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Biology with Lab
Please review the FAQs and contact us if you find a problem.
Credits: 1
Prerequisite: Middle school biology and chemistry
Recommended: 9th or 10th
Test Prep: CLEP Biology This course covers the basic material for this exam, but this is considered a very hard test, and I would suspect more will need to be studied to learn everything required for this huge exam. It's worth the same as two college courses which is why it covers so much.
Course Description: This course is based on Georgia Virtual Learning's High School Biology courses, though it pulls in other resources throughout. This curriculum includes topics such as the scientific method, cells, biochemistry, photosynthesis and respiration, mitosis and meiosis, DNA and RNA, genetics, ecology, evolution and creation, taxonomy, viruses and bacteria, protists and fungi, and finally animals. Students will learn through texts, videos, online interactives and through hands-on and virtual lab investigations. (GVL course pages are linked as sources for the pages I copied their information from. They are all edited to some degree. All of the crossword puzzles are made from the GVL material as well as study questions and key term sheets.) And a thank you to Holly Dunn and Liz Mogg for all their help with preparing this course.
Notes: I believe in a literal six-day creation of the world by our holy, loving, almighty, creative God. This will be discussed in the beginning of the course to give the framework for how evolution will be approached. Natural selection is taught as it corresponds with Biblical truth but not beyond that. Students will gain some understanding of secular evolutionary thought and come away strengthened in their faith. Many of the materials mention millions of years, and I can't get away from that, but the students will not be required to take any of that as fact. There is no test on evolution; instead, students finish that chapter by presenting their beliefs about creation and evolution.
Materials needed
Day 1

1. **If you didn't get here through My EP Assignments, I suggest you go there and create an account.**
2. **(*)Print out your First Quarter Grading sheet or use the Excel version.**
3. **Keep in mind that your success in Biology will be directly proportional to the amount of effort you invest. You should complete every activity assigned to strengthen your understanding of each concept.**
4. **Expectations**
    - **Do your best effort. Be responsible for your own learning.**

- **Read directions carefully.**
- **Believe in your abilities. Confidence is half the battle.**
- **Read all text and supplementary materials as assigned.**
- **Try, and then try again.**
- **Complete all assignments as assigned.**
- **Ask Questions!**
- **Practice. Practice. Practice.**

1. **Safety Laboratory safety is important. Although many labs are online, students will be conducting some labs at home. All students are encouraged to wear protective equipment at all times while conducting labs.**
2. **Assignments**
   - **Save all your work to your hard drive or disk and also save it in another location (i.e. disk or flash drive).**
   - **Sometimes things can happen to your computer, and it may be necessary for you to prove that you have completed all assignments.**
   - **Cheating and plagiarism is lying and stealing.**

What is Biology?

1. **Read over the key terms. You don't need to learn all of these terms now. Use this to start to refresh your memory about what you've learned previously.**
2. **This is your answer key for the course.**

Day 2

1. **Learn about the terminology of biology. This chart shows how the words used in biology are formed. They have meanings.**
2. **Read about the "Study of Life."**
3. **The next few days you will look more closely at the characteristics of life. For today, think about what you already know about living and non-living things. Even if you have never taken a biology course before, you know some characteristics/attributes that living things have in common. Make a list of what living things have in common. What makes something alive?**
4. **Then write at least three characteristics of living things with descriptions and examples as shown in the example below.**
   - **Characteristic: the need to be able to obtain and use energy**
   - **Description: If something is alive it needs a source of energy.**
   - **Example: Plants get their energy from the sun. Animals eat plants or other animals. Mushrooms feed on decaying organic material.**
     - **(source – You do not need to visit this site. This is just referencing the source of this assignment.)**

1. **Record your score out of 10. Take off one point for each incomplete section of the assignment. There are nine things you should have written.**

Day 3*

1. ***Print the outline (source). Or just create your own.**
2. **Take notes in an outline form.**
    - **The title is Characteristics of Life.**
    - **Then you will write I. All living things are made with one or more cells.**
    - **Then you would indent and write A. B. etc. with some information.**
1. **Read about three characteristics of life.**
    - **All living things are made with one or more cells.**
        - **Watch the short video on living things being made up of cells.**
        - **Watch the short video on unicellular and multi-cellular organisms.**
        - **Read about examples of single-cell organisms.**
    - **All living things must be able to obtain and use energy.**
        - **Plants use the process of photosynthesis to get energy. Cell organelles called chloroplasts convert the sun's energy into usable energy for the plant.**
        - **Animals have organelles called mitochondria which carry out a chemical reaction which turns the food we eat into energy during digestion when the food is broken down. The energy is used by our cells to keep us going.**
    - **All living things react to a stimulus.**
        - **Watch the Seed to Flower video.**
        - **How do you react to stimuli?**
            - **Do you jump when you hear a loud noise?**
            - **Do you squint when a light is bright?**
            - **Do you react to smells?**

Day 4

1. **Continue your outline. If you printed out an outline, turn it over and write your own on the back for the next three characteristics.**
    - **All living things reproduce.**
        - **asexually**
            - **The most common form of asexual reproduction is when bacteria and other single-cell organisms divide themselves into two identical cells. They reproduce by dividing. It can happen as quickly as every thirty minutes.**
        - **sexually**
            - **Reproduction sexually is the combining and multiplying of cells, instead of the dividing of them. This most commonly happens when male and female single cells combine and then multiply.**

        - **Some animals can only reproduce every couple of years. Others, like mice, can reproduce every month. Some have one baby at a time, others, like the toad can have thousands at once.**
    - **All living things grow, develop and die.**
        - **Every organism has a life cycle, a beginning and an end.**
        - **Every organism deteriorates and breaks down eventually.**
        - **All living things come to a point when its cells can no longer do what they must in order to survive.**
    - **All living things maintain homeostasis.**
        - **Watch this short video for an overview of the role of homeostasis in the body.**
        - **Homeostasis happens throughout our bodies. It controls…**
            - **heart rate**
            - **respiration rate**
            - **amount of waste products in the blood**
            - **the amount of water in the body**
            - **body temp**

Day 5

1. **Read over this list and descriptions of the characteristics of living things. (Just read the top of the page. There's a list of 7 things. Stop at 2. What is Matter?)**
2. **How does this compare to what you've learned?**
3. **Pretend you've discovered something you think is alive. Present it to the scientific community (your family) and give at least twelve points of evidence that it is biotic using at least six characteristics of life you've just learned about. (Read the grading below to make sure you do what you are supposed to do.)**
4. **Record your grade out of 30 for completing this assignment . This is meant to be an oral presentation, but you can request to do it in writing as well.**
    - **Score up to five points for each of six characteristic. State the characteristic and two ways your specimen exhibits that characteristic.**

Day 6

1. **Is it biotic or abiotic? Biotic means living and abiotic means non-living. However, biotic things that are now dead can be considered both biotic and abiotic. It becomes not straightforward at that point.**
2. **Read from "What is Biology?" (ck12) (You don't need to use the links in the reading. I will be linking to ones separately that you should use. This site may require you to log in. If you don't have one, please create an account.)**
3. **Answer questions 1-4.**

4. **Check your answers. All answers can be found on the answer pages linked on Day 1.**
5. **Record your score out of 4.**

Day 7

1. **Watch this video on evolution and natural selection. When you read about evolution, think about it in terms of natural selection. As a Christian who believes that the earth was created in six days by God, I do believe in natural selection. Of course I do. It exists today. It's something that we can observe happening. I don't accept that somehow these small changes within species somehow, over "eons and eons" made species jump and transform into whole other species. There has never been any observable evidence of that happening. The scientists who believe in that (and not all do) take it on *faith* that that's how all of the many species came to be. I would rather have faith in God. It makes much more sense that 10 million species came to be because they were created by a creative God than to say that those (possibly over 30 million) species developed because they survived best in each ecosystem. If that were the case, don't you think there would be way fewer species if it were really about developing into what survived *best* in that environment?**
2. **Read the story of creation. The video won't play. You have to read the page and click on "Next" until you get to the section on the "Fall."**
3. **Complete the quiz.**
4. **Check your answers.**
5. **Record your score out of 8.**

Day 8

1. **Watch this video on faith and evolution.**

Day 9 (Materials Needed)

1. **Read through the organization of life terms.**
2. **Read over the safety information.**
3. **Complete the lab, Do Sugar Crystals Grow. Read and follow the directions!**
4. **Thinking about biotic and abiotic…Did the sugar grow? How did it grow? Did it reproduce? When it stopped growing, did it die?**
5. **Score 10 points for completing the experiment and 5 points for answering the questions.**
6. **Record your score out of 15.**

Day 10

1. **Look over your notes from this unit on the characteristics of life.**

2. **Complete the crossword puzzle for review as well.**
3. ***Take this quiz to see what you remember about your introduction to biology. Always hold onto things like this because they make excellent review materials for later tests and exams.**
4. **Check your answers. They just have to be the right idea, not the exact words.**
5. **Record your score out of 7.**

Scientific Method
Day 11*

1. ***Fill in the blanks on the note page. Use this page on experiments and the internet.**
2. **Record 6 points for completing each blank on the page. Take off one point for each incomplete blank.**
3. **Save this sheet for studying!**
4. **Write a brief paragraph on how you have or could use the scientific method to solve a problem.**
5. **Record 5 points for completing the paragraph.**

Day 12

1. **Read and answer questions three and five about Science and the Natural World.The beginning is review, so you can skim that material.**
    - **You don't need to use the links on the page, but if the video is working, you can watch it or part of it.**
1. **Check your answers.**
2. **Record your score out of 4, up to two points for each question.**
3. **Do numbers 1-5 on the "Identifying Variable" assignment.**
    - **The independent variable is the one being tested. It's the manipulated variable. They are changing it.**
    - **The controlled variables are kept the same each time.**
    - **The dependent variable depends on the independent variable. It's the outcome; it's what responds to the change in the independent variable.**
1. **Check your answers.**
2. **Record your score out of 10.**

Day 13

1. **Complete this assignment on developing a controlled experiment.**
2. **Check your answers.**
3. **Record your score out of 20. 1 point for each answer +4 points for the graph if it is labeled and complete. Take off one point for any missing answer.**

Day 14

1. **Answer the "What is the Scientific Method?" questions using "Test Yourself." If you don't get them all right, then use the video lesson.**
2. **Record 5 points for completion, if you completed the assignment.**

Day 15

1. **Review the metric system. Look it over and try to fill in the blanks.**
2. **Watch the videos on the metric system.**
    - **Weight vs Mass: What's the Difference**
    - **Converting Units in the Metric System: Length/Volume**
    - **Measuring Density**
1. **This page has 6 simple questions on it in two sets. Answer them.**
2. **Record up to 15 points. (There were 16 questions today, 10 in step 1 and 6 in step 3. You can get a perfect score with one wrong.)**

Day 16

1. **Watch the scientific method video.**
2. **Review the chapter on scientific investigation by answering the questions. Just answer in your head then click or highlight to see the answers.**
3. **Record 5 points for completion, if you completed the assignment.**

Day 17

1. **Match the terms and definitions.**
2. **Complete the vocabulary crossword puzzle.**
3. **Read about the "Organization of Life."**
4. **Record 5 points for completion.**

Day 18

1. **There are limits to science.**
2. **It is said that scientists start from two basic assumptions: that the world is explainable and understandable and our understanding must be based on what is truthfully perceived and observed. As a Christian I can see how the world having a Creator makes things explainable and understandable. No one except God saw what happened long ago. The Bible is the only record we have of what happened. The Bible is an extremely accurate history book. The scientists who say we must observe in order to know have never, ever observed one species evolving into another, in any way, shape, or form. It's not "real" science. I wasn't there to observe the world's creation, but God was, and we have His record of it.**
3. **Write two questions that can be answered by science and two questions that can't.**

4. **Record 5 points for completion.**

Day 19

1. **Remind yourself about the hierarchy of life.**
2. **Order these: cells, organelles, atoms, molecules, tissues, organ systems, population, organs, organisms, communities.**
    - **Check your answer.**
1. ***Read* the Structure Fits Function assignment (source). (You can complete this on Day 20.) Here's some help in understanding how structure determines the function.**

Day 20

1. **Complete the Structure Fits Function assignment. You can do additional research to answer the questions.**
2. **Look over the answers on the answer pages.**
3. **Record a score of 20. Take off a point for any incomplete or just plain wrong answers.**
4. **Review all of your notes and quizzes from the course so far.**
5. **Take the scientific method quiz.**
6. **Record your score out of 10.**

Cells
Day 21

1. **Intro to Cells Read and answer review questions one through three.**
2. **Check your answers.**
3. **Record your score out of 3.**

Day 22*

1. ***Print out these note pages on cells. Fill in the blanks where info is missing as you read and watch the videos.**
2. **Read about cells and watch the video.**
3. **Watch this guy talk really fast about this stuff.**

Day 23

1. **Continue filling in your notes from the information on this page on cell organelles.**
2. **Click around and learn about cell structure. You can use this to help you if you are still filling in blanks.**

Day 24

1. **Take the quiz on Prokaryotic and Eukaryota cells. (4 questions, 8 points)**
2. **Take the quiz on cell organelles. (10 questions, 20 points)**
3. **Record your score out of 28.**
    - **If you missed any, you can regain those points by answer any of these cell test questions correctly. (If you missed one above, that ended up being 2 points off your total. Here one correct answer is one point.)**

Day 25(*) (Materials: vinegar, eggs, corn syrup/salt/other)

1. **Look at this lab report template.**
2. **(*)Start Osmosis Lab.**
3. **Write a lab report according to the template. (You can only do the first parts of this today.)**

Day 26

1. **Continue lab observation.**
2. **Review cells. Click on the different parts to read about them.**

Day 27

1. **Finish your lab and report.**
2. **Score your lab report according to this rubric.**
3. **Record your score out of 20.**
4. **What happened? Water was traveling through the membrane. Life seeks balance. The process is called homeostasis. The water left the cell, the egg, through the membrane and went into the syrup that didn't have any water. You can soak an egg in water. What will happen? Why?**

Day 28

1. **Watch this video on plant cells.**
2. **Review the terms with flashcards, test, or one of the activities.**

Day 29

1. **If necessary, review cells one more time!**
2. **Take the quiz.**
3. **Record your score out of 10. (There are 11 questions. That means you can miss one and still get 10 points.)**
4. **Complete this cell project. You can use any websites/notes necessary.**
5. **Score your cell project out of 20. Take off a point for any missing pieces or any obviously wrong answers.**
6. **Record your score out of 20.**

7. **Hold onto your project!**

Day 30

1. **Do the test.**
2. **Record your total score out of 20.**
3. **Read "What Are Stem Cells?"**
4. **Read "The Continuing Controversy Over Stem Cells: A Christian View."**

Day 31

1. **Explain to someone why you chose the jobs you did on your cell project. Present your project.**
2. **Score up to 10 points for confident, clear explanations.**
3. **Record your score out of 10.**
4. **Read about diffusion and answer the review questions.**
5. **Check your answers.**
6. **Record your score out of 2.**

Day 32

1. **Read about diffusion and osmosis with videos from Khan Academy.**
2. **Watch the guy talk fast about cell transport.**

Day 33

1. **Here is an explanation of how osmosis works.**
2. **Have someone open the vinegar bottle a couple of feet away from you. Count how many breaths you take before you smell it. That's showing you the time it takes for the vinegar to diffuse through the air.**
3. **Watch this video of an osmosis experiment.**
4. **Answer the mystery questions. (source)**
    - **Note for #6: Starch molecules are too big to cross the dialysis bag membrane.**
1. **Check your answers.**
2. **Record your score out of 15. There are fifteen questions. Some are combined under one number.**

Day 34*

1. **(*)Answer the questions about osmosis for review.**
    - **Use the links as necessary to find the answers if necessary.**
        - **hyper- and hypo- tonic**
        - **fish in saltwater**

1. **What egg solution was hypertonic and which was hypotonic?**

Day 35

1. **Use the homeostasis and cell transport flashcards and/or activities.**
2. **Review all of your notes and materials from this chapter on cells. You could also review by exploring inside a cell.**

Day 36

1. **Take the homeostasis and cell transport test.**
2. **Record your score out of 25.**
3. **Watch "The Inner Life of a Cell." Can you recognize any parts of a cell and their functions?**

Biochemistry
Day 37

1. **Read about water and pH.**
2. **Use these two applets to look at water bonded into a droplet and a piece of ice. Make observations. What's different about the liquid and ice models?**
3. **If you need help with acids and bases, here's a link to talk you through it.**

Day 38*

1. **Answer the questions.**
2. **Check your answers.**
3. **Record your score out of 25. (potential for extra credit)**

Day 39

1. **Explore molecules. You don't have to understand everything going on in all of these. What can you observe?**
2. **Build two molecules. Use what you can find, things like toothpicks, pretzels, stirrers, straws, marshmallows, soft candies, and cotton balls to build either a molecule of water or a molecule of salt and either glucose or vitamin C.**

Day 40*

1. **Write 15 items (half base, half acid). Write their name, their pH, and make sure they are labeled as either acid or base.**
    - **You can use this pH sliding scale, or this picture (or search for your own).**
    - **Record your score out of 15.**

Day 41*

1. ***Read about macromolecules and carbohydrates and take notes according to this graphic organizer.**
2. **Then go to this link and read more on carbohydrates and look at their structure and makeup. (Here's an explanation for younger students. Don't feel bad about looking up things on kid sites to get a general idea before you tackle harder material. It can be a smart practice.)**
3. **Follow the arrows on the chart. Where do macromolecules come from?**

Day 42

1. **Read about lipids. Don't forget to take notes on your graphic organizer (printed on Day 41).**
2. **Now read this page on lipids. (site for younger students)**

Day 43

1. **Read about proteins and enzymes. Don't forget to take notes.**
2. **Read about proteins. (site for younger students)**
3. **Then read about enzymes.**

Day 44

1. **Read about nucleic acids. Don't forget to take notes on your graphic organizer (printed on Day 41).**
2. **Watch the video on the chemical structure of nucleic acids.**
3. **Then read this page on nucleic acids for younger students.**
4. **Answer the questions on macromolecules.**
5. **Check your answers to the questions.**
6. **Score 10 points for correctly answering the questions. Take off one point for any answer you didn't find.**
7. **Record your score out of 10.**
8. **Score up to 20 points for completing the outline/concept map section. There are 5 parts to complete each for carbohydrates, proteins, nucleic acids, and lipids. Take off a point for any block you missed.**
9. **Record your score out of 20.**

Day 45(*)

1. **(*)Print out the lab worksheets. (The link on the pdf is outdated. Use the link given in step 2 here for the lab.)**
2. **Complete the four labs, starting by clicking on carbohydrates. Fill out the worksheets as you go.**
3. **Record the steps AS you go through the labs.**

4. **Score up to 12 points for completing the 12 blank sections. Take off a point for any missing part of your answer.**
5. **Record your score out of 12.**

STOP
This is the end of the first quarter. If you are using a paper grading sheet, divide your total score by the total possible. It should be less than 1 (unless you have a perfect or better than perfect score). Multiply your result by 100. (Just ignore decimals.) That's your grade percentage (eg. 87%). Your goal is 90% or better. Place your graded work and labs in a safe place to be included in your portfolio.
Day 46(*)

1. **(*)Print out your new grading sheet or use the Excel version.**
2. **Review what you've learned. Read through cell theory.**

Day 47

1. **Choose one property of water and describe what would happen if water didn't have that property. Write a paragraph. (Make sure you know what cohesion is.)**
2. **Record 5 points for a paragraph that completes the assignment.**
3. **Review cells.**
4. **Review biochemistry. This is for review. You don't need to use this page to learn new things, unless you want to!**

Day 48

1. **Read about bonds.**
2. **Carbon can have how many bonds?**
3. **You may not know all of the answers on this quiz. I didn't write it, but I have scored it accordingly, so don't get upset. If you do know all the answers, you will get bonus points, but you can get a perfect score even if you miss some of them.**
4. **Take this quiz. Record your score out of 6.**
5. **Define: polarity, cohesion, solvent, organic compounds.**
6. **Check your answers.**
7. **Score your definitions, up to two points for each definition.**
8. **Record your score out of 8.**

Day 49

1. **Study your note pages from these three chapters we've completed so far. You should also use these vocabulary flashcards to study for a test tomorrow. You can use the flashcards or any of the other activities.**

Day 50

1. **When you are ready, write the definitions of the terms on this test. You may not use notes when you are taking this test. You do not have to get the exact words that are in the answers, but you need to get the meaning correct.**
2. **Check your answers.**
3. **Score up to 2 points for each answer. (This leaves room for getting one point for a partially correct answer.)**
4. **Record your score out of 24.**

Photosynthesis and Respiration
Day 51*

1. ***Print out the notes for this chapter. What's familiar? What's foreign?**
2. **Learn about photosynthesis.**
    - **Quick reminder**
    - **Explanation**
    - **Read the top paragraph and stop after the picture near the top of the page showing photosynthesis. Look at the equation. What does it say? Read it in English. 6H2O would read, "Six water molecules."**
    - **Complete the photosynthesis interactive.**
1. **Score 5 points for completing each section.**
2. **Record your score out of 20.**

Day 52*

1. **Go through the cellular respiration and energy page.**
2. ***Take your time. Take notes. You won't be filling this out all today.**
3. **Here are some videos on ATP: one two three.**

Day 53

1. **Go through the page on aerobic cellular respiration.**
2. **Use your pages from Day 52 to take notes.**
3. **The do the same with anaerobic cellular respiration.**
4. **Finish your notes for this section.**
5. **Record up to 35 points for completion. (The numbering repeats at the end of the notes.)**

Day 54

1. **Go through this lesson on cellular respiration.**
2. **Go through this page on cellular respiration and then answer the questions at the bottom. You won't just find all the answers directly on the page.**
3. **Check your answers.**

4. **Record your score out of 8 (one point each).**

Day 55*

1. ***Print out your note-taking guide.**
2. **Read about chloroplasts. Take notes.**
3. **Try the Pearson Pigment Lab I. (On the page with the picture of a test tube with a green line at the bottom. Be patient. The colors will start to rise up and separate.)**
4. **The last part of the lab activity is a quiz. Score up to 10 points for completing each step of the lab. Score up to 3 additional points for any correct quiz answer.**
5. **Record your score out of 10. (potential for extra credit)**

Day 56

1. **Read about photosynthesis and watch the videos.**
2. **Continue to fill out the note pages from Day 55.**
3. **Watch the video on the limiting factors of photosynthesis.**

Day 57

1. **Use the photosynthesis interactive. Read the descriptors next to the pictures. You can click on the images to see them bigger.**
2. **When you get to the equation for photosynthesis, write it down. Read it as an English sentence. Explain to someone what it says.**
3. **Then read the puzzlers. What do you think? Scroll down to see varying responses.**
4. **Listen to this guy talk fast about photosynthesis.**

Day 58*

1. **Watch this video on what's going on inside a cell and how it obtains energy.**
2. **Listen to this guy talk fast about ATP and cellular respiration.**
3. **While you watch these…**
    - **Draw a diagram of cellular respiration.**
    - ***Cut and paste and complete the worksheets on cellular energy and photosynthesis.**

1. **Act out (somehow) cellular energy and photosynthesis. Use people, props, puppets, whatever.**
2. **Do it for an audience. They should know something by the time you are done!**
3. **Record up to 10 points for completing today's assignment.**

Day 59

1. **Review and complete the review questions, Light-Reactions-of-Photosynthesis. You don't have to do the practice section.**

2. **Review and complete the review questions, Chloroplasts. You don't have to do the practice section.**
3. **Check your answers.**
4. **Record your score out of 6.**
5. **Answer the questions as you watch the video, The Powerhouse of the Cell. Read them before you start the video!**

Day 60

1. **Work through the cellular respiration lab.**
2. **Arrange the tiles and answer the journal questions. (Scroll down if you don't see the journal at the bottom of the page.)**
3. **Record 16 points for completion – ten points for correctly ordering the tiles and six points for answering the six questions.**

Day 61

1. **Complete the crossword puzzle.**
    - **Crossword Puzzle**
1. **Record up to 8 points for eight correct answers in the crossword puzzle.**
2. **Write a poem or song about photosynthesis or cellular respiration for extra credit. Record 5 points for acceptable completion after your song or poem has been performed before an audience.**

Day 62

1. ***Complete the study guide. Can you do it without your notes?**
2. **Check your answers.**
3. **Score up to 28 points for 14 well-answered questions. Score up to 2 points for not using your notes.**
4. **Record your score out of 28. (potential for extra credit)**

Day 63

1. **Answer the questions. You can use your notes or the links in the course as necessary.**
2. **Check your answers.**
3. **Score 1 point for each of the 19 questions.**
4. **Record your score out of 19.**

Day 64

1. **Study for the test.**
    - **Read the list or use the flashcards.**
    - **Use the learn, scatter and space race buttons until you know the answers.**

1. **When you are ready, take the test.**
2. **Record your score out of 20.**

Mitosis and Meiosis
Day 65*

1. ***Print and read the vocabulary for the chapter. What's familiar? What's foreign?**

Day 66*

1. **Read about chromosomes and the organization of DNA. Make sure to watch the videos.**
2. ***Fill out the chart on the cell cycle as you can.**

Day 67

1. **Read about and answer review questions on Asexual and Sexual Reproduction.**
2. **Check your answers.**
3. **Record your score out of 4.**
4. **How do these animals reproduce?**

Day 68(*)

1. **Read about mitosis and watch the video.**
2. **I won't require this, but I want you to do this. Make your own mitosis flip book. I would encourage this. Make the book and give it to someone to flip through. Explain what's happening to them. Even if you don't make the book, describe mitosis to someone.**

Day 69

1. **Read about DNA. Keep clicking on next. Don't worry about the mitosis animation. You've seen it before. Answer the problem questions.**

Day 70

1. **Go through the cell division interactive.**
2. **Here are images of the phases.**
3. **Try the cell cycle interactive.**

Day 71*

1. ***Complete this Mitosis Timeline Virtual Lab. (The link to the image just shows the image in the directions.)**
    - **Go through the beginning of this to help you get started.**

1. **Record your score out of 50.**

Day 72*

1. ***Answer the questions. You can use the links in the course and the internet if necessary.**
2. **Record up to 23 points for answering 23 questions.**

Day 73

1. **Read about meiosis. Make sure to use the links on the page.**

Day 74*

1. ***Print the questions and answer them without using your notes.**
2. **Now, you can use your notes for anything you couldn't answer.**
3. **Check your answers.**
4. **Score 2 points for every question you got right on your own. Score 1 point for every question you had to use your notes for.**
5. **Record your score out of 24. (potential for extra credit)**

Day 75

1. **Watch the videos on mitosis and meiosis.**
2. **Write out what happens during mitosis and meiosis.**

Day 76

1. **Read through the list of characteristics.**
2. **Go through the review with as much detail as you need to. Answer the questions at the end. Keep click on next.**
3. **There will be quizzes on Day 77 on mitosis and meiosis. You can review your notes.**

Day 77

1. **Do mitosis quiz.**
2. **Do meiosis quiz.**
3. **Record your score out of 20.**

DNA and RNA
Day 78*

1. ***Print out your vocabulary notes for the next chapter on DNA and RNA and read them over.**

2. **Go through the DNA notes. You don't have to take the quiz. Just keep moving through. This is an introduction to what we'll be covering in this unit.**

Day 79*

1. ***Fill in these notes as you use the video on the DNA/RNA page below.**
2. **Go through the page on DNA and RNA.**
3. **Check out these pages. The first two are short videos. Watch them. The last three are activities. Do at least one.**
    - **The chemical structure of DNA (launch the resource)**
    - **Chargaff's ratio (launch the resource)**
    - **How to extract your DNA**
    - **How to extract DNA from anything**
    - **(*)Origami DNA**

Day 80*

1. **Go through the page on DNA replication.**
2. **Go through the DNA replication interactive.**
3. **Watch the video on the history of the double helix discovery.**

Day 81

1. **Go through the page on protein synthesis.**
2. **Watch the video on replication and translation.**

Day 82

1. **Go through the page on protein synthesis and mutation.**
2. **Look at some outcomes of mutation.**

Day 83

1. ***Print the DNA workshop questions.**
2. **Follow the directions and use the DNA workshop interactive to answer the questions you just printed. Here is a video walk-through if your computer does not allow/run Shockwave.**
3. **Check your answers.**
4. **Record your score out of 17. (half point each, potential for extra credit)**

Day 84

1. **Complete the DNA lab.**
    - **Snork Synthesis Lab**
    - **Codon Wheel Codon Table**

1. **Record your score out of 20 for completing the assignment.**

Day 85*

1. **Review and complete review questions about RNA.**
2. **Check your answers.**
3. **Record your grade out of 3.**
4. **Complete this RNA activity.**
    - ***templates**
1. **Check your answers. Record up to 10 points for completion.**
2. **Hold onto your model. (You could take a picture for your portfolio.)**

Day 86

1. **Look at the chromosomes and scroll down to see what's found in them.**
2. **Learn about DNA technology.**

Day 87

1. **Answer the study guide questions. You can use the links in the course to help you find the answers.**
2. **Check your answers.**
3. **Record your score out of 15.**

Day 88

1. **Take the six DNA quizzes. Record your two best scores.**
2. **Record your total for the two quizzes out of 20.**

Day 89(*)

1. **(*)Read and answer the questions about molecular biology (source) as best as you can. This is review.**
2. **Check your answers at the end of the packet.**
   (ANSWER CORRECTION: #4 is D-starch)
3. **Record your score out of 10. (potential for extra credit)**

Genetics
Day 90

1. **Take the tour of basic genetics. Do each one on the list on the right starting with What Are Traits? Work your way down.**

STOP

This is the end of the second quarter. If you are using a paper grading sheet, divide your total score by the total possible. It should be less than 1 (unless you have a perfect or better than perfect score). Multiply your result by 100. (Just ignore decimals.) That's your grade percentage (eg. 87%). Your goal is 90% or better. Place your graded work and labs in a safe place to be included in your portfolio.

Day 91(*)

1. **(*)Print the grading sheet for this quarter or use the Excel version.**
2. **Watch the presentations in the list under "Introduction to Molecular Genealogy." You'll have to click on the next one in the list after the video finishes playing.**
3. **Take notes.**
4. **(*)Print out your vocabulary for this chapter and read it over.**

Day 92(*)

1. **Play this genetics game. Go through case 1 and 2 on the left page. You don't have to visit the playground. (From playing around on this I think the longer alleles are dominant. Males have the ruffle under their neck.)**
    - ***If you can't play this on your device (try another browser), you could also try this paper activity. Directions Chromosomes**

Day 93

1. **Read more about genetics.**
2. **Watch and take notes on the recorded lecture.**
    - **Genetics and Mendel's experiments**

Day 94

1. **Do the genetics practice problems. (answers)**
2. **Record up to 15 points.**
    - **Extra credit: Up to five points of extra credit for getting up to five of these genetics problems correct.**
1. **Complete the cases (at least cases 3 and 4).**
    - **Here's an alternative activity that should work on any device if you can't do that.**

Day 95

1. **Here is a flashcard set if that helps you learn the terms you need to grasp to follow the material in this unit.**
2. **Here are several of the terms we've been using in plainer language and with examples.**
3. **Learn about Punnett Squares and Di-hybrid crosses.**
4. **Complete the Punnett Squares practice.**

    - **If you have trouble with this, try a video.**
1. **Check your answers.**
2. **Record up to 20 points (1/2 point for each little answer).**

Day 96

1. **Follow the directions and use the tutorial.**
2. **Fill in the chart in the simulation and complete the quiz until you have them all correct.**
    - **If you can't do the Flash activity above, look at the picture at the bottom of the page and read about skin pigmentation. Click on the link and complete the coin-flipping lab to determine skin color. Record up to 10 points for completion.**
1. **Record up to 10 points for 10 completed questions. Take off a point for any answer not complete.**

Day 97

1. **Read about complete and incomplete dominance.**
2. **Complete the Punnett Square word problems.**
3. **Check your answers.**
4. **Record your score out of 25. Score a half point for each blank you fill in.**

Day 98

1. **Watch the video on blood types. What does this have to do with what we're learning?**
2. **Read the list of dominant and recessive traits. What about the list surprises you?**
3. **Read about other types of inheritance.**
4. **Can you answer this question? Click on the tutorial button if you need help.**

Day 99* (Materials: Marshmellows large and mini, toothpicks, candies, OR , create/use your own materials. Add your choices to the decoder page.)

1. ***Complete the Reebop Genetics Lab.**
2. **Record up to 24 points. Score up to one point for each block filled in and two points for each of the six questions answered.**

Day 100

1. **Read about pedigrees.**
2. **You can read more about genetic family trees here. (Don't click on anything.)**
3. **Read about genetic disorders.**

Day 101

1. **Create a transgenic plant. If you can't get it to run (flash based), then read about genetic engineering.**
2. **Should scientists be allowed to continue with genetic engineering? Answer with a paragraph or have a discussion with your parents. Make sure you explain the why? Can you argue both sides of the debate?**
3. **Here are some articles for reading/thinking about genetic engineering from a Christian perspective.**
    - **one**
    - **two**

Day 102

1. **Do the crossword puzzle.**
2. **Genetics ethics: what do you think? Answer the questions. You could do these as a discussion with parents instead of writing out answers if you all so choose.**

Day 103

1. **Complete the Cats Genetics Lab.**
2. **Check your answers.**
3. **Record your score up to 24 points.**
4. **There are two quizzes on Day 104. Now would be a good time to read over the vocabulary notes from this chapter.**

Day 104

1. **Use your notes or anything from this chapter to review. Make sure you know your Punnett Squares.**
2. **When you are ready, put away your notes and close everything else and take your quizzes.**
    - **Genetics quiz**
    - **Punnett squares quiz (You only get one point per question.)**
1. **Record your score out of 15. (potential for one extra credit point)**

Ecology
Day 105*

1. ***Print out and read over the ecology key terms for this chapter on ecology.**
2. **Read over the project guidelines. You will be choosing an endangered species to learn about. Be creative. You don't have to make something on the computer.**
    - **Here are some online project maker ideas, but you don't have to do it online, and you don't have to use one of these.**
    - **Thinglink, Prezi, Emaze, Piktochart, Animoto**
1. **This project is due on Day 120.**

2. **You can start exploring to be thinking about what animal you want to choose.**
    - **Here are some sites about endangered animals. You don't have to pick one from this list.**
    - **Here's a link to help you write your bibliography.**

Day 106*

1. ***Print the biosphere study guide. Complete it as you read.**
2. **Read about ecology and the biosphere.**
3. **Review biotic and abiotic factors.**
4. **Read "What's in a name?"**

Day 107*

1. ***Print out this chart to take notes on the world's major biomes.**
2. **Fill in the chart about terrestial biomes which mainly mark different areas of climate.**
3. **Record up to 28 points. Take off a point for any empty box.**
4. **Take a look at the locations for the major terrestrial biomes. Which biome do you live in?**

Day 108*

1. **Go through the page on energy flow.**
2. **There is a video on the page about wolves. I remember having heard complaints from locals about the wolves, so searched and found this article. Wolves were eating their calves in their herds of cattle. Remember, there are always two sides to a story, and often, unexpected consequences.**
3. ***See if you can fill in the blank.**
4. **Check your answers.**
5. **Record up to ten points for correctly filling in the blanks.**
6. **Have you chosen your animal? You should be learning about it. Make sure to keep track of your sources. (Your directions on Day 105.)**

Day 109

1. **Read about symbiosis. There are a bunch of videos at the bottom of the page. Make sure to watch them.**
2. **Tell someone an example of each time of symbiotic relationship.**
3. **Take a look at these:**
    - **camouflage and mimicry**
    - **video raven's intelligence (Here's another one on ravens learned behavior)**

1. **Learn about your endangered animal. Take organized notes! How are you going to present your information? Be thinking.**

Day 110

1. **Do you know the terms? Try a game or use the flashcards.**
2. **Explain to someone how deep sea plants can get energy without sunlight.**
3. **You can work on your project any day without me telling you. It's due on Day 120.**

Day 111

1. **Complete the food web.**
    - **If you have trouble with that, try making food chains.**
1. **Record up to 10 points for completion. (You can complete your free play by making two working food chains.)**
2. **Can you make a food web that survives? Click on "Open Simulator."**
3. **Record up to 12 points for succeeding in keeping all the animals alive. (If you really can't get them all to live, take off two points for each animal you can't keep alive.)**
4. **Work on your project. (Directions are on Day 105.)**

Day 112*

1. **Learn about food webs in the ocean.**
2. **Here's a video on how warmer water affects food chains.**
3. ***(only page 4 is necessary) Complete the chart on page four labeling the ocean life as producer, consumer, or decomposer. Then create a food chain. (You can print and use the pictures if you like, or just write or draw them.) Then write answers for the scenarios on page three. What do you think would be affected?**
4. **Record up to 12 points. Score up to 6 points for completing the table and 6 points for answering the three scenarios.**

Day 113

1. **Watch/Read the following. Write a sentence after each summarizing the info or telling what you think is the most significant aspect.**
    - **Read about intertidal communities. Or watch a video.**
    - **Watch the video on food webs in the coral reef.**
    - **Read about Antarctic ecosystems.**
    - **Record out of 6 points, up to 2 points for each complete, informative sentence.**
1. **Put together a marine food web.**
2. **See the world. Can you identify the biomes?**

Day 114

1. **Learn about the recycling of matter. Use the links on the page and answer the two questions at the bottom of the page in writing.**

2. **Write/draw a description of each cycle or describe them to someone: hydrologic, carbon, nitrogen.**
3. **How does the flow of matter differ from the flow of energy through an ecosystem?**

Day 115

1. **Watch the videos on community ecology.**
2. **Read about community ecology.**
3. **What's happening each year to the moose and wolf population? Why? Write a sentence or tell someone about each year.**

Day 116

1. **Watch the video on ecological succession.**
2. **Read about succession.**
3. **How does destruction lead to diversity? Here's a similar presentation of succession after a fire as a video of where this is taking place if you want to see the real thing instead of a cartoon.**
4. **Watch the first minute of this video to see it in action.**
5. **Learn about invasive species.**
    - **What's the problem with invasive species? How does that relate to community ecology and succession?**

Day 117

1. **Read about the impact of humans. Here's another article.**
2. **Write a paragraph (or discuss with a parent) the conclusions of the articles. What do you think of overpopulation? Do you think anything should be done? (You can read my opinion below.)**
3. **Personally, I have a problem with the word, "overpopulation." It means there are too many people. Who decides what number is too many? God gave humans dominion over the earth. We were in charge and we've messed up. We haven't been good stewards with what God gave us. Christians should be environmentalists. This is God's creation and we should be taking care of it. HOWEVER, many who call themselves environmentalists put the earth and animals before humans. They think it's okay to kill babies through abortion because it will help the earth! Christians always value human life above any other *thing*. I don't think the problem is too many people. It's selfishness and greed, basically sin, that is destroying the earth. The good news is that God is going to create a new earth for us one day.**
4. **Record 5 points for your paragraph/discussion.**
5. **Project…**

Day 118

1. **Complete the crossword puzzle. You can research if you need help.**
2. **Today would be a good day to finish your project! (Day 105, directions)**

Day 119

1. **Watch the video on population ecology.**
2. **Read about population.**

Day 120

1. **Finish your project. Make sure you are complete and ready to be grading using the criteria given.**
2. **Present your project to an audience or at least someone.**
3. **Score your project. Where it says 10%, that's 10 points. 5% is 5 points, etc.**
4. **Divide your score in half.**
5. **Record your score out of 50.**
6. **Review your notes/study guide.**
7. **Take the population quiz.**
8. **Record your score out of 8. (potential for extra credit)**

Day 121

1. **Complete the population lab using this link. (requires flash)**
2. **Score your assignment based on the rubric in the lab.**
3. **Record your score out of 38.**

Day 122

1. **The game mentions the earth getting warmer because of an increase in carbon emissions. This is referred to as global warming. Read this page and use the links to learn more. No matter what you believe about it, you should know about it. (If the page says it's being updated, then use this link to an archived page.)**
2. **You can read about global warming impact here. (Lesson in propaganda: pay attention to "if," "could," "possibly" and such words and phrases pointing to the fact that these aren't facts, but speculations.)**
3. **I put this video in Oceanography as well, but if you haven't seen it, I suggest you watch it, or at least part of it. It's a video of scientists saying that global warming caused by carbon dioxide emissions is not a reality; it is just a political tool.**
4. **Remember, scientists don't always agree. There are LOTS of things scientists disagree about. Never let anyone make you feel stupid for believing differently than they do.**
    - **Always be prepared to think for yourself. The book, *More than a Carpenter*, was written by a skeptic. He thought he would prove Christianity false but wound up proving it true and becoming a Christian himself. "McDowell**

always believed that Christians were 'out of their minds' but now insists that 'never has an individual been called upon to commit intellectual suicide in trusting Christ as Savior and Lord.'" (from amazon.com) Being a Christian doesn't mean denying science or history, it means understanding history and science in a way that unbelievers never can.

Day 123

1. **Read about human impact.**
2. **Read about human impact on wildlife.**
3. **Watch the video on human impact.**

Day 124

1. **Start your Human Impact and Animal Resiliency Assignment.**
2. **Finish it on Day 125. You can write about this (include pictures), or create an online presentation. Record your sources. Create a bibliography.**

Day 125

1. **Finish your presentation/report on human impact.**
2. **Present it. If you wrote something, read it out loud to others.**
3. **Record up to 30 points for completing the assignment.**

Day 126

1. **Explain how acid rain can change an ecosystem.**
2. **Because it's interesting, take this quiz on energy resources.**
3. **Save the world. Learn about renewable energy.**
4.

Day 127

1. **Learn about a North American biome, the prairie. Start with the shortgrass prairie.**
2. **Read about it, learn how to play, and then play the game. Use the links to complete the activity.**
3. **Write a paragraph telling about the biome.**
4. **Then complete the tallgrass prairie in the same way.**
5. **Score up to 5 points for a complete paragraph: intro, 3 reasons, conclusion.**
6. **Record your score out of 10.**

Day 128

1. **Take the Global Trends Quiz. Check your answers.**

2. **There are three sections. The first two focus on population, which I have discussed with you before. They focus on the demand many people put on the planet, but then take note at the correct answer to the first question on the last section, the environmental challenge section. It reminds us that it's really not a problem of numbers of people.**
3. **Solve the world's problems. You can write this or just tell someone. What would you do to help solve one of the world's problems such as declining resources and increased pollution.**
4. **Record 5 points for a thoughtful solution.**

Day 129

1. **Complete the study guide.**
2. **Use the links on the page to help you.**
3. **Record your score out of 15 (1 point each except for the graph).**
4. **Review your ecology vocabulary and notes from the chapter.**

Day 130

1. **Do the crossword puzzle. You can use your notes.**
2. **There are 37 blanks. Record your score out of 35. (potential for extra credit)**
3. **Take the ecology quiz.**
4. **Record your score out of 10.**

Evolution
Day 131

1. **You need to understand the evolutionary hypothesis of how people believe all of the organisms on earth came to be. We will also be reading and looking at some contrary information. If you ever want to explain your position and defend your beliefs, it would be helpful to be able to speak intelligently about evolution.**
2. **Read about natural selection and survival of the fittest.**
3. **There is such a thing as natural selection and survival of the fittest. The weakest get killed the easiest, the fastest, and so don't breed as much, if at all, and so there aren't more like them. Those are best fit to live in the circumstances, survive to have babies who are like them, just as God designed genetics to work. We can see it as the hand of God changing a population to help it survive.**
4. **Read this article about "Darwin's Finches."**
5. **Explain to someone about what you read today.**

Day 132

1. **Read this article touting evolution creating a new species. You'll read that a finch learned a new song. Is a finch still a finch? Yes. Can you ever see these little**

changes in population turning that finch into a fish? a monkey? a truly different species?

2. **Read about natural selection.**
3. **Read about genetics and evolution.**
4. **Talk with someone about what you have read.**

Day 133

1. **Read about the history of life according to evolution scientists.**
2. **Here's an article on carbon dating from a Christian scientist.**
3. **If you are interested in all this, here are some videos you might like to watch.**
4. **What can you explain from what you read today?**

Day 134

1. **I'm going to go ahead and let you take this tour. Pay attention to the number of the different types of animals. You don't have to click on the millions of years ago circles if you don't want to. That page is the end of the tour.**
2. **Which type of animal is the most abundant today? Which is the least? (If you don't know the answer, go back to the tour!)**
3. **Christians believe the dinosaurs and humans did live at the same time. Leviathanseems to be an example in Job. (I personally also think those stories of knights slaying fire-breathing dragons are examples. I know they are just stories and were exaggerated as they get repeated and passed on, but they did come from somewhere.)**
4. **Check out a few of adaptations. Remember, these animals and plants didn't will some sort of change. They just went about their lives as they were created to. God took care of the rest through the way he made genetics to work.**
5. **Read about your appendix.**
6. **What did you learn today?**

Day 135

1. **Read these pages about bacteria resistance, and this one (don't worry about the video.)**
2. **What do you think can and should be done about bacteria resistance? Write your answers/position.**
3. **Record up to 5 points for a well thought out answer.**

STOP
This is the end of the third quarter. If you are using a paper grading sheet, divide your total score by the total possible. It
should be less than 1 (unless you have a perfect or better than perfect score). Multiply your result by 100. (Just ignore

decimals.) That's your grade percentage (eg. 87%). Your goal is 90% or better. Place your graded work and labs in a safe place to be included in your portfolio.

Day 136(*)

1. **(*)Print out your next grading sheet or use the Excel version.**
2. **Watch Video on All Life Systems Were Created by God. (alternate video link)**
3. **Read and Watch Videos about:**
    1. **DNA Was Created (alternate video link)**
    2. **Proteins Were Created (no video)**
    3. **Cells Protect (no video)**
    4. **Engineering Wonder (alternate video link)**
    5. **Only God (alternate video link)**

Day 137

1. **Watch Video on Life Was Created Fully Functional (video)**
2. **Read and Watch Videos about:**
    1. **Natural Selection**
    2. **The Natural Direction (video)**
    3. **Living Creatures (video)**
    4. **Equipped to Adapt (video)**

Day 138

1. **Watch Video on Man Was Created by God (video)**
2. **Read and Watch Videos about:**
    1. **Image of God (video)**
    2. **People Descended (video)**
    3. **Purpose and Accountability**
    4. **Distinct from Apes (video)**

Day 139

1. **Watch the videos below on "Biological Clocks Indicate Recent Creation."**
2. **Read and Watch Videos about:**
    1. **Living Populations Are Young**
    2. **Living Fossils**
    3. **Fresh Fossils (video)**

Day 140

1. **Write out and present to an audience a well thought out explanation of your beliefs about creation and evolution. Try to be persuasive.**

Taxonomy

Day 141

1. **Go over your vocabulary from each unit.**
2. **Why not go back over your vocabulary pages from all of the chapters? Each of the units had one of these sheets. There will be a final exam where you will need to know a bit of everything. Refresh your memory.**
    - **What is biology?**
    - **Ecology**
    - **Photosynthesis**
    - **Mitosis and Meiosis**
    - **DNA and RNA**
    - **Genetics**

Day 142

1. **Read about taxonomy. Do the review activity linked at the bottom of the page.**
2. **Read about domains.**
3. **Read about kingdoms.**
4. **Read about the kingdoms here as well.**

Day 143

1. **Use the tabs along the top to learn and practice the 3 domains and 6 kingdoms. You can use the flashcards, the learn tab, the games, etc. If you are feeling smart, try the speller tab!**
2. **Take the test. (Each is worth half a point. Divide your total in half.)**
3. **Record your score out of 10.**

Day 144

1. **Read the introduction and launch the activity. How close did you come to correctly classifying the organisms?**
2. **Choose your best organism and remember your score for it, up to 7 points.**
3. **Build a fish. Retry until you survive. (This is a flash activity. If you can't do it, then describe the features of a fish and what habitat it would survive in and why.)**
4. **Score 5 points for successful completion.**
5. **What factors were important in your survival?**
6. **Build a bird. Successfully complete at least one bird, meaning your bird survives.**
7. **Score 5 points for succession completion.**
8. **What factors were important for your survival?**
9. **Record today's combined score out of 17.**

Day 145*

1. ***Print out this dichotomous key worksheet.**

2. **Use these images to do the activity. Take one candy and compare it with the first two descriptions. Follow the directions as to which descriptions to go to next. Choose each time which description fits BEST and continue to follow the directions until you have found the "scientific" name for the candy.**
    - **lifesavers (Hint: This is flat in your key.)**
    - **lollipop**
    - **Starburst**
    - **Tootsie Roll**
    - **Hershey's Kiss**
    - **Jolly Rancher**
    - **Andes Mint**
1. **Complete the worksheet.**
2. **Check your answers.**
3. **Score up to 10 points for correctly naming 7 candies and a half a point for each correct answer for the 6 questions at the bottom of the page.**
4. **Record your score out of 10.**

Day 146

1. **Use this dichotomous key to identify a tree in your yard or neighborhood (or just use this tree.) You can go back during the quiz and change an answer if you don't think you answered something correctly.**
2. **Use this dichotomous key to salamanders (source).**
3. **Record 11 points for correctly completing the lab.**

Day 147(*)

1. **(*)Create a dichotomous key for these creatures.**
2. **Name or number the creatures.**
3. **Create couples of descriptions that people can use to identify their creature.**
4. **Have someone check several when you are done.**
5. **Answering the questions for your creature should lead you to the correct, unique name/number for each creature.**
6. **Record your score out of 20 if you were successful.**

Day 148

1. **List the levels of taxonomy in order for someone. Have them check you.**
    - **Complete the crossword puzzle.**
1. **Record 12 points for completion if you knew/found all of the answers. Take off a point for any missing answer.**
2. **Read this article about discovering new species. The article is from the Orange County Register, originally published in February of 2006.**

3. **Research some newly discovered species, look for one in the past year. Write a paragraph about it or tell someone about it. Where was it found? How? What is it? What is it related to?**
4. **Record up to ten points for completing today's assignment (5 for the crossword and 5 for the new species)**

Day 149

1. **Review with this organization of life chart.**
2. **Review the vocabulary with flashcards or with games.**
3. **Take the quiz.**
4. **Record your score out of 10 (deduct a point for each question missed).**

Viruses and Bacteria
Day 150*

1. ***Print out your key terms for this chapter.**
2. **Read about bacteria.**
3. **Do you remember the parts of a bacteria cell? Review and then play the game.**
4. **Watch the video on the varying structures of bacteria.**

Day 151

1. **Read about bacteria growth.**
2. **Read about bacteria control and benefits.**
3. **Make sure to watch the video and use the interactive links.**

Day 152

1. **Complete the Blackout Syndrome. (this is a bit gross) Solve the mysteries. Don't just click on random answers. Your grade is on how well you can solve the mysteries.**
2. **Score 5 points for each solved mystery. Take off a point for each time you guessed incorrectly. (potential for 15 points)**
3. **Record your score out of 12.**

Day 153

1. **Watch the videos.**
    - **Good bacteria vs. Bad bacteria**
    - **Antibiotic resistance**
1. **Start your lab. Download the student worksheet (on the right). Here's an alternate link for the worksheet if the one on the website doesn't work. You can print or type the answers right onto the page. You will finish on Day 154.**

Day 154

1. **Complete the lab.**
2. **Record up to 50 points for completing the packet.**

Day 155

1. **Read about Typhoid Mary.**
2. **Identify the source of the disease.**
3. **Write a paragraph about how diseases spread and what should be done to prevent the spread of disease.**
4. **Record up to 10 points for a clear introduction and conclusion and details that support your ideas. Make sure both topics are covered.**

Day 156

1. **Read about viruses.**
2. **Find two viruses on the scale.**
3. **Watch the videos.**
    - **Cell vs. Virus**
    - **Catching a cold**
    - **Viral life cycle (click on a language to launch the resource)**
1. **Draw a diagram or write the steps of what a virus does and how your body responds.**

Day 157

1. **Read Virus Basics. There are many pages to this.**
2. **There are three things listed for preventing HIV infection. You'll see that they are very easy to do. Number three is the only one that is separate from just obeying God's principles. There is no fear of infection from numbers 1 and 2 if we are living by God's standards. Instead of instructing people in what is right (keeping your body only for your spouse and not using drugs), they are telling people they can be safe by using condoms and clean needles. But the truth is, there is no such thing as 100% safe sex outside of a marriage between two people who keep themselves for each other. What they really mean is *safer* sex, which still carries some potential risk. Following God's way, you never need to fear risk of such types of diseases being passed onto you.**
3. **Make a vaccine.**
4. **Record your score out of 10 for completion.**

Day 158

1. **Read through the vocabulary.**
    1. **A through D**

2. E through L
3. M through S
4. T through V

1. These are the words you need to know (and others from the lesson).

Day 159

1. Complete this crossword puzzle.
2. Score one point for each correct answer. (Do the words all fit together and in the amount of spaces provided?) Take off a point for any incorrect or incomplete answer. There should not be incomplete answers.
3. Record your score out of 24.

Day 160*

1. Review the words you need to know. You can click on any of the activities to practice the words.
2. In this quiz you will be given the definitions and you will need to fill in the word.
3. *Take the quiz.
4. Check your answers.
5. Take off one point for any wrong answer.
6. Record your score out of 12.
7. Prepare for your yeast experiment. You need some flat soda.

Protists and Fungi
Day 161 (Materials needed: 2, two liter bottles of both water and soda, active dry yeast, 4 identical balloons)

1. Begin your yeast experiment .
2. You will be writing up a formal lab. Write up everything except observations/data and conclusion. Create a chart to record your data in.
3. Here is the lab report template.
4. Later in the day you will collect data.

Day 162*

1. Collect data for your experiment.
2. *Print out your key terms for this chapter. Read through them!
3. Read about protists.

Day 163

1. Watch Protist-The Movie. (It's going to reference evolution, but there is other information.)
2. Check out the protist image gallery.

3. **Finish your experiment.**
4. **Complete your lab.**
5. **Score your lab report according to this rubric. (source–cc by-nc)**
6. **Record your score out of 20.**

Day 164

1. **Go through the page on protists and answer the questions.**
2. **Record your score out of 27 for completion.**

Day 165*

1. **Go to the Virtual Pond Dip website.**
2. ***Fill out this chart for 10 organisms.**
3. **Score 20 points for completion.**
4. **If you like, you can look at real pond organisms.**

Day 166*

1. ***Take notes as you learn about fungi.**
2. **Watch Crash Course – Fungi.**

Day 167

1. **Complete the survey lab on fungus.**
2. **Record up to 24 points for finding all 23 answers.**

Day 168

1. **Use your notes and complete the crossword puzzle.**
2. **Record your score out of 25. Take a 1/2 point off for any missing or incorrect answer.**

Animals
Day 169

1. **Watch the videos on plant structure and function (nutrition and transport).**

Day 170

1. **What do you know about plant structure?**
2. **Read (and watch videos) on plant adaptations.**

Day 171

1. **Learn about angiosperms.**

2. **Design a lab to test the factors that affect germination. Write up a lab report as you go.**

Day 172

1. **Answer the questions about flower structure and reproduction.**
2. **Check your answers.**
3. **Record up to 14 points.**
4. **I won't bring it up again. You'll be completing your lab with the data you have obtained so far on Day 179. You'll be scored according to this rubric. (source–cc by-nc) Make sure you know what you need to be doing.**

Day 173*

1. ***As you study invertebrates, fill in the graphic organizer.**
2. **Learn about some phyla of invertebrates.**

Day 174

1. **Learn about worms. Continue filling out your graphic organizer.**

Day 175

1. **Learn about more invertebrates. Continue filling out your graphic organizer.**

Day 176

1. **Learn about one more group of invertebrates and about vertebrates. Continue filling out your graphic organizer.**

Day 177

1. **Classify the invertebrates. Complete the lab and journal questions.**
    - **This requires Flash. If you aren't able to use it, you can use this lab.**
1. **Record up to 25 points for completion.**

Day 178

1. **Only if you want to… virtual frog dissection. (We lost the one we used to have. You just click on the scissors and it does the cuts for you. It will guide you through. Here's a link if you are into looking into dead animals. Here are links to pictures of dissections of various animals.)**
2. **Review your notes from all of your chapters. You will have Day 179 as well. Here is your vocabulary. You'll only need what we really covered in our course. There's no need to memorize definitions. Use these to refresh your memory. On your final exam you'll be asked to explain processes and to give examples and such.**

- What is biology?
- Ecology
- Photosynthesis
- Mitosis and Meiosis
- DNA and RNA
- Genetics
- Bacteria
- Protists and Fungi

Day 179

1. **Review your study guides and notes from all of your chapters.**
2. **Finish your lab report with the information you have so far.**
3. **Score your lab report. (source–cc by-nc)**
4. **Record your score out of 20.**

Day 180

1. **Take your final exam.**
2. **If you skipped a question, go back and try it. You should always at least try.**
3. **Score your exam. There should be 97 total points. Add three points to your total if you answered every question.**
4. **Record your score out of 100.**
5. **Congratulations on finishing biology!**
6. **Record your final score. Add biology to your transcript. Create a course record for this course. Save your final, labs, other written work and even some screen shots for your portfolio and records.**
7. **If you are planning on taking a biology test for college credit, please see the notes below.**

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