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Radiofrequency	Microwave	Infrared	Ultraviolet	X-rays	γ-rays
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Name \_\_\_\_\_ Date \_\_\_\_\_

### The Electromagnetic Spectrum

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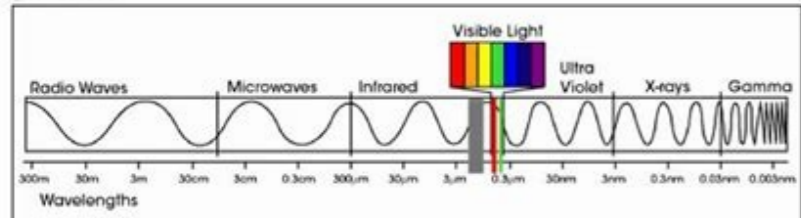
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### ROYGBV Electromagnetic Spectrum

© Glady Holman

## What Is Light?

Visible light is only one form of energy/light on the EM spectrum, shown below, but it's the only one we can see, it also is responsible for color.



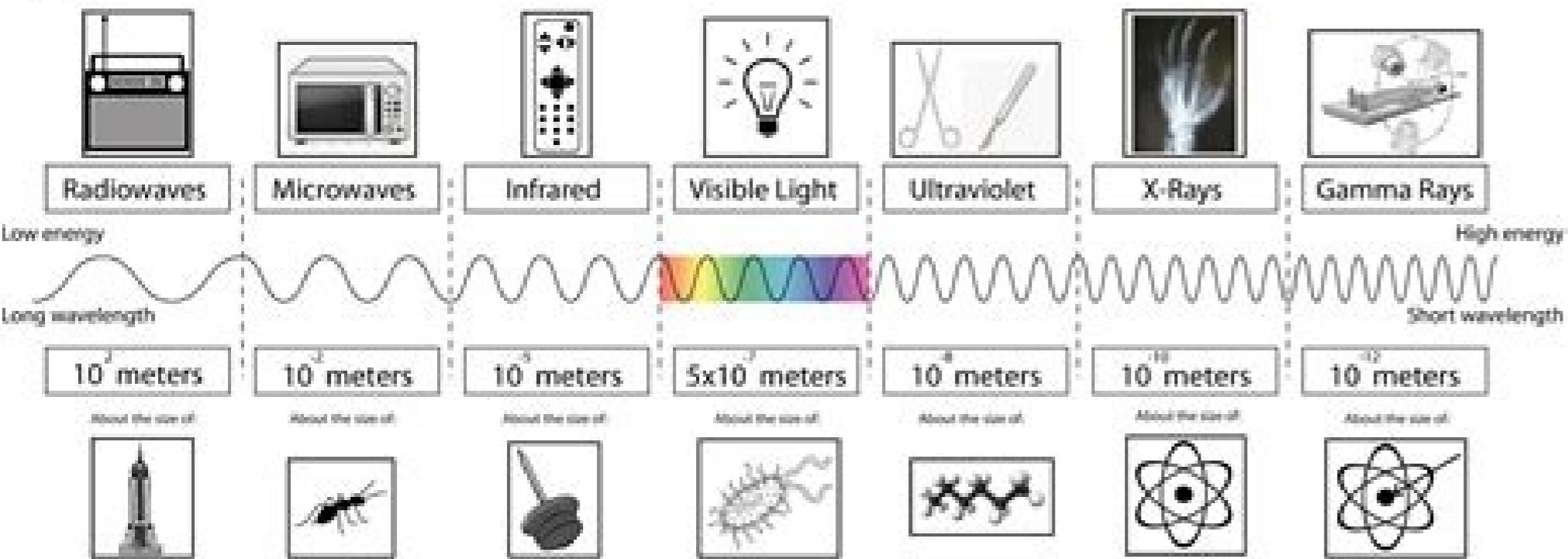
### Fun Facts about light:

- Light can travel from the sun to earth a total of about 93 million miles in 8 minutes! That might not sound very fast, but it would take a car 177 years (60 mph) to travel that far.
- Why does light show up in different colors? Light has different wavelengths, red light has the longest wave length and violet (blue-purple) has the shortest.
- In one year light travels 5,878 trillion miles, otherwise known as a light year

### Here are some websites with fun activities to do with light:

- Bubble experiment [http://www.exploratorium.edu/snacks/bubble\\_tray/index.html](http://www.exploratorium.edu/snacks/bubble_tray/index.html)
- Make a green gumball black <http://www.optickids.org/home/content/classroom-activities/easy/make-a-green-gumball-black/>
- Make your very own rainbow <http://www.sciencekids.co.nz/experiments/makearainbow.html>

J. Headfield



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 some 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 the Hydroplate 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 young 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 sometimes give completely opposite conclusions. Always be on the lookout for what is fact and what is assumption. Materials needed: See Lessons 24, 60 and 67 Lesson 1(\*) (Note that an asterisk \* indicates that there is a worksheet on this lesson) Welcome to your first day of school! I wanted to give you one important reminder before you begin. Many of your lessons below have an internet link for you to click on. When you go to the different internet pages for your lessons, please DO NOT click on anything else on that page except what the directions tell you to. DO NOT click on any advertisements or games. DO NOT click on anything that takes you to a different website. Just stay focused on your lesson and then close that window and you should be right back here for the next lesson. Okay? If you didn't get here through My EP Assignments, I suggest you go there and create an account. (\*)Print out the first quarter grading sheet or use the first quarter Excel version. Let's start at the beginning. Read What Is a Biblical Worldview? This is the end of your work for this course for your first day. You are allowed to move at your own pace (this is homeschooling), but it's intended you complete one lesson a day. Lesson 2 Read, "What's the Best Proof of Creation?" Lesson 3 Read, "How Old Is the Earth?" Lesson 4 A little history...Read "Where Did the Idea of Millions of Years Come From?" Lesson 5 Lesson 6 You are going to read a chapter called Big Bang?, from the Answers in Genesis site. Scroll to the bottom and read the questions so that you can be thinking about them when they come up in the article. 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. Lesson 7 Answer the questions at the end of the chapter. Always answer in complete sentences. Record 18 points for completion. Lose a point for any answer that doesn't answer the question completely. Lose a point for any answer not in a complete sentence. Lesson 8 Lesson 9 Answer the questions at the end of the chapter. Always answer in complete sentences. Record 12 points for completion. Lose a point for any answer that doesn't answer the question completely. Lose a point for any answer not in a complete sentence. Lesson 10 Lesson 11 Read page 5 about the structure of the Earth. You can also read about the layers of the Earth here. Click on the Earth's Structure tab. Draw/make a model of the Earth's structure. Figure out the relative thicknesses of the different layers. If you need a cheat for that... 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. Lesson 12 Lesson 13 Today watch this video on the Earth's radioactivity. I know this is hard stuff, but try to get the basic idea. Lesson 14 Read pages 2 and 3 on plate tectonics. You can use the activities on the page. Lesson 15 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. The videos aren't working. You can see videos here, though. Lesson 16 Read through Ocean Trenches. Click on "Next Page" to move on. Click on "Next Page" after the picture and read through the first page on the origin of trenches. Write a paragraph or tell someone a general summary of how the author believes ocean trenches formed. BTW, the author is a MIT graduate. Lesson 17 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. Take a look at the comparison chart on the following page. Lesson 18 Read "Did the Continents Split During the Days of Peleg?" Lesson 19 Read the next chapter, Geologic Column. First, scroll down to the questions at the bottom of the page and read those. Then, go back to the top and read until you get to "Reference Article Summaries." Lesson 20 Answer the questions at the end of the chapter. Always answer in complete sentences. 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. Lesson 21 Read the next chapter, The Fossil Record. Start with the questions. Stop, if you want, at the article summaries. Lesson 22 Answer the questions at the end of the chapter. Always answer in complete sentences. 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. Lesson 23 Today you're going to work on a little vocabulary. Work to learn any new vocabulary from the first page of the new unit on the rock cycle. You can also read page two on minerals. The links it tells you to read don't work. Don't worry about them. See what kinds of minerals are in your environment. Collect a couple of rocks to identify if you want. Lesson 24 (Materials: steel nail, glass you can scratch a little-maybe a compact mirror or something like that) Read about rocks. Use the key to identify your rocks. And/or identify these... Lesson 25 Lesson 26 Lesson 27\* (Materials: scissors and glue stick) Read about the rock cycle on page 6. If it's working, you can do the drag and drop activity. \*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) Check your answer. Record up to 15 points for each piece in the right place. Lesson 28 Lesson 29 Read page 3 on erosion and soil. Use the links about soil texture and erosion. The link on soil profile doesn't work. You can read the first paragraph here about soil profile. This is a short article on erosion and some things that can help prevent soil erosion. Lesson 30 Look at this weathering assignment. 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.) Score up to 4 points for each question answered with complete sentences. Add two points. (This assignment changed.) Record your total score out of 46 points. Lesson 31 Read ideas about the origin of the Grand Canyon. Lesson 32 Lesson 33 Answer the questions for chapter 18. Check your answers. Score up to 3 points for each complete answer written in complete sentences. Record your score out of 12. There's lots more on this topic in the online textbook if you are interested in reading more. Lesson 34 Read page 4 on mass wasting and stop at the page. 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 source) Lesson 44 Read about carbon dating. Lesson 45 Answer the questions for chapter 7 which you read on Lesson 44. Check your answers. Record up to 14 points for complete answers written in complete sentences. 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. Lesson 46(\*) (\*)Print out the second quarter grading sheet or use the second quarter Excel version. We've already read the creationist perspective of the fossil record. Let's learn more about it. Go through the fossil record activities: geologic time and fossil tour. Keep clicking on "More" and "Next." Read page 4 on fossils. Answer the questions at the bottom of the page. Lesson 47 Choose one of the interactive maps and then click the globe icon on the far left side. Choose your state or a state from the list and click "Zoom." Use the key to read the map. Write a paragraph describing the geological structure of the state. Look up any terms from the key you need to. Lesson 48 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. Lesson 49 Read about Mount St. Helens. 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.) Check your answers. Record up to 6 points for complete answers in complete sentences. Lesson 50 Read page 3 on the Paleozoic Era. Read this article about biological evolution and answer the questions at the bottom of the page. You have today and Lesson 51 to complete this. Lesson 51 Finish reading the article about biological evolution and answering the questions at the bottom of the page. Record up to 22 points for complete answers in complete sentences. Lesson 52 Lesson 53 Lesson 54 Read about biomes on page 2. Make the video at the bottom of the page full screen and read about each biome. You need the temperature and precipitation data from each biome. 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. Record 20 points for your graphs. 10 points for each graph: 1 point for each biome included, 1 point for title, 2 points for labels Lesson 55 Learn about aquatic biomes on page 3. Use this website to make a chart about animals, vegetation, climate, and location in the following biomes: freshwater, marine. Lesson 56 What is the biome where you live? Write a one-page description of your area that includes vegetation, animals, climate, temperature, and location. You can use this link to help you. Record up to 10 points for including each of the five areas and for writing in proper sentences and with an introduction and conclusion. Lesson 57 Read this packet of info (from wikispaces) 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. ? Lesson 58 Read page one about weather and climate. 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. Lesson 59 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.) Watch the video on page 3 on the ozone. Read about the sun's impact on weather. Don't forget that you need to be answering the questions from Lesson 58. Lesson 60(\*) Materials: flashlight, ruler (if you can), graph paper Read page 4 about factors that affect climate. (\*)Complete the lab on the angle of incidence. Print out the chart or make your own. Answer the questions. There are six blanks on the chart and four questions to answer. Score up to 2 points each for completion. Record your



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