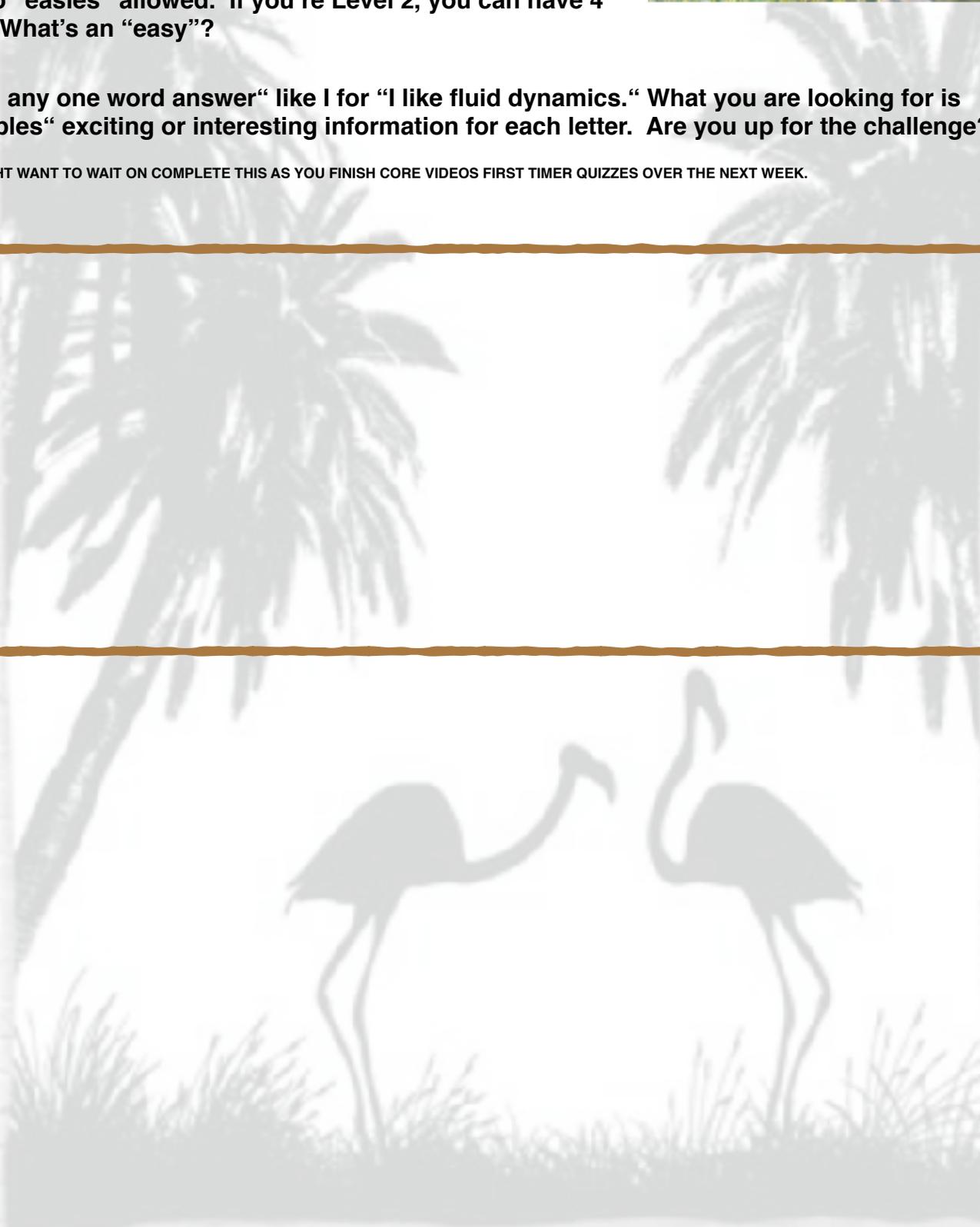
A

M

I

C

S



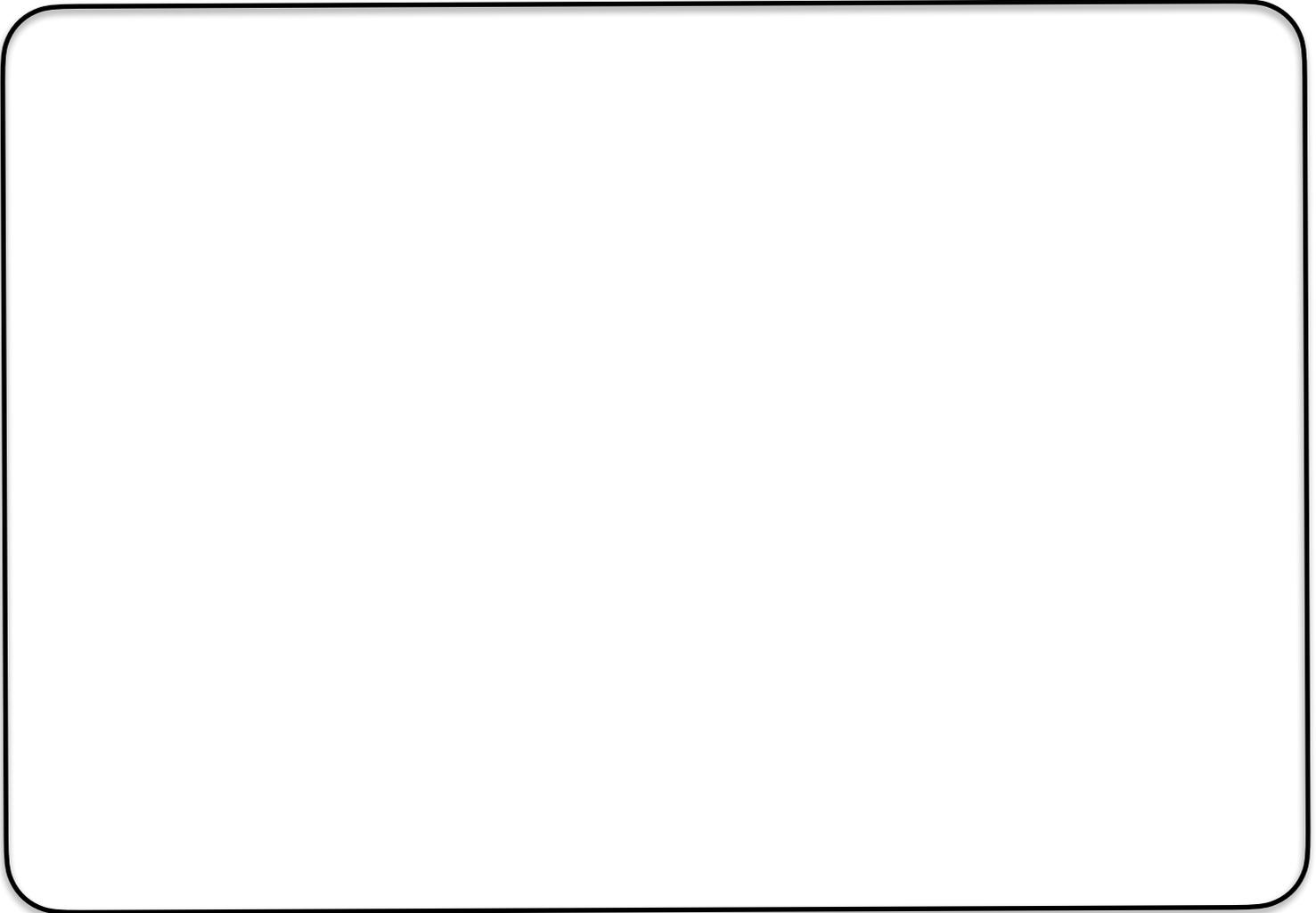
2. Drawing: Emperor Penguin (15 m)

DAY 22

p.2



1. https://www.youtube.com/watch?v=Y1APW_4J8dw
2. <https://design.tutsplus.com/tutorials/how-to-draw-a-penguin-->
3. <https://www.youtube.com/watch?v=Cooqz3PttqY>
4. <https://www.youtube.com/watch?v=CTwpCDDSyAk>

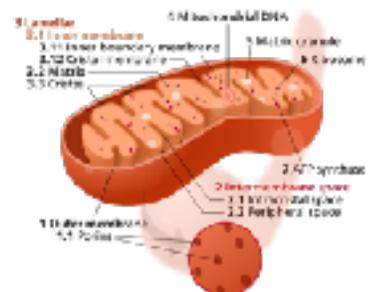


"I have made the earth, the men and the beasts which are on the face of the earth by My great power and by My outstretched arm, and I will give it to the one who is pleasing in My sight."

—Jeremiah 27:5

To make your dog or cat, God had to do innumerable things with the DNA code that builds them. One of the things is that He had to do was make it so each of the 20 trillion cells of a dog had about 1000 insanely complex hot dog-shaped mitochondria built in every cell. These mitochondria use parts of our food to make energy molecules. There are specific places on the DNA stand where the code for different parts of the mitochondria are. *EVERY* cell had to know where those parts are and access them...Could you find them? Would you know what to do with the code sections once you knew?

It's all too wonderful for us here at CWS. We're glad God knows all things about our bodies and lives better than we do. It's a secure and sweet place to be.

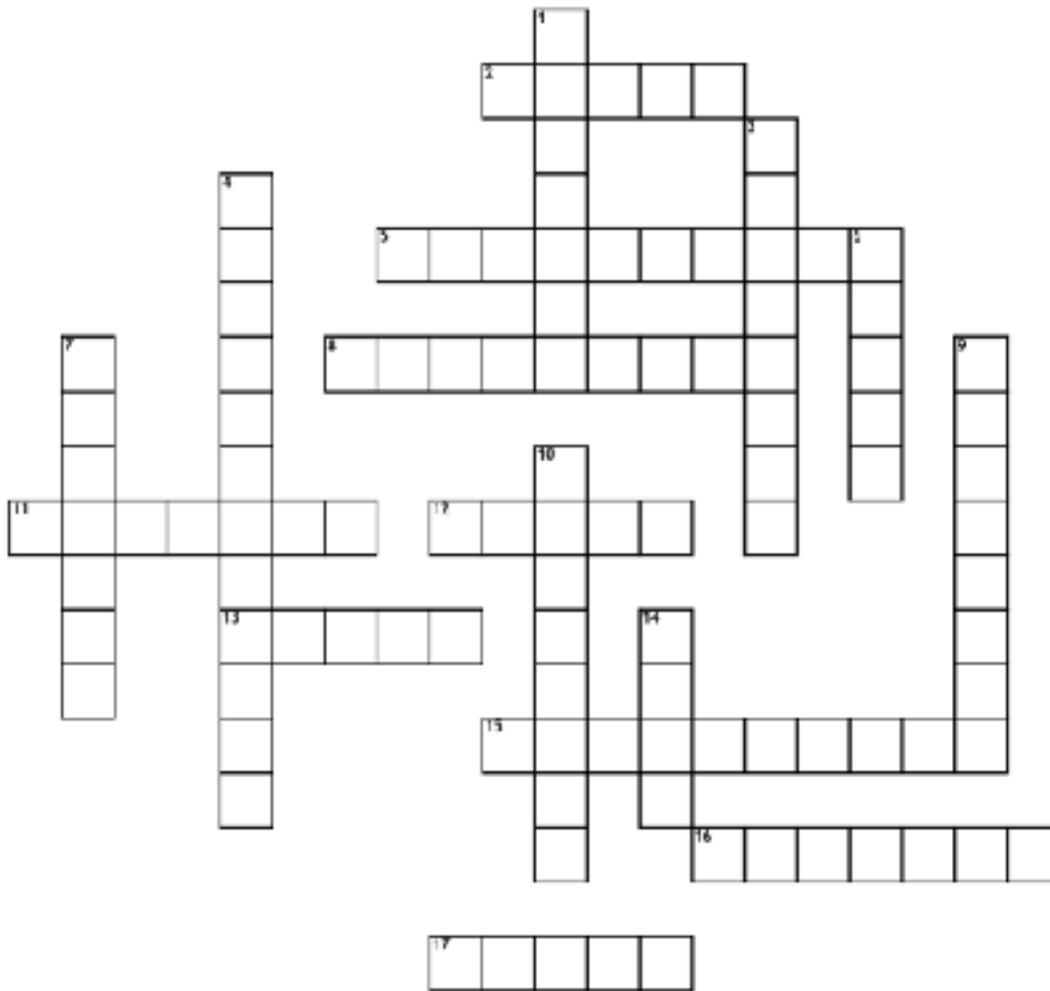


Give this Crossword Puzzle a try.

(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 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_____.
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_____.
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.

3. Drawing: Tiger (15 m)

DAY 24

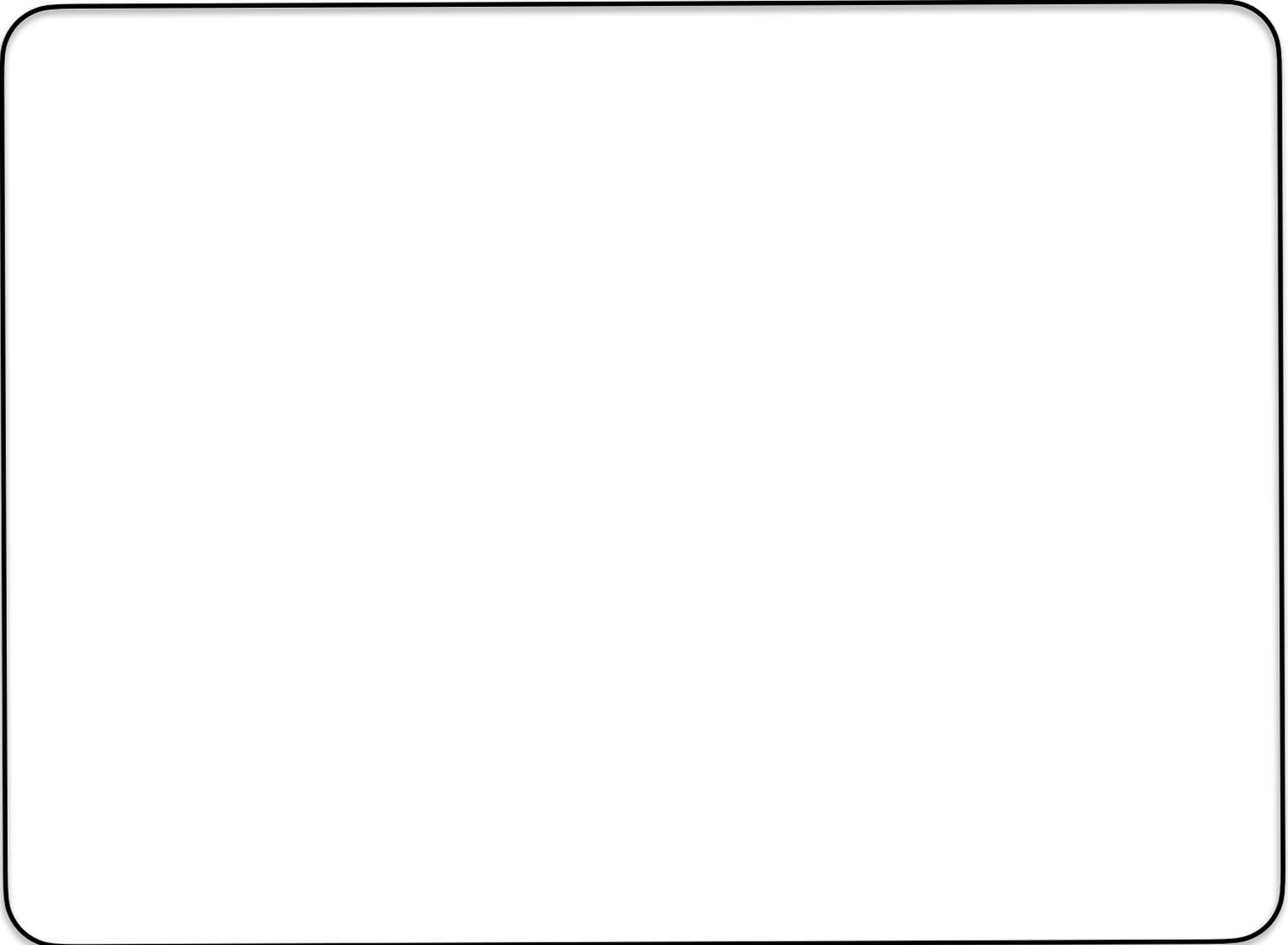
p.2



1. <https://lifestyle.howstuffworks.com/crafts/drawing/how-to-draw-a-tiger/>
2. Tablet: <http://www.yedraw.com/how-to-draw-tiger.html#.Xe978JNKg3h>

3. <https://www.youtube.com/watch?v=CTwpCDDSyAk>

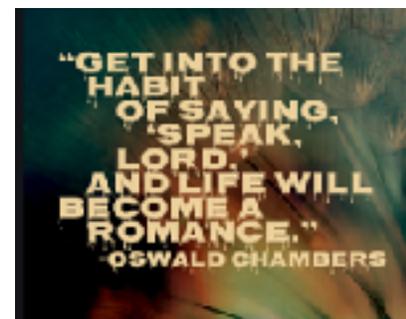
4. <https://how2drawanimals.com/8-animals/28-draw-tiger.html>



**“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**

Your Savior 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.





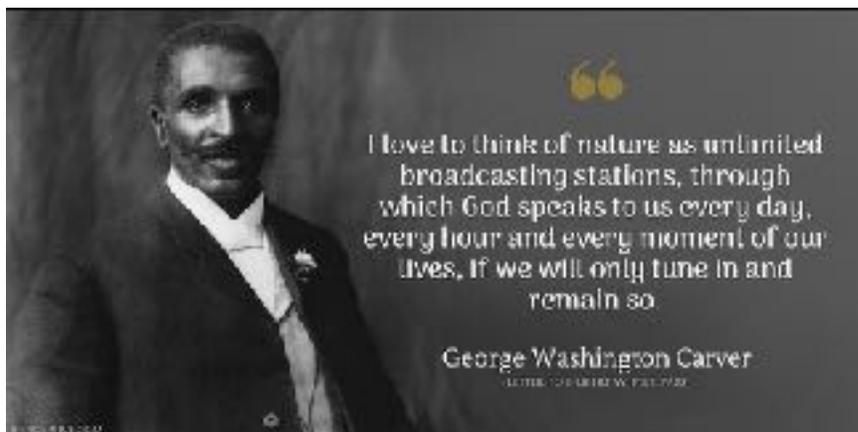
Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER. BENGE p.141-175. Other options are always welcome. Mom, teacher is boss.*

Title

Pages read



“
I love to think of nature as unlimited
broadcasting stations, through
which God speaks to us every day,
every hour and every moment of our
lives, if we will only tune in and
remain so.”

George Washington Carver

LETTER TO GEORGE WASHINGTON CARVER

1. Gold Digs 2 (60m+)

Parents Note: An option for some is to watch "Absolute Genius" Videos in Fluid Dynamics General Links 1 .



DAY 26

p.1

GD2: Bones

The "Gold Dig" Theme for Fluid Dynamics is "Bones". It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

Directions

If you are older and Gold Digs is not too difficult, **Read FIRST TIMER'S Gold Digs and take the quiz.**

Then title and draw 2 pictures of the most interesting concepts about this Gold Dig in the boxes on the left.

If you are younger, read the material for 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.

There are 5 lessons doing First Timer's Gold Digs on Bones in this printable. Then for those of you who are older, there are 5 more lessons taking the quiz again at the Second Timer's level.

Picture Title:

Picture Title:

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Save Awesome Genius Videos for later. Only 1 at the most here.

Link1:

[Large empty rounded rectangular box for writing facts from Link 1]

Link 2:



[Large empty rounded rectangular box for writing facts from Link 2]

Link 3:

[Large empty rounded rectangular box for writing facts from Link 3]



It's time to do some Research!

This lesson is straight forward. Research any topic you like dealing with the topics presented or in something related to these lessons.

You need to follow your instructor's directions as to how to research and how to present your research. If you have no instructions, find 25-50 facts on your subject area—25 if they are involved, and 50 if they are shorter. Use the box below and the next sheet to list your research findings.

See the Experiment Journal pages in the Research lesson for ideas and possible topics.

You have many UChoose lessons in this Global Topic. If research is a love of yours, there are many opportunities to continue it in Uchoose lessons in this printable.

CWS Suggestion: Dolphin Hydrodynamics (How they swim fast), Bird Aeronautics, How Planes Work, Jet wings. Plane control systems.

Title

Date:

A large, empty rectangular box with a thick black border, intended for students to write their research findings.



Title

Date:

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

Today is a dissection day. So fun!

In this Global Topic, you have four different dissections which are detailed in the Experiment lessons: Fish, Starfish, Shark and Squid. You can choose any two. ***Where to get the supplies and how to do the dissections is all in the Experiment lessons.***

You may go down to the supermarket and buy a trout from the supermarket and dissect it. You can even cook it and eat your way through the dissection! You'll lose a little educational value, but, hey, it can taste pretty good! You can always buy another fish from the store and hit again, or just go out and go fishing—easy!



The box on this page and the next is for you to put pictures 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 details you discover.

Our goal is to make you a Vet-Grade Anatomist of the animals you chose.

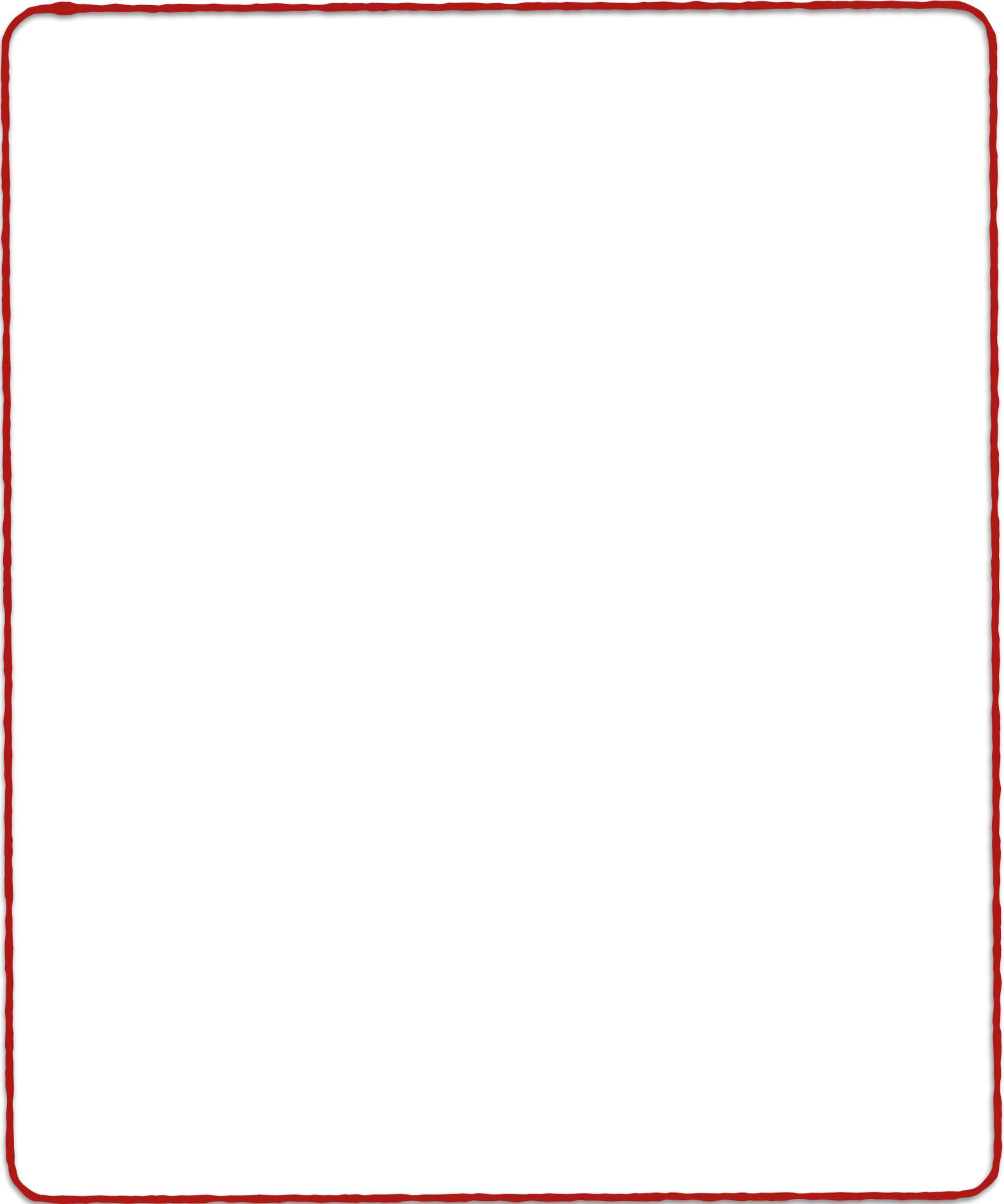
My Dissection: _____ Date: _____

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

Exp. My Dissection:

DAY 29

p.2





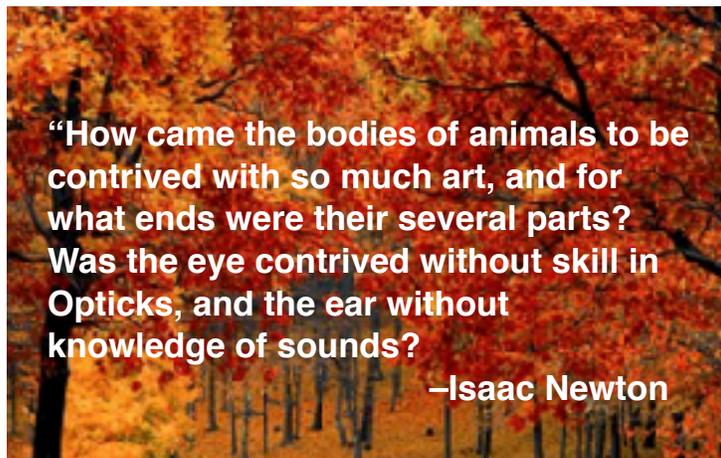
Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

CWS SUGGESTION: *Heroes of History: GEORGE WASHINGTON CARVER. BENGE p.176-END* Other options are always welcome. Mom, teacher is boss.

Title

Pages read



1. Gold Digs 3 (60m+)

Parents Note: An option for some is to watch "Absolute Genius" Videos in Fluid Dynamics General Links 1.



DAY 31

p.1

GD3: Bones

The "Gold Dig" Theme for Fluid Dynamics is "Bones". It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

Directions

If you are older and Gold Digs is not too difficult, **Read FIRST TIMERS Gold Digs and take the quiz.**

Then title and draw 2 pictures of the most interesting concepts about this Gold Dig in the boxes on the left.

If you are younger, read the material for 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.

There are 5 lessons doing First Timers Gold Dig on Bones in this printable. Then for those of you who are older, there are 5 more lessons taking the quiz again at the Second Timer's level.

Picture Title:

A large, empty rounded rectangle with a black border, intended for drawing a picture related to the 'Gold Dig' theme.

Picture Title:

A large, empty rounded rectangle with a black border, intended for drawing a picture related to the 'Gold Dig' theme.

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:

Today is a Reinforcement day. Be creative.

The purpose of the reinforcement lessons is to reinforce any aspect of 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 using regular puppets. Or you could **act out** with a friend or sibling being the DNA of different animals talking to each other 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 the Experiment Journal; pages in the Experiment lesson for more ideas.

Title

Date:

1. Gold Digs 4 (60m+)

Parents Note: An option for some is to watch "Absolute Genius" Videos in Fluid Dynamics General Links 1



DAY 34

p.1

GD4: Bones

The "Gold Dig" Theme for Fluid Dynamics is "Bones". It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

Directions

If you are older and Gold Digs is not too difficult, **Read FIRST TIMERS Gold Digs and take the quiz.**

Then title and draw 2 pictures of the most interesting concepts about this Gold Dig in the boxes on the left.

If you are younger, read the material for 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.

There are 5 lessons doing First Timers Gold Dig on Bones in this printable. Then for those of you who are older, there are 5 more lessons taking the quiz again at the Second Timer's level.

Picture Title:

Picture Title:



Choose a way to record something about your reading.

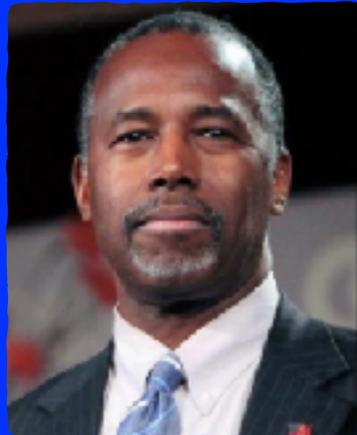
- Short essay
- Key words
- Mind map or drawing

CWS SUGGESTION: Heroes of History: Thomas Edison By J. Benge p.1-35. Other options are always welcome. Mom, teacher is boss.

Title

Pages read

Large empty rounded rectangular box for student response.



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 \(60m+\)](#)

Parents Note: An option for some is to watch "Absolute Genius" Videos in Fluid Dynamics General Links 1



DAY 36

p.1

GD5: Bones

The "Gold Dig" Theme for Fluid Dynamics is "Bones". It's a wild and exciting journey into hundreds of amazing ways God has designed our bones.

Directions

If you are older and Gold Digs is not too difficult, **Read FIRST TIMER'S Gold Digs and take the quiz.**

Then title and draw 2 pictures of the most interesting concepts about this Gold Dig in the boxes on the left.

If you are younger, read the material for 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.

There are 5 lessons doing First Timer's Gold Dig on Bones in this printable. Then for those of you who are older, there are 5 more lessons taking the quiz again at the Second Timer's level.

Picture Title:

Picture Title:

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Advanced Students : ALSO DO BONES 1 AGAIN. Take quiz for “Second Timers”.

Save Awesome Genius Videos for later. Only 1 at the most here.

Link1:

[Large empty rounded rectangular box for writing Link 1 facts]

Link 2:



[Large empty rounded rectangular box for writing Link 2 facts]

Link 3:

[Large empty rounded rectangular box for writing Link 3 facts]

It's time to do some Research!

This lesson is straight forward. Research any topic you like dealing with the topics presented or in something related to these lessons.

You need to follow your instructor's directions as to how to research and how to present your research. If you have no instructions, find 25-50 facts on your subject area—25 if they are involved and 50 if they are shorter. Use the box below and the next sheet to list your research findings.

See the Experiment Journal pages in the Research lesson for ideas and possible topics.

You have many UChoose lessons in this Global Topic. If research is a love of yours, there are many opportunities to continue it in Uchoose lessons in this printable.

CWS Suggestions: Turbinate Bones, Box Fish Swimming Dolphin HydroDynamics, Bird Aeronautics, Plane aeronautics, Ship Hydrodynamics, Ship Hull designs



Title

Date:

A large, empty rectangular box with a thick black border, intended for students to write their research findings.



Title

Date:

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

3. Fluid Dynamics Acrostic (20 m)

DAY 39

p.1

The Rules:

You've learned a even more about Fluid Dynamics.. But now's your chance to test your mastery again! Everything on this page must be new.



Take every letter below and tie a great concept to it. If you're going for a *Level 3 student*, no "easies" allowed. If you're *Level 2* you can have 4 "easies". What's an "easy"?

An easy is any one word answer" like I for "I like fluid dynamics." What you are looking for is "interestables"—exciting or interesting information for each letter. Are you up for the challenge?

H

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MICS :)

5. Fluid Dynamics: Origami (60 m+)

DAY 39

p.2

Have some fun making some Fluid Dynamics creatures!

Engineering with Origami WOW https://www.youtube.com/watch?v=ThwuT3_AG6w&t=376s



Seal

<https://www.youtube.com/watch?v=SqYAwb7fMbw>

<https://www.youtube.com/watch?v=U3SH59mHURA>



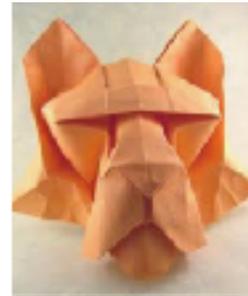
Penguin

<https://www.youtube.com/watch?v=iHQMzLUQMmg>



Tiger

<https://origami-art.us/instructions/234-origami-tiger>



Tiger Face

<https://www.giladorigami.com/origami-database/Tiger%27s%20head%20Roman%20Di>



Sea Turtle

<https://www.youtube.com/watch?v=CCqxMhV-3pE>



3-D Penguin

https://www.youtube.com/watch?v=k_W8liOytM4



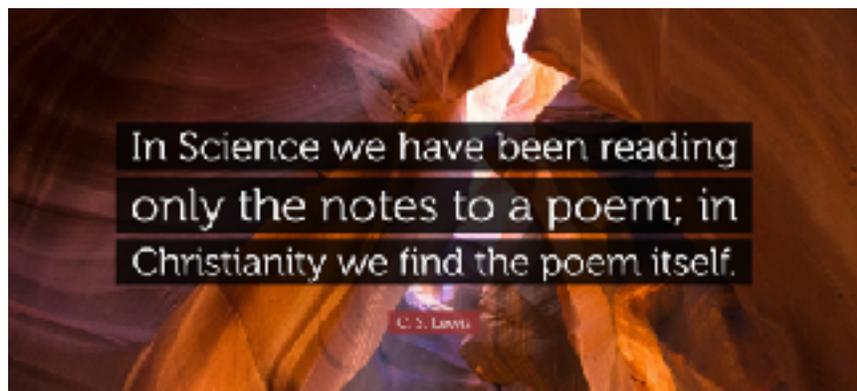
Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

CWS SUGGESTION: Heroes of History: Thomas Edison By J. Benge p.36-70 Other options are always welcome. Mom, teacher is boss.

Title

Pages read

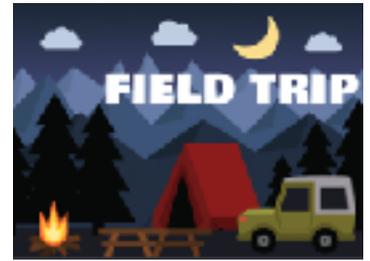




This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with rounded corners and a thick green border, intended for writing a title and summarizing the project.

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Advanced Students : ALSO DO BONES 2 AGAIN. Take quiz for “Second Timers”.

Link1:

Link 2:



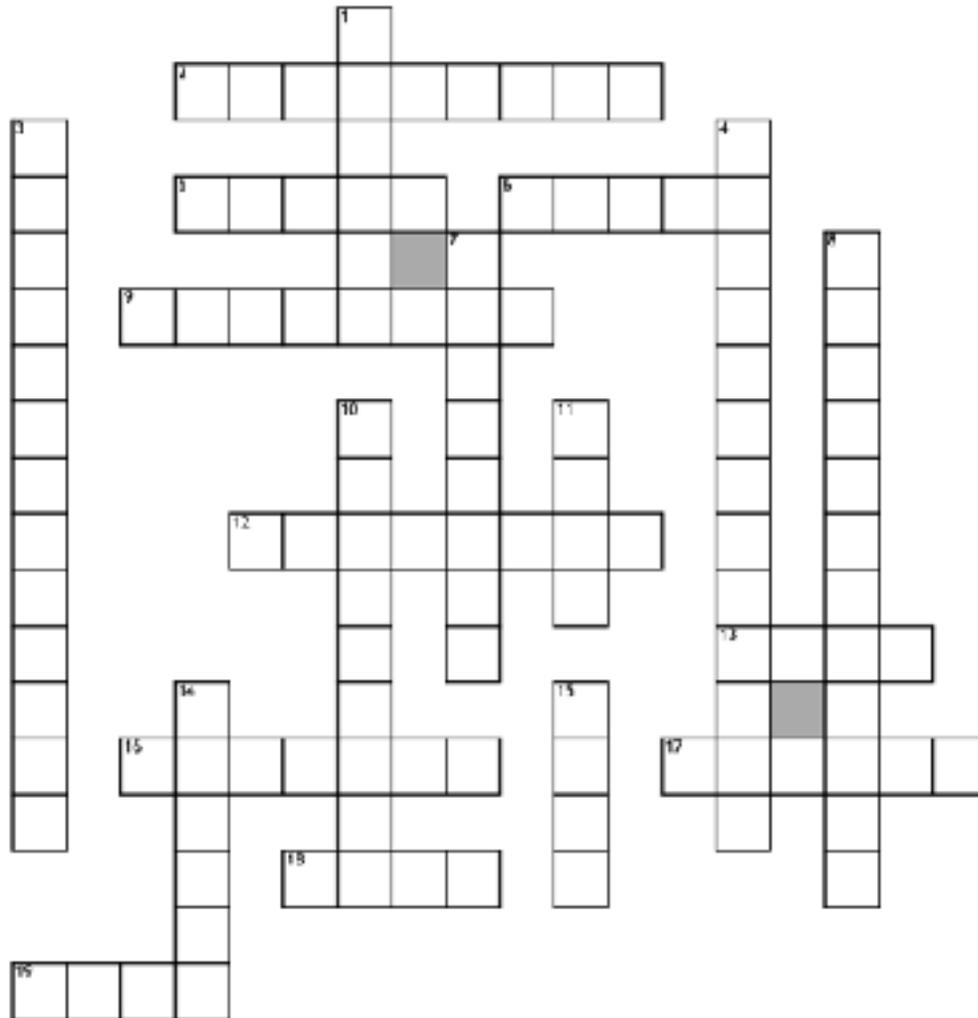
Link 3:

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)

DAY 42

p.3

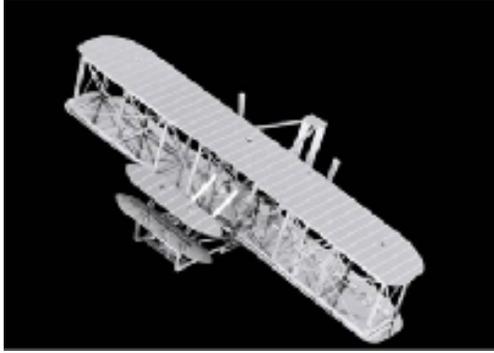
These questions are the same as on the previous page only larger.

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.
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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.



Take the Second Timers Quiz

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

2. Watch an “Absolute Genius” link + 5 Great Facts (30 m)

[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 others biography videos that are 30 minutes long (or several on the same person that total 30 minutes,)

3. Read and Record an Instagram Devotional (10 m)

Read a CWS Instagram Devotional and Apply It

Crosswired Science has a number of Instagram Devotionals at this URL: <https://www.instagram.com/crosswiredscikids/> For younger children, we suggest using the book “Indescribable” Louie Giglio.

- 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.

Title:

Scientist:



1.

2.

3.

4.

5.



This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

Go For Whatever -U-Want! Field Trips included! Yippee!



Title

A large, empty rectangular area with a thick green border, intended for writing a title and a summary of the chosen project.



Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

***CWS SUGGESTION:** Heroes of History: **Thomas Edison** By **J. Bengel** p.71-105. Other options are always welcome. Mom, teacher is boss.*

Title

Pages read





This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with rounded corners, outlined by a thick, hand-drawn green border. This area is intended for the student to write a title and provide a summary of their chosen project.

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Advanced Students : ALSO DO BONES 3 AGAIN. Take quiz for “Second Timers”.

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:

1. Watch & Quiz **2**: 2 Core Videos + L2 Quiz (15 m)



Take the Second Timers Quiz

Watch the 2 Fluid Dynamics (FD) Core Videos for today, [Carb Venturis & Super Feathers](#) and [Planes, Whiskers & Alulas](#) Twice. 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.

2. Watch an “Absolute Genius” link + 5 Great Facts (30 m)

[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,)

3. Read and Record an Instagram Devotional (10 m)

Read a CWS Instagram Devotional and Apply It

Crosswired Science has a number of Instagram Devotionals at this URL: <https://www.instagram.com/crosswiredscikids/> For younger children, we suggest using the book “Indescribable” Louie Giglio.

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

Title:

Scientist:



1.

2.

3.

4.

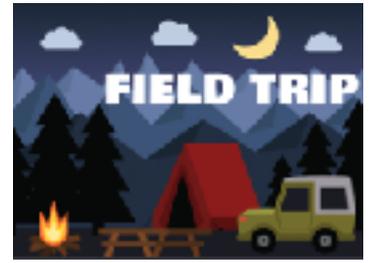
5.



This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with a thick, hand-drawn green border, intended for writing a title and a summary.

Choose a way to record something about your reading.

- Short essay
- Key words
- Mind map or drawing

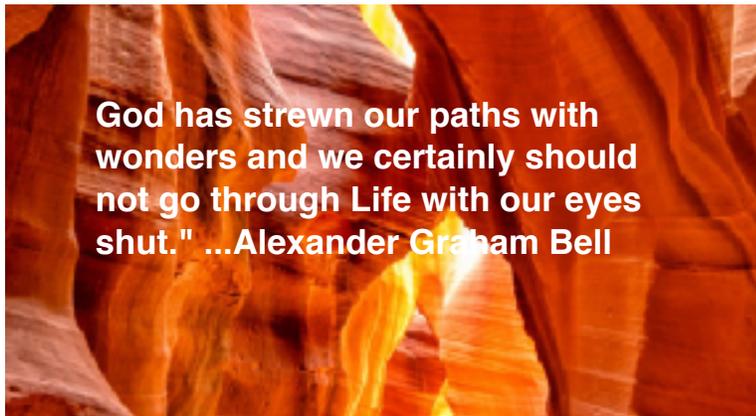


CWS SUGGESTION: *Heroes of History: Thomas Edison BENGE p.106-140* Other options are always welcome Mom, teacher is boss.

Title

Pages read

A large, empty rectangular area with a green border, intended for students to write their reading record.

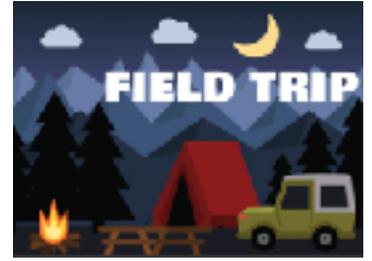




This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with rounded corners, outlined by a thick, hand-drawn green border. This area is intended for the student to write a title and provide a summary of their chosen project.

Today is 45-60 Min. Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

Advanced Students : ALSO DO BONES 4 AGAIN. Take quiz for “Second Timers”.

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:

1. Watch & Quiz **3**: 2 Core Videos + L2 Quiz (15 m)



Take the Second Timers Quiz. Watch the 2 Fluid Dynamics (FD) Core Videos for today, [Hummers & Dolphins](#) and [Boxfish & Penguins](#). Twice. After the second time, take the quiz at the Second 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 more times.

2. Watch an "Absolute Genius" link + 5 Great Facts (30 m)

[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.)

3. Read and Record an Instagram Devotional (10 m)

Read a CWS Instagram Devotional and Apply It

CrossWired Science has a number of Instagram Devotionals at this URL: <https://www.instagram.com/crosswiredscikids/>

- 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.

Title:

Scientist:



1.

2.

3.

4.

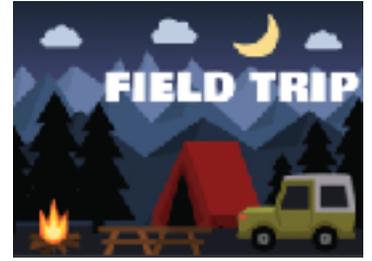
5.



This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, add a picture to. Summarize your project or event here. 100-200 words.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with a thick, hand-drawn green border, intended for writing a summary or project description.

Choose a way to record something about your reading.

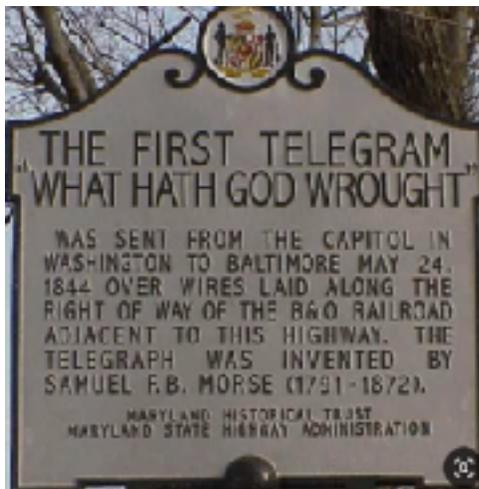
- Short essay
- Key words
- Mind map or drawing



CWS SUGGESTION: *Heroes of History: Thomas Edison. By J. Bengel*
p.141-175 Other options are always welcome. Mom, teacher is boss.

Title

Pages read

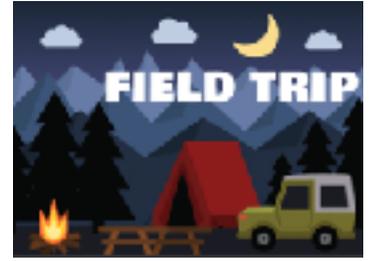




This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture—or two or a dozen— here, too.

Go For Whatever -U-Want! Field Trips included! Yippee!



Title

A large, empty rectangular area with a thick green border, intended for writing a title and drawing a picture.

Today is Links. Amazingly Interesting! Write 2 great facts from 3 of your favorite Links. (Look back at previous Link lessons for detailed directions.)

NOTE: YOU ARE DOING GENERAL LINKS 1 AGAIN!

Advanced Students : ALSO DO BONES 2 AGAIN. Take quiz for “Second Timers”.

Link1:

Save Awesome Genius Videos for later. Only 1 at the most here.

Link 2:



Link 3:

Scientist:



1.

2.

3.

4.

5.



This is a Science-Free-For-All!

The U-Choose lesson icon contains truckloads of great ideas! Summarize the project you choose here, Add a picture or two—or a dozen— here, too.

*Go For Whatever -U-Want! Field Trips included!
Yippee!*



Title

A large, empty rectangular area with a thick green border, intended for writing a title and summarizing the project.

You can do any number of things to record a little something about your reading. Your teacher will assign you a quick essay, several sentences, clipped sentences about what you read, a mind map, or drawings.

If you get no specific direction...TAKE YOUR PICK!

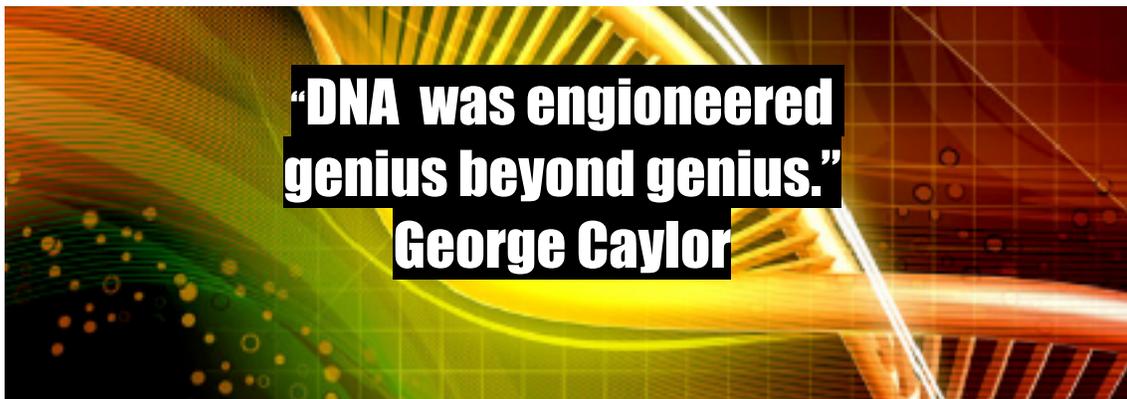
CWS SUGGESTION: *Heroes of History: Thomas Edison By J. Bengel p.176 to end* Other options are always welcome. Mom, teacher is boss.



Title

Pages read

A large, empty rectangular box with rounded corners and a thick green border, intended for students to write their reading titles and page counts.





This is your exciting Science Project for this Year.

- Scientists all 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 Project each year you are doing through school. Why?
- It 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. 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 Fluid Dynamics.

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, UChoose and Field Trip lessons.

My Project:

Date:

- Shadow a Science Occupation. (see above)
- Investigate an audio resource like Jonathan Parks.
- 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.
- Go to Science Seminars.
- Help with Creation evangelism.
- Read Sci- Biographies. ("Benge" are Great)
- Read loads of Creation Magazines
- Concentrate on "power" experiments like making Borax and other crystals, making a laser- sound transmitter, building your own sound system, etc.
- Enter a Science Fair.
- Master Puppetry and use it in Science Camps
- Do Science camps around your city during school breaks. Try going with a team into really poor areas. Do them in other countries.
- Plan and preform Science exhibitions for large groups with Christian messages.
- Help campus Creation outreaches.
- Read 50 articles, watch 30 videos from Creation ministries more read 5 Creation books..
- Listen to 50 Creation messages.



1.

2.

3.



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