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## **Earth Science with Lab**

**Please review the FAQs and [contact us](#) if you find a problem.**

**Credits:** 1

**Prerequisites:** Pre-algebra, I kept most math out of the course, but it comes up in a *few* places.

**Recommended:** 9th or 10th

**Test Prep:** This course does not correlate well with any one test. It covers some topics on the AP Environmental Science test and on the CLEP Natural Sciences test. You would need to get other resources and do additional study to be able to do well on these tests.

**Course Description:** The main topics covered include: the earth's origin, composition, and structure; plate tectonics and hydro plate theory; rock cycle; landscape evolution; geologic time; earth history; environment relationships; weather and climate; matter and energy cycles; and human impact. The second semester will cover topics in the study of astronomy and cosmology. Topics covered include: history of astronomy, telescopes and instruments of astronomy, the earth, the moon, our solar system, stars, galaxies, and cosmology including dark matter and origins of the universe. Students will study these topics from both an old and new earth perspective. Students will answer questions, take quizzes, complete labs, and write reports. The course culminates in a scientific report on the origins of the universe. Main course materials: [GVL Astronomy](#), [The 4th Day Alliance](#), [Answers in Genesis](#) (esp. New Answers Books 1, 2, and 3), [Evolution Exposed Earth Science](#), [GVL Earth Systems](#)

Notes: Hold onto all of your written work for this course as a record. When using the GVL site, you will not have access to the Discovery videos. Just follow the directions I give in the course. I provide links to other videos or readings. This course does have a lot of reading. Some of it is on a college level. You will also be weeding through two different points of view. Scientists will give completely opposite conclusions. Always be on the lookout for what is fact and what is assumption.

Materials needed: See Days 24, 60 and 67

### **Day 1(\*)**

1. (\*)Print out the [first quarter](#) grading sheet or use the [first quarter](#) Excel version.
2. Let's begin at the beginning. Read [What Is a Biblical Worldview?](#)

### **Day 2**

1. Read, "[What's the Best Proof of Creation?](#)"

### **Day 3**

1. Read, "[How Old Is the Earth?](#)"

#### Day 4

1. A little history...Read "[Where Did the Idea of Millions of Years Come From?](#)"

#### Day 5

1. Read [pages 1, 2 and 3](#) on the formation of the solar system. Just read. Don't worry about any of the extra things on the pages. You'll just click on the tabs labeled 2 and 3 to go to the next pages.
2. If you can't use Flash, here's a little [diagram of the atmosphere](#). You can get much of the same info from this [image](#).
  - Make observations. (Make sure to check out the temperature.) What do you notice?

#### Day 6

1. You are going to read a chapter called, [Big Bang?](#), from the Answers in Genesis site.
2. Scroll to the bottom and read the questions so that you can be thinking about them when they come up in the article.
3. Then read the article. You can stop where it says 2.1, the summaries of reference articles, but you can read those if you find this stuff interesting and want to know more.

#### Day 7

1. Answer the [questions](#) at the end of the chapter. Always answer in complete sentences.
2. Record 18 points for completion. Lose a point for any answer that doesn't answer the question completely. Lost a point for any answer not in a complete sentence.

#### Day 8

1. Read the next chapter, [Origins of the Solar System](#).
  - Start with the questions.
  - Stop, if you want, at the article summaries.

#### Day 9

1. Answer the [questions](#) at the end of the chapter. Always answer in complete sentences.
2. Record 12 points for completion. Lose a point for any answer that doesn't answer the question completely. Lost a point for any answer not in a complete sentence.

#### Day 10

1. Read about the [formation of oceans](#) on page 4.
2. Read this page on the [evaluation of theories](#).
3. We will be learning an alternative theory on the formation of ocean trenches.

#### Day 11

1. Read page 5 about the [structure of the earth](#).

2. You can also read about the [layers of the earth](#) here.
3. Draw/make a model of the earth's structure. Figure out their relative thicknesses.
  - If you need a [cheat](#) for that...
1. Do you know why the earth's center is solid even though it's hotter than the outer core?
  - The inner core literally has the weight of the world on it. The pressure of it all holds those molecules in place.

### Day 12

1. Read about the [earth's internal heat source](#) on page 6.
  - [Thermal Energy Transfer](#)
  - [Conduction](#)
  - [Convection](#)
  - [Radiant Energy](#)
1. Read, "[Could God Really Have Created Everything in Six Days?](#)"

### Day 13

1. Today watch this [video](#) on the earth's radioactivity. I know this is hard stuff, but get the idea.

### Day 14

1. Read pages 2 and 3 on [plate tectonics](#). You can use the activities on the page.

### Day 15

1. Read pages 4, 5, and 6 on [plate boundaries](#). You can use the activities on the page, but you don't have to do the word search.

### Day 16

1. Read through [Ocean Trenches](#). Click on Next Page to move on.
2. Click on Next Page after the picture and read through the first page on the [origin of trenches](#).
3. Write a paragraph or tell someone a general summary of how he believes ocean trenches formed.
  - BTW, the author is an MIT graduate.

### Day 17

1. Read about [different theories](#) on the formation of trenches.
  - I know it's a lot. Take what you can from it. Take your time to look at and understand the images.
  - Explain to someone what you learned from the page on the formation of ocean trenches.
1. Take a look at the [comparison chart](#) on the following page.

### Day 18

1. Read, "[Did the Continents Split During the Days of Peleg?](#)"

### Day 19

1. Read the next chapter, [Geologic Column](#).
  - Start with the questions.
  - Stop, if you want, at the article summaries.

### Day 20

1. Answer the [questions](#) at the end of the chapter. Always answer in complete sentences.
2. Record 12 points for completion. Lose a point for any answer that doesn't answer the question completely. Lost a point for any answer not in a complete sentence.

### Day 21

1. Read the next chapter, [The Fossil Record](#).
  - Start with the questions.
  - Stop, if you want, at the article summaries.

### Day 22

1. Answer the [questions](#) at the end of the chapter. Always answer in complete sentences.
2. Record 12 points for completion. Lose a point for any answer that doesn't answer the question completely. Lost a point for any answer not in a complete sentence.

### Day 23

1. Today you're going to work on a little vocabulary.
2. Work to learn any new vocabulary from the first page of the new unit on the [rock cycle](#).
3. You can also read [page two on minerals](#). The links it tells you to read don't work. Don't worry about them.
4. See what kinds of [minerals are in your environment](#).
5. Collect a couple of rocks to identify if you want.

### Day 24 (Materials: steel nail, glass you can scratch a little-maybe a compact mirror or something like that)

1. Read about [rocks](#). Use the key to identify your rocks. And/or identify these...
  - 1.
  - 2.
  - 3.

### Day 25

1. Go through the [rock cycle interactive](#). Keep moving through the whole thing through Test Your Skills.

### Day 26

1. Read about the formation of [igneous rocks](#) on page 3.

2. Watch this video on the [formation of igneous rocks](#).
3. Read about sedimentary rocks on page 4 and try to answer the questions.
4. Watch the video on [sedimentary rocks](#).
5. Read about [metamorphic rocks](#) on page 5. You don't have to do the card deck classification at the bottom of the page.
6. Watch the video on [metamorphic rocks](#).

### Day 27\* (Materials: scissors and glue stick)

1. Read about the [rock cycle](#) on page 6. If it's working, you can do the drag and drop activity.
2. \*Cut out the [pieces on page 2](#) and arrange (and glue if you can) them to show the rock cycle.
  - If you can't stand the thought of cutting and pasting, you can do [page one](#) of this worksheet. Record one point for each blank and up to 5 points for each of the other two answers written in complete sentences. (No answer key)
1. Check your [answer](#). Record up to 15 points for each piece in the right place.

### Day 28

1. Read pages 1 and 2 on [erosion and weathering](#). Make sure to learn the vocabulary.

### Day 29

1. Read page 3 on [erosion and soil](#). Use the links about soil profile and erosion. The link on soil texture doesn't work. You can read this article on [soil texture](#).
2. This is a short article on [erosion](#) and some things that can help prevent soil erosion.

### Day 30

1. Look at this [weathering assignment](#).
  1. Go through the [activity](#) and answer the questions. (Make the video full screen. Pause the video to read it and then play and I will scroll down to the next part and show you where you should be reading.)
  2. Score up to 4 points for each question answered with complete sentences.
1. Add two points. (This assignment changed.) Record your total score out of 46 points.

### Day 31

1. Read ideas about the [origin of the Grand Canyon](#).

### Day 32

1. Read the [questions](#) for chapter 18.
2. Read the article on the [formation of the Grand Canyon](#).

### Day 33

1. Answer the [questions](#) for [chapter 18](#).
2. Check your [answers](#).

3. Score up to 3 points for each complete answer written in complete sentences.
4. Record your score out of 12.
5. There's lots more on this topic in the online [textbook](#) if you are interested in reading more.

### Day 34

1. Read page 4 on [mass wasting](#) and stop after the box with arrows and five flashcard things.
  - Where it asks, "Did you know," you just need to click on Show Answer and read the info.
  - In the box, click on show or the box by "Definition" and read all of the information. Turn the pages to go through all five.
  - Stop here.
1. Read through the presentation on [mass wasting](#).
2. Go back to page 4 and do the last six questions at the bottom of the page under the box with definitions. Answer before you check. Score one point for every correct answer.
3. Record your score out of 5. (potential for one point extra credit)

### Day 35

1. Read the page on the [water cycle](#). Use the links on the page. On the first one, click on maximize and then [Lesson](#). After the lesson you can click on Global Impact. (The [link](#) at the bottom of the page is the same as the short video embedded earlier on the page.)
2. Answer the two questions at the bottom of the page. The first, "Why is the hydrologic cycle an important process for Earth" answer as a paragraph. The second, "Is there a beginning or end to the hydrologic cycle," can be answered in a sentence.
3. Record up to 7 points. Score 3 points and 1 point for the content of the answer, and 2 points and 1 point for the structure of your answer.

### Day 36

1. Read about [aquifers and ground water](#).
2. Play with the [pumps](#) and make observations.
3. Answer the six questions following the image. Write answers in complete sentences before checking your answers.
4. Record up to 12 points. You only get points for any answer written in complete sentences.

### Day 37

1. Read page 6 about [glaciers](#). DO NOT use the links on the page. Just read the top of the page.
2. Use the following links to answer the [questions about glaciers](#).
3. Links:
  - [Introduction to Glaciers](#)
  - [All About Glaciers](#)

- [Alaska's Glaciers](#)
  - [Videos](#) (You don't have to watch the videos if you prefer to find the information elsewhere.)
1. Record up to 16 points. Score up to two points for each complete answer. A complete answer answers the question and is in a complete sentence. The answer should tell what the question was.

### Day 38

1. Read an article about the [ice age](#).

### Day 39

1. Answer the [questions](#) for chapter 16 using the [article](#) you read on Day 38.
2. Check your [answers](#).
3. Record up to 16 points for complete answers.

### Day 40

1. Read pages 1 and 2 on [dating](#) and work to learn the vocabulary.

### Day 41

1. Read "[Aren't Millions of Years Required for Geological Processes?](#)"

### Day 42

1. Answer the [questions for chapter 23](#) which you read on Day 41.
2. Check your [answers](#).
3. Record up to 14 points for complete answers written in complete sentences.

### Day 43

1. Read page 3 about [absolute age](#).
  - I find the title of this a little obnoxious. Counting tree rings and carbon dating aren't the same in their "absoluteness." We'll read more about carbon dating from a creationist perspective.
  - Watch the dendrochronology presentation on the page.
    - The root "dendro" means tree.
    - The root "chron" means time.
    - The suffix "ology" means the study of.
    - What's dendrochronology?
1. Use the [Java half-life simulation](#) or watch the [video](#) of it. Answer the questions at the bottom of page three using the simulation.
2. Say something is a foot tall, and it is cut in half every 30 seconds (half life). Draw a graph (or make one online or on the computer) that shows its size versus time.
  - How would the graph change if it started at two feet?
  - How would the graph change if each half life was twice as long?

- (Activity adapted from [http://cms.gavirtualschool.org/Shared/Science/EarthSystems13/GeologicTimeandCorrelation/Modeling\\_HalfLife\\_Lab.pdf](http://cms.gavirtualschool.org/Shared/Science/EarthSystems13/GeologicTimeandCorrelation/Modeling_HalfLife_Lab.pdf))

#### Day 44

1. Read about [carbon dating](#).

#### Day 45

1. Answer the [questions for chapter 7](#) which you read on Day 44.
2. Check your [answers](#).
3. Record up to 14 points for complete answers written in complete sentences.
4. Figure your grade for the quarter. What can you do to improve your grade? Where did you lose points? Aim for a perfect score. Save all of your written work for your portfolio.

#### Day 46(\*)

1. (\*)Print out the [second quarter](#) grading sheet or use the [second quarter](#) Excel version.
2. We've already read the creationist perspective of the fossil record. Let's learn more about it.
3. Go through the fossil record activities: [geologic time](#) and [fossil tour](#). Keep clicking on "More" and "Next."
4. Read [page 4](#) on fossils. Answer the questions at the bottom of the page.

#### Day 47

1. Choose your [state](#), or a state from the list. To see it bigger, click on the link under "Show in web browser" once you've opened up the state page.
2. Use the [key](#) to read the map.
3. Write a paragraph describing the geological structure of the state. Look up any terms from the key you need to.

#### Day 48

1. Read page 2 about [Precambrian time](#). We're going to read the other point of view. We'll continue reading the alternative perspective as well.
  - Watch the video on the page about [volcanoes](#).
  - Choose an [article](#) to read about volcanoes.

#### Day 49

1. Read about [Mount St. Helens](#).
2. Answer the [questions for chapter 26](#). (You should probably read these before you read the article so that you can be looking for the answers.)
3. Check your [answers](#).
4. Record up to 6 points for complete answers in complete sentences.

#### Day 50

1. Read page 3 on the [Paleozoic Era](#).
2. Read this article about [biological evolution](#) and answer the questions at the bottom of the page. You have today and Day 51 to complete this.

### Day 51

1. Finish reading the article about [biological evolution](#) and answering the questions at the bottom of the page.
2. Record up to 22 points for complete answers in complete sentences.

### Day 52

1. Read about the [Mesozoic Era](#) on page four.
2. Read about [human and dinosaur fossils](#).

### Day 53

1. Read page 5 about the [Cenozoic Age](#).
2. Read this article about [Genesis genealogies](#).

### Day 54

1. Read about [biomes](#) on page 2.
2. Click on each circle at the bottom of the page to read about each biome. There are links within each one to read its description and to learn about its location, temperature and precipitation.
3. Make two graphs that show the temperature and precipitation of all the biomes. Use one color for each biome and use that same color on both graphs. Make sure to label your graphs and to make a key that shows what each color stands for.
4. Record twenty points for your graphs. Ten points for each graph: 1 point for each biome included, 1 point for title, 2 points for labels

### Day 55

1. Learn about [aquatic biomes](#) on page 3.
2. Use this [website](#) to make a chart about animals, vegetation, climate, and location in the following biomes: freshwater, marine.

### Day 56

1. What is the biome where you live? Write a page description of your area that includes vegetation, animals, climate, temperature, and location. You can use the [link from Day 55](#) to help you.
2. Record up to ten points for including each of the five areas and for writing in proper sentences and with an introduction and conclusion.

### Day 57

1. Read this [packet of info](#) and review all the info in the charts. You don't have to do any of the activities except on page 9. Write how the different levels are interdependent. How

are organisms [interdependent](#) on the population and how is the population interdependent on the community, etc.

### Day 58

1. Read page one about [weather and climate](#).
2. Write down the vocabulary and all of the questions with room to answer. Your job by the end of this unit is to have written in answers to all of those questions.

### Day 59

1. Read pages 2 and 3 on [climate and atmosphere](#). (As usual don't worry about the Discovery video. Don't worry about the missing video on climate.)
2. Watch the [video](#) on page 3 on the ozone.
3. Read about the [sun's impact on weather](#).
4. Don't forget that you need to be answering the questions from Day 58.

### Day 60(\*) Materials: flashlight, ruler (if you can), [graph paper](#)

1. Read page four about [factors that affect climate](#).
2. (\*)Complete the lab on [the angle of incidence](#). Print out the chart or make your own. Answer the questions.
3. There are six blanks on the chart and four questions to answer. Score up to two points each for completion. Record your score out of 20.

### Day 61

1. Read page five about [ocean currents](#). Watch the video on the page about ocean currents.
2. Read about the [Coriolis Effect](#) and other wind patterns. Go through all four pages.
3. Are there any questions from Day 58 that you could answer today?

### Day 62

1. Read about [air currents](#) (just the first page) and about [wind belts](#). (You don't have to do the activity).
2. Scroll down a little on [this page](#) and look for National Geographic on the left. Click on Environmental Science under it. Click on three of the video mini lessons: Seasonal Cycle, El Nino and La Nina, and the Movement of Air Masses (to learn about fronts).

### Day 63

1. Read about [severe weather](#). Read about thunderstorms and then use the links on the right to learn about other severe weather.
2. Any answers you can answer today? They are due on Day 64. You can research any answers you haven't found in your reading.

### Day 64

1. On page 9 [quiz](#) yourself on the vocabulary using the flashcards at the bottom of the screen.
2. Score up to 12 points for being able to define the terms before reading the answer!
3. [Predict the weather](#). Do all three levels. Login with easypeasy and allin1homeschool . This login is just for Easy Peasy students to do their assignments.
4. Finish answering any questions you haven't yet from Day 58.
5. There are nine questions. Record up to 18 points for complete answers.

### Day 65

1. Read about the [oxygen cycle](#).
2. Watch this video on the [hydrolic and carbon cycles](#).
3. Draw a diagram of the carbon cycle.
4. Record up to ten points for including at least ten things on your diagram.

### Day 66

1. Watch the video on [photosynthesis](#).
2. Draw a diagram of the process of photosynthesis.
3. Record up to five points for including at least five things on your diagram.

### Day 67 (\*) Materials: Chocolate chip cookies-two different brands, milk, tooth pick

1. Read through page two on the [oxygen and carbon cycles](#). Don't worry about videos on the page. Make sure to read the questions and answers at the bottom of the page.
2. (\*)Complete the [Cookie/Mining Lab](#).
3. Record up to 36 points. Score up to two points for each question (24 points) and one point for each blank in the chart and for each cookie drawing (12 points).

### Day 68

1. Read about the [nitrogen cycle](#).
2. Watch the video from the page on the [nitrogen and phosphorus cycles](#).
3. Complete the matching activity at the bottom of the page.
4. Then play the [nitrogen cycle game](#).
5. Record up to five points for completion.
6. Answer the [questions](#).
7. Record up to 10 points for figuring out the answers to the five questions.

### Day 69

1. Draw a diagram of the nitrogen cycle.
2. Record up to five points for including at least five items.
3. Write a paragraph about the phosphorus cycle. You can use [page four](#) to help you out.
4. Record up to five points for five sentences in paragraph form (intro, detail, detail, detail, conclusion).

### Day 70

1. Read page two about [fossil fuels](#). Write down all of the orange words and their definitions. Their definitions are in the text or show up when you hover on the word.
2. Watch the video on the [formation of fossil fuels](#).
3. Study these two charts. Write a paragraph or explain to someone what they show.
  1. [Global resources stock check](#)
  2. [What's left of the earth's non-renewable resources?](#) The top one is just a picture. Scroll down to use the interactive one.

### Day 71

1. Read about [natural gas](#).
2. What are the pros and cons of using gas?

### Day 72

1. Read about [oil](#).
2. What are the pros and cons of using oil?

### Day 73

1. Read about the [greenhouse effect](#) or watch the [video](#).
2. Click on the different tabs and do the activity, [greenhouse effect exercise](#). (Flash activity. Enable flash to use this if you are able. It's just another look at the greenhouse effect.)
3. Work your way through this page on the [greenhouse effect](#). Do the "Checking In."
  - Record up to five points for correct answers to the five questions.

### Day 74

1. Complete the [virtual lab](#) on greenhouse gases. Finish the page. There's a chart and four questions for you.
  - Here's a [temperature graph](#). There is a graph of gases on the page. You don't need to download the app. Use the graphs to do as best as you can.
  - Here's a graph of [temperature projections](#).
  - Here's a graph of [gas emissions projections](#). It doesn't separate the gases. You can use it to make estimations for your chart.
1. What would it take to [stabilize CO2](#)? (After you click submit on the first set of charts, click "experiment 1" at the bottom of the page to continue to the next section.)
2. Record up to 28 points for completing the assignment.

### Day 75

1. Watch the video on [What is Global Warming?](#)
2. Read "[What is Global Warming?](#)"
3. Play around on this site on [climate change](#). Use the different links. (Here's a direct link to the youtube [video](#) featured on the page.)

### Day 76

1. Read "[The Inconsistencies of Climate Change Alarmists](#)."

### Day 77

1. On Day 78 you need to have complete-sentence [answers](#) to the questions for chapter 16.
2. Today read the [article](#), “Should We Be Concerned About Climate Change?”

### Day 78

1. Write complete-sentence [answers](#) to the questions for chapter 16, using the [article](#), “Should We Be Concerned About Climate Change?”
2. Record up to 7 points for 7 complete answers.

### Day 79

1. Watch the short video on [hydropower](#).
2. Read about [hydroelectric energy](#).
3. Use some of the links to learn more.

### Day 80

1. Read about [solar power](#). Stop at Solar Power Tower.
2. Watch the video on [solar powered cars](#).
3. On Day 82 you’ll be building something. Decide today what you’ll build and get what you need collected.
4. On Day 86 you’ll need up to 7 clean Ziploc bags any size that would fit an index card inside, petroleum jelly, up to 7 index cards.
5. On Day 85 you’ll need three Ziploc bags, a few paper towels, 15 Lima beans, and vinegar.

### Day 81

1. Read about [wind power](#).
2. Take the [wind power quiz](#).
3. Build a [wind farm](#).

### Day 82

1. Go through the [review](#) on page 7.
2. Build an alternative energy something. Below are just some ideas. You can find your own project idea if you like.
  1. [solar oven](#)
  2. [hydro power](#)
  3. [pinwheel generator](#), [wind turbine](#)
1. Record 20 points for completion and take a look at Day 83’s assignment now!

### Day 83

1. Complete a [science lab report](#) on your project.

2. Use this grading guideline to know what you should include. You can use a description instead of a photograph if you want.
3. Use the rubric linked in #1 to score your project. Record up to 20 points.

#### **Day 84**

1. Read [primary air pollutants and the causes of air pollution](#) on page 3.
2. Read just the top intro part about the [Great Smog](#).
3. SOAK your 15 Lima beans overnight in warm water.

#### **Day 85**

1. Complete the lab on the effects of [acid rain](#).
2. Score up to 12 points for completing all the parts/questions of the lab report. Score up to 16 points for completing your table (even though there are more than 16 blanks to fill in).
3. Record your score out of 28 when the lab is complete on Day 90.

#### **Day 86**

1. Today you're going to do a lab on [air pollution](#). You don't have to do seven locations. Do at least 5, including the control.
2. Today set it up. You will have to leave this for 24 hours. Then come back to fill in your data chart and write your lab report as described.
  1. You need ziplock bags, index cards, petroleum jelly, magnifying glass.
  2. If you can't do this lab, you can do this online [virtual lab](#), but warning, this is harder.
3. You can start your lab report today. You might want to work on your [reading](#) for Day 87 because you'll have to finish your lab report on Day 87 as well.

#### **Day 87**

1. Go through page four on the [effects of air pollution](#).
2. Record up to 16 points for completing all the parts of your [lab report](#). (You may find it listed on your grading sheet as Day 85.)

#### **Day 88**

1. Choose a topic for a report. You will research and write a report 500-1000 words on the topic. It's due Day 90. Here is the [rubric](#) for how you will be graded (the first one on this pdf, for a research paper). You will be scored out of five for each of five categories only, from thesis statement through conclusion. Add a [bibliography](#) with at least six sources listed.
2. Choose an earth science topic related to what we've covered so far. You might consider earthquakes or tornadoes or cloud formations.

#### **Day 89**

1. Work on your report. Make sure you write it in proper form: introduction (last sentence is your main idea), details (each paragraph starts with a main idea sentence and ends with a transition), conclusion.

### **Day 90**

1. Finish your report (keep reading first) and have someone [grade your research report](#). Score up to five points for each of the first five categories only. For documentation add up to three points if have six sources and have included them in a [proper bibliography](#). Record your score out of 25.
2. Complete the lab report on the effects of [acid rain](#).
3. Score up to 12 points for completing all the parts/questions of the lab report. Score up to 16 points for completing your table (even though there are more than 16 blanks to fill in).
4. Record your score out of 28 (listed on the grading sheet for Day 87.)

Figure out your second quarter grade. Save your written work for your portfolio.

### **Day 91(\*)**

1. (\*)Print out your [third quarter](#) grading sheet or use the [third quarter](#) Excel version.
2. Now we're going to switch our attention from the earth to space.
3. For our introduction, we're going to watch a documentary on astronomy. Today watch this video on [the inner planets](#).

### **Day 92**

1. Watch part 2 on the [earth, moon, and stars](#).

### **Day 93**

1. Watch part 3 on [Jupiter and the outer planets](#).

### **Day 94**

1. Watch part 4 on [going into space](#).

### **Day 95**

1. Watch part 5 on the [history of astronomy](#).

### **Day 96**

1. Watch part 6 on [telescopes](#).

### **Day 97**

1. Watch part 7 on [constellations](#).

### **Day 98**

1. Watch part 8 on [constellations](#).

### **Day 99**

1. Before we go further, let's go back to the Bible.
2. Read [Does the Bible Say Anything about Astronomy?](#)
3. Answer these [questions](#) on the article. Go to chapter 4.
4. Check your [answers](#).
5. Record up to 9 points. Score up to 3 points for each answer.

### Day 100

1. Read [Does the Big Bang Fit with the Bible?](#)
2. Answer these [questions](#) on the article. Go to chapter 5.
3. Check your [answers](#).
4. Record up to 12 points. Score up to 3 points for each answer.

### Day 101

1. Read [Does Distant Starlight Prove the Universe Is Old?](#)
2. Explain to someone or write a paragraph about the different thoughts on the origins of the universe.

### Day 102

1. Answer these [questions](#) on the article. Go to chapter 19. Make sure you answer in complete sentences.
2. Check your [answers](#).
3. Record up to 14 points. Score up to 2 points for each answer.

### Day 103

1. Read the introduction to the new unit.
  - We have all heard how the Mayan calendar has predicted the end of the world in 2012. Do you know it is because the calendar stops in the year 2012 and goes no farther? Do you know that a lot of other ancient civilizations also developed complicated calendars and observations about the planets and stars? Then in the 1500s a man named Nicolas Copernicus started a revolution by calculating that the Sun was the center of the Solar System. That made a lot of people angry who believed that the Earth was the center of the Universe and that everything revolved around it. Eventually people like Johannes Kepler and Sir Isaac Newton went on to show that not only is the Earth not the center of the Universe, but we are a tiny planet revolving around a minor star on the edge of a pretty average Galaxy. This module will explore some of the ancient astronomers and the contributions of Copernicus, Kepler, and Newton. ([source](#))
1. Read the [key terms](#) for this unit.
  - Please realize some of the root words at work here to make these easier to understand. Helio (as in aphelion, heliocentric, and perihelion) refers to the sun, from the Greek word for sun, helios.
1. Learn the terms using the [flashcards](#).
2. Read about the [early astronomers](#).

### Day 104

1. Read about [myths](#) people believe about space.
  - I had heard the Wall of China one, so I did a little looking around. [It can be seen from space](#), just under certain circumstances.
1. Write a paragraph on one that you believed or that you know people believe and why it's not true.

### Day 105

1. List at least two contributions to astronomy by each of the following civilizations: Mayans, Greeks, Chinese, Egyptian. Do your own research.
2. Record your total number of points out of 8. Score up to 1 point for each one listed. (Don't record more than 10 points. There's a chance of earning two extra points.)

### Day 106

1. Read [The Copernican Revolution](#).
2. Little note: It's rather silly to say that the sun was rotating around the earth because Joshua told the sun to stand still. Joshua wouldn't know the science of how the world worked. He just wanted it to stay light. God gave him all the light he needed and all that he had asked for. It's rather silly to say that the Bible is unscientific because it says the sun stood still. For all we know today, we still talk that way. We talk about the sun rising and setting, it's movement across the sky, even scientists.
3. Read about [retrograde motion](#).

### Day 107

1. Read about [Galileo](#). You can skim down to where it talks about him.
2. Read about [Galileo](#) from a Christian astronomy site.

### Day 108

1. Read about [Kepler and Brahe](#).
2. Write out the [math equation](#) that states Kepler's third law.
3. Read about [Kepler](#).

### Day 109

1. Complete this [lab](#) on Kepler's Laws of Motion.
2. Here's the [simulation](#) you'll be using. If you can't use it, [here's one](#) that will run on any device. It won't give you numbers. You'll have to come up with comparative measurements and time the orbits yourself. Do the best you can with it.
3. Record your score out of 50. (Potential for 3 points extra credit.) Answer everything in complete sentences and don't leave any data blank. Label your graphs.

### Day 110

1. Do the [self-check](#). (Questions from [GVL](#))

2. Read about [Isaac Newton](#).
3. Watch the presentation on [Newton and gravity](#).
4. Go through the [gravity](#) presentation.

### Day 111

1. Go through this page on [gravity](#) through the first two practice problems. If you are a scientist in the making, try more problems because it's fun to solve problems.

### Day 112

1. Complete this lab on [gravity](#).
2. Use this [interactive](#) to follow the directions linked above.

### Day 113

1. Take the [quiz](#) on gravity. ([alternate quiz](#))
2. Record your score out of 10.
3. Do you know your [vocabulary](#)?
4. On Day 115 you need to have completed a timeline that includes ten astronomers. Include several pieces of info for each, all written in complete sentences.
5. Make your timeline on paper, on the computer, or [online](#).

### Day 114

1. Work on your timeline. Add images of the astronomers.
  - You will score up to ten points for including up to ten astronomers.
  - You will score up to ten points for including an image of each astronomer.
  - You will score up to ten points for creating the timeline in order and with the appearance of a timeline with appropriately labeled and spaced dates.
  - You will score up to twenty points for including up to twenty correct entries about their discoveries.

### Day 115

1. Complete your timeline.
2. Record your score out of 50.
  - Score up to ten points for including up to ten astronomers.
  - Score up to ten points for including an image of each astronomer.
  - Score up to ten points for creating the timeline in order and with the appearance of a timeline with appropriately labeled and spaced dates.
  - Score up to twenty points for including up to twenty correct entries about their discoveries.

### Day 116

1. Read through the vocabulary for the new unit on the [instruments of astronomy](#).
2. Read, "What is [electromagnetic radiation](#)?"
3. Read more on [electromagnetic radiation](#).

4. Watch the [presentation](#) about electromagnetic radiation. Write down definitions of:
  1. refraction
  2. reflection
  3. diffraction
1. Record up to 6 points for three definitions in complete sentences.

### Day 117

1. Write out the [practice problem](#).
2. Match the [types of electromagnetic radiation](#). ([source](#))
3. Answer the wavelength problems. ([source](#))
  1. Red light has a wavelength of 720nm. What is its frequency? (Answer:  $4.2 \times 10^{14}\text{Hz}$ )
  2. A radio signal has a frequency of  $102 \times 10^6 \text{ Hz}$ . What is its wavelength? (Answer: 2.9m)
  3. A violet light with the frequency of  $7.1 \times 10^{14} \text{ Hz}$  is shot through a diamond and has a wavelength of  $1.75 \times 10^{-7} \text{ m}$ . What is the speed of the light in the diamond? (Answer:  $1.2 \times 10^8 \text{ m/s}$ )
4. Record up to 5 points for up to ten correct, half a point each.

### Day 118

1. Read about [light](#). Keep moving through all those pages. You don't need to watch the videos.
2. Take brief notes on the development of our ideas on light.

### Day 119

1. Read about the [Variable Speed of Light](#). That's all you have to do. Take your time and do your best.

### Day 120

1. Look at the diagram about the [electromagnetic spectrum](#).
2. Answer the [questions](#). You can look up any information you feel you need to in order to answer.
3. Check your [answers](#). Score up to 2 points each.
4. Record your score out of 20.

### Day 121

1. Watch the presentation on the page about [light and spectroscopy](#). (Definition of [spectroscopy](#).)
2. Watch the video on the signatures of [light](#).
3. You don't need to read all of this one, but look for [applications of spectroscopy](#). How can it be used?

### Day 122

1. Complete the [Emission Spectrum Lab](#).
2. Use this Java [simulation activity](#) to complete it or use this [video](#) of the simulation to complete the lab. ([source](#))
3. Score up to 30 points: 20 points for following all the directions and completing it, 10 points for answering completely the last two questions.
4. Record your score out of 30.

### Day 123

1. Watch the video on spectroscopy. (Take notes to stay focused.)
  - [part 1](#)
  - [part 2](#)
  - [part 3](#)
1. Answer the [self-check questions](#). ([source](#))

### Day 124

1. Read about the [development of telescopes](#).
2. Take notes on the timeline of its development.

### Day 125

1. Read about [how telescopes work](#) (pages 2 to 7, this links to 2) OR watch the [video](#).
2. Read about the [Hubble Space Telescope](#).

### Day 126

1. Research discoveries made by the Hubble telescope and write a paragraph on what you think is one of the most important or exciting discoveries and why.
2. Record up to 5 points for writing at least five sentences that completely answer the question. (It must begin with an introduction sentence that tells what the paragraph is going to be about.)

### Day 127

1. Pretend you're using a telescope today and [explore images in space](#).
2. You could also use [videos and images](#) from Hubble's site.

### Day 128

1. Learn about the [earth's tilt and the seasons](#) by watching the video.
2. Now study this [simulation](#). Write out at least three observations of what it shows.
3. Record up to 6 points for up to six observations. Record your score out of 3. (Potential for extra credit. Study the simulator!)

### Day 129

1. Answer the questions.

- Of the four seasonal equinoxes, which marks the longest, shortest, and equal-length days of the year? (Answers: summer – longest, winter – shortest, autumnal and vernal equinoxes – equal)
  - What determines the seasons? (Answer: the tilt of the earth and the angle the sun's energy hits it, not the sun's distance to earth)
1. Make a [sundial](#).
  2. Record up to 10 points for having up to 5 hours accurately labeled on it.
  3. While you're waiting on the next hour, write down some consecutive sunrise/sunset times and moonrise/moonset times. Make observations. How does it change each day?

### Day 130

1. Read about [observing the moon, the planets](#) and the [sun](#). (Only some of the planets are available for reading more about.)

### Day 131

1. Read about getting started [observing the night sky](#).
2. Go through the [star gazing terminology](#).
3. And read the top and bottom of this page on [constellations](#).

### Day 132

1. Watch the video on the [cycles of the sky](#). How and why do the stars move across our sky?
2. Now work your way through this page on [understanding the motion of stars](#). How can you use your hands to measure degrees of angles in the sky? You don't have to use the applet. You can type in answers, and when you hit enter, it will tell you if you were correct.

### Day 133

1. Look at the [constellations](#) for the month you are in right now.
2. Tonight, or on the next clear/clearish night, go outside and sketch what you can see.
3. Label the drawing with the time and weather conditions. Draw everything you can see and label what you can.

### Day 134

1. Click on each of the listed months and look at the shown [constellations](#). Move your mouse to make the pictures disappear and then try to find the constellations in the picture.
2. Follow the directions to label the [winter constellations](#). ([Source](#))
  - Fill in the star map with the outlines of the winter constellations (in Red), the
  - names of the winter constellations (in Blue), and the names of at least five bright stars (in Green). You will need to do some research to find them. There are drawing tools in most word processing programs that will allow you to draw on the image above or you can print out this sheet and draw them by hand.

1. Record your score up to 30 points. Score up to 2 points each for: up to 5 constellations drawn, 5 constellations named, 5 stars named.

### Day 135

1. Watch the video on [meteors, meteoroids, and meteorites](#).
2. Read about [comets, asteroids, and meteors](#).
3. Ask some questions about them at the bottom of the page. Each is a link to learn more.

### Day 136(\*)

1. (\*)Print out your [fourth quarter](#) grading sheet or use the [fourth quarter](#) Excel version.
2. We're back to our online Creation textbook today. Do your best to work through this page on the [origin of asteroids and meteoroids](#).
3. Write or tell a summary of his point about the origins of these things.

### Day 137

1. Try to answer the [self-check questions](#). ([source](#))
2. By the end of Day 138 complete one of the [Astronomy Project](#) ideas.
3. Keep track of your [sources](#)! Any pictures used should be cited unless they are in the public domain.

### Day 138

1. Work on your [astronomy project](#).
2. Don't forget to keep a record of your [sources](#).

### Day 139

1. Record your score out of 50 points.
  1. Score up to 4 points for each one included. There are four pieces of information expected for each one: picture, description, and the specific info requested in the assignment.
  2. Score up to 10 points for including a bibliography with at least 5 sources listed in an [appropriate way](#).

### Day 140(\*) Materials: flour, cake pan, cinnamon, magnifying glass, tweezers

1. (\*)Complete this [lab on craters](#). You can print out the chart, or just make your own to fill in. You DO NOT need to take pictures.
  - Score up to 25 points for a completed chart.
  - Score up to 20 points for completed answers in complete sentences.
  - Score up to 5 points for a complete conclusion.
1. Record your score out of 50.

### Day 141

1. Read through the [key terms](#).

2. Then do the [crossword puzzle](#). (Hint: FULLMOON is one of the answers. Moon is included and there are no spaces between words.)
3. Watch the video on the [moon's phases](#).

#### Day 142

1. Watch the [video](#) on the moon surface, insides, and formation.
2. Read about the [moon's atmosphere](#).
3. Read from a Christian scientist on the [formation of the moon](#).

#### Day 143

1. Read another Christian scientist's [views on the moon](#).
2. Learn about [lunar eclipses](#).

#### Day 144

1. Read about the [solar system](#).
2. Here's one more [introduction to the solar system](#). Don't worry about all the links on the page. Just go through the page.
3. Here's a video on the [relative size of the planets](#). (This is directly on youtube. Do not watch any related videos.)

#### Day 145

1. Watch this video on the [relative size of the distances between planets](#). (This is directly on YouTube. Please make the video full screen and do not play related videos.)
2. Read about the [origin of the solar system](#).
3. Tell someone about the origin of the solar system.

#### Day 146

1. Read this article on [astronomy confirming a young universe](#).
2. Write a paragraph on the age of the universe and give proof of your position.

#### Day 147

1. We're going to learn about the planets. Think of how you can take and organize notes on the planets that will allow you to compare and contrast them. Don't just take notes on each planet. You could take notes on size, on atmosphere, etc. and put the information for each planet together on that topic so you can compare them.
2. Learn about [Mercury](#). You can click on the stats. If you put your mouse over the green highlighted areas on the rotating image, you can learn more. You can also enter your weight. That's something you can compare between planets.
3. Watch a video on [Mercury](#).

#### Day 148

1. Learn about [Venus](#). Continue taking organized notes.
2. Watch a video on [Venus](#).

### Day 149

1. Learn about [Mars](#). Continue taking organized notes.
2. Watch a video on [Mars](#).

### Day 150

1. Learn about [Jupiter](#). Click the buttons for stats and facts.
2. You can learn your [weight on Jupiter](#) here. You can write it down for the rest of the planets as well.
3. Watch a video on [Jupiter](#) and its [moons](#).

### Day 151

1. Learn about [Saturn](#). Continue taking organized notes and click for stats and facts.
2. Watch a video on [Saturn](#).

### Day 152

1. Learn about [Uranus](#). Learn about [Neptune](#). Continue taking organized notes.
2. Watch a video on [Uranus and Neptune](#).

### Day 153

1. What is the order of the four inner planets from the closest to the sun to the farthest? Also order them according to the speed of their orbit. (Answers: Mercury, Venus, Earth, Mars-same for both)
2. Record your score out of 10.
3. Take the [quiz on page 8](#) on Jupiter and Saturn. You can use your notes.
4. Record your score out of 10. Score up to two points each (including the last set). You can award partial credit.
5. Take the [quiz on page 10](#) on Neptune and Uranus. You can use your notes.
6. Record your score out of 6.
7. Read about the [Kuiper Belt](#).
8. Try the [self assessment on page 13](#).
9. I don't think those quizzes should have taken a lot of time. If you have time, check out this video on the [Oort Cloud](#).

### Day 154

1. Complete this activity on [moon rock density](#).
2. Record your score for completing all the parts and answering all the questions completely out of 30.

### Day 155

1. Work through the [key terms](#) and definitions for the new unit on stars.
2. You can use the [matching activity](#) to help you learn the definitions.

3. Go through the [three pages](#) on the formation of stars, the life cycle of stars, and fusion in stars.
4. Try the [Test Byte](#).

### Day 156

1. Read about [fusion energy](#).
2. Read about the [challenges of using fusion energy](#).
3. Write a paragraph on the benefits and challenges of having a fusion power plant.
4. Record up to 5 points for 5 sentences written in paragraph form that include benefits and challenges of having a fusion power plant.

### Day 157

1. Go through the page on the [fusion process](#). Don't click on any links.
2. Watch the [video](#) to read and answer the questions. Record the correct answers for all five steps.
3. Complete the page on [helium burning](#). (Don't click on the interactive.)
4. Watch the [video](#) to read and answer the questions. Record the correct answers for all five steps.
5. Score up to 10 points for recording 10 correct answers.
6. Compare the equilibrium cycle with the Helium burning process. Also discuss what determines if a star eventually burns other fuel besides Hydrogen. (This "question" is from GVL Astronomy.)
7. Score up to ten points for complete answers in complete sentences.
8. Record your score out of 20.

### Day 158

1. Read this article on [speedy star changes](#).
2. Read the [Faint Young Sun Paradox](#).
3. Answer the [questions](#) about fusion. ([source](#))
4. Tell someone (or write) about the problems with old stars and stars evolving over millions of years.

### Day 159

1. How about another video? Watch the video on [stars](#).
2. Read about the [life cycle of a star](#).

### Day 160

1. Here's a list showing the [life cycle of a star](#).
2. Then go through this page and do the [student activities](#) at the bottom of the page.
3. Record your score out of 45 points.
  - Score up to 1 point for each completed numbered direction 1-25. (up to 25 points) Record your results and answers as directed.
  - Score up to 15 points each for your diagram

- Score up to 2 points for each of 15 definitions.

### Day 161

1. Read about the [brightness of stars](#).
2. One way to mathematically figure a star's brightness is by using the [inverse square law](#). Here's [another explanation](#).
3. Answer the [questions](#) about stars. If you don't know the answers, learn them when you check each answer. ([source](#), pages 8 and 10)

### Day 162

1. Complete the [Absolute and Relative Magnitude](#) virtual lab on the magnitude of stars. ([source](#))
2. Here are the links you are told to go to.
  1. [one](#)
  2. [two](#)
3. Record your score out of 26.

### Day 163

1. Then take the [Crash Course](#).
2. How far it is from the earth to the edge of the Milky Way? (Find the answer.) How long would it take to get there?

### Day 164

1. Watch this video on [galaxies](#) and [part 2](#).
2. Read about [the number of stars](#).

### Day 165

1. Complete the [Milky Way lab](#) by completing these [worksheets](#). (Use the first link to complete it. You don't have a model, but you don't need it for your worksheets.)
2. Record your score out of 40. Score points for completing each portion, including answering in complete sentences.

### Day 166

1. Follow the directions and create a classification for [these galaxies](#). Fit the galaxies into four categories.
  - Describe each category so that others would place the galaxies into the proper category.
  - List the category name or number, its description, and which galaxies from the link would belong in that category.
  - Score up to 15 points for fitting each galaxy into a category.
1. Now place the galaxies according to [Hubble's categories](#).
  - Score up to 15 points for fitting each galaxy into a category.
1. Compare the two sets of categories. Which is better? Why?

- Score up to 5 points for your conclusion (in a complete sentence!)
1. Record your score out of 35.

### Day 167

1. You can read more about [different types of galaxies](#) here. On the bottom of the page, you can click to read more about the different types.
2. Take the [quiz](#). Did you learn anything new? ([source](#), pages 5 and 8)

### Day 168

1. Watch this video on [dark matter](#).
2. Read about [dark matter](#).
3. Now read about it from a [Christian perspective](#).
4. Write a paragraph or explain to someone about dark matter and why it matters.

### Day 169

1. Watch the video on the [Big Bang](#). You need to know what this is even if you don't agree with it. It's a part of our culture.
2. And here are two articles from a Christian perspective.
  - Was there a [big bang](#)?
  - Why does [the universe appear to be expanding](#)?

### Day 170

1. Follow the [directions](#) and do your best to decide if each card is an observation or a guess and for which theory.
  - article: Cosmic Times [Origin of Everything: Hot Bang or Ageless Universe?](#)
  - Score up to 10 points for placing all of the cards into categories.
1. Write a short paragraph summary as described.
  - Score up to 5 points for a complete paragraph telling which you think is most based on evidence.
1. Record your score out of 15.

### Day 171

1. Does the [Bible refer to life in outer space](#)?
2. [Evidence for Alien Life](#)?
3. Aliens are not something to get fascinated about. There are many testimonies of people who do believe they were visited or abducted by aliens. They were able to get rid of them by calling on the name of Jesus. They fled like demons do in such instances. I feel like we have to believe the testimonies of Christians who say they have faced this terrifying ordeal and not just dismiss aliens as nonsense. Many brought it on themselves by getting "into" aliens. I personally believe that aliens are just one more deception of Satan. I just want to warn you to not seek info on them, etc. I, of course, don't believe in aliens as real beings living out in the universe. I think they are demons, and I don't want to see one!

### Day 172

1. Choose a [creationist astronomer](#) to write a short report on. Do research and complete a report by the end of Day 175. Keep track of your sources. You must have more than one!
2. You will score up to 25 points for at least five paragraphs. Is the person's contribution to astronomy and creation perspective clearly shown? Does the report have a conclusion and introduction? Score another five points for including a quote. Make sure you [show where it is from](#).

### Day 173

1. Continue working on a report on a [creationist astronomer](#).
2. Make sure to list your sources. Here's a site to help you [list your sources in the proper format](#).

### Day 174

1. Continue working on a report on a [creationist astronomer](#).
2. Make sure to list your sources. Here's a site to help you [list your sources in the proper format](#).

### Day 175

1. Finish your report on a creation astronomer. Here's a site to help you [list your sources in the proper format](#).
2. Record up to 30 points for at least five paragraphs and including a quote (5 points). Questions to consider when scoring: Is the person's contribution to astronomy and creation perspective clearly shown? Does the report have a conclusion and introduction?

### Day 176

1. Look through the [15 evidences of a young universe](#).
2. Decide which you think are the most convincing. Think over all you have learned this year, not just about astronomy but about our earth as well.
3. Write one last report. Write on the origins of the universe. Use scientific fact to show your points. Keep track of your sources.
4. You will be scored out of 50 points. You must have at least 25 sentences. (25 points) You must have at least five sources. (5) You must have specific information in each main body paragraph. (15) You must have the proper structure including an introduction, conclusion, main idea sentences, transitions, and good grammar! (5)
5. Make sure you [show where it is from](#).

### Day 177

1. Continue to write on the origins of the universe. Use scientific fact to show your points. Keep track of your sources!

**Day 178**

1. Continue to write on the origins of the universe. Use scientific fact to show your points. Keep track of your sources!

**Day 179**

1. Continue to write on the origins of the universe. Use scientific fact to show your points. Keep track of your sources!

**Day 180**

1. Present your report. I suggest reading it out loud to an audience (5 extra credit points).
2. Record your score out of 50 points. You must have at least 25 sentences. (25 points)  
You must have at least five sources. (5) You must have specific information in each main body paragraph. (15) You must have the proper structure including an introduction, conclusion, main idea sentences, transitions, and good grammar! (5)
3. Congratulations on finishing the course. Don't forget to stop and look up! And don't forget to think for yourself and to always trust the all-knowing, ever-faithful and true God.