



The Golden Ratio & Fibonacci Numbers: Math Connections with the Real World

Student Assignments & Project Workbook

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Before You Begin this Course

Studying the history and applications of the Golden ratio and Fibonacci number series is a life-rewarding endeavor. Most of modern day education doesn't introduce these numbers let alone have the time to go into any great depth of their history and application. As you go through this course, decide on what projects and activities you would like to do according to your ability level and time commitment to this course. Please keep in mind, the more effort you put into this course, the more knowledge and experience will be gained towards understanding and application of the Golden ratio and Fibonacci numbers. The following are the things you can complete per lesson. You can also focus most of your time on one major project of your choice. You can either print out this workbook or type right into it using the latest version of the free online app, [Adobe Acrobat Reader](#).

Weekly Assignments and Smaller Projects

1. Complete each study guide and or Quizlet per lesson. Be sure to record your weekly Quizlet test grade in your MathArt journal.
2. Complete the journal templates per lesson.
3. Select and complete one short project or activity from each lesson's web resource page from the Projects and Activities section. Pages 5 - 13 can be used to assist you through these smaller projects.

OR do the:

Weekly Assignments While Working on a Major Project

1. Complete each study guide and or Quizlet per lesson.
2. Complete the journal templates per lesson.
3. Work on one major project during the entirety of the course. Pages 14 - 24 can be used to help guide you through creating your major project for this course.

Golden Ratio & Fibonacci Numbers Weeks 1 – 4 Course Checklist

Each week, check off the assignments as you complete them below. Students can elect either to complete a smaller project (#5 below) per week or work on one big project (#6 below) during the course.

Lesson #1 – Intro to Golden Ratio & Fibonacci Numbers	Lesson #2 – Golden Ratio & Fibo in Art, Architecture & Nature	Lesson #3 – Fibonacci Numbers in Nature	Lesson #4 – Phi & the Great Pyramid
1). Study guide Ques.	1). Study guide Ques.	1). Study guide Ques.	1). Study guide Ques.
2). Journal template	2). Journal template	2). Journal template	2). Journal template
3). Quiz from study guide or Quizlet from course page	3). Quiz from study guide or Quizlet from course page	3). Quiz from study guide or Quizlet from course page	3). Quiz from study guide or Quizlet from course page
5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.	5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.	5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.	5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.
6). Begin research for one big project	6). Research one big project	6). Work on one course project	6). Work on one course project

Golden Ratio & Fibonacci Numbers Course Checklist Weeks 5 - 7

Lesson #5 – Phi & Quasicrystals	Lesson #6 – Mathematics of Music	Lesson #7 – Human Body Phi & Proportion
1). Study guide Ques.	1). Study guide Ques.	1). Study guide Ques.
2). Journal template	2). Journal template	2). Journal template
3). Quiz from study guide or Quizlet from course page	3). Quiz from study guide or Quizlet from course page	3). Quiz from study guide or Quizlet from course page
5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.	5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.	5). Do one activity from the Projects & Activities or make up your own. Post work in comments section of lesson.
6). Continue work on big project	6). Add your project on your online digital media of choice to be shared as a link in the comments section with the class.	6). Post a link to your project in the last lesson's comments area.

Student Project Instructions

Each week's lesson offers a link to a page of web resources about that week's topic from the course [MathArt](#) website. Students are encouraged to do either a short project per week from the weekly web resource page under the section Projects and Activities, or however many you decide you can do total for the course. I also offer two lapbook projects for lesson #3 (Fibonacci Numbers in Nature) and #4 (Phi and the Great Pyramid) that students can complete as their major project for this course or in addition to doing smaller weekly projects. However, if you want to explore other topics on the following pages and do projects about other topics, proceed through this workbook using either the short projects plan or the student chosen bigger project's plan.

If you're not doing the lapbooks or a major course project, I encourage students to complete at least one small project per week in addition to doing the weekly study guide and or Quizlet. As mentioned previously, instead of doing one smaller student project per week, students can work on one major project for the course. See page _____ if you're planning on doing a larger project for this course.

Smaller Weekly Projects

For the smaller weekly projects, you can select from the weekly web resources per topic taught and scroll down to the Projects and Activities section of the page. Look through each of the web links. If a link happens to be broken, which, unfortunately can be a fairly common occurrence, please email me directly at gab21921@gmail.com and I will fix or replace it quickly.

Recording and Sharing Student Work

Please record your completed work on a chosen digital media platform such as YouTube for videos or a blog for photos and text. I suggest that students use blogger.com for written work and photographs, as it is easy to use and free. But, students can use any blogging platform they choose whether already established or something you set up specifically for this course. Post your completed projects on your media of choice and give us the link in the appropriate lesson page comments area located at the bottom of the page. We'd love to see your work! After you post a link to your project, please leave a kind comment for at least one other student's posted work in the comments area at the bottom of the page.

Short Weekly Student Projects & Activities

Lesson #1 – Intro to the Golden Ratio & Fibonacci Numbers – One Short Activity

1. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/golden-ratio.html) web link:
<http://hascmathart.weebly.com/golden-ratio.html>
2. Scroll down to where it says in big bold letters, Projects, Activities and Video Tutorials. Click through each of the links. Select one of the web activities or follow along and do any of the YouTube video tutorials.
3. Complete the activity.
4. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
5. Write or type below which activity you've chosen to do.

Lesson #2 – The Golden Ratio & Fibonacci Numbers in Art, Architecture and Nature

1. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/golden-ratio.html) web link:
<http://hascmathart.weebly.com/golden-ratio.html>
2. Scroll down to where it says in big bold letters, Projects, Activities and Video Tutorials. Click through each of the links. Select a new web activity (since these are the same options from last week's lesson) or follow along and do any of the YouTube video tutorials.
3. Complete the activity.
4. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
5. Write or type below which activity you've chosen to do.

Lesson #3 – Fibonacci Numbers in Nature

1. For this lesson, you have the added option for completing the lapbook. Download the lapbook from the files section of Lesson #3 Fibonacci Numbers in Nature lesson page.
2. Complete the lapbook or cut out the templates and affix the images as you like them in your MathArt journal. This can be your small or major project you complete for this course in addition to completing the Great Pyramid lapbook offered for lesson #4.

OR

3. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/fibonacci-numbers-in-nature.html) web link:
<http://hascmathart.weebly.com/fibonacci-numbers-in-nature.html>
4. Scroll down to where it says in big bold letters, Projects, Activities and Video Tutorials. Click through each of the links. Select a new web activity (since these are the same options from last week's lesson) or follow along and do any of the YouTube video tutorials.
5. Complete the activity.
6. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
7. Write or type below which activity you've chosen to do.

Lesson #4 – The History & Golden Ratio of the Great Pyramid of Egypt

1. For this lesson, you have the added option for completing the lapbook. Download the lapbook from the files section of Lesson #4 The History & Golden Ratio of the Great Pyramid of Egypt.
2. Complete the lapbook or cut out the templates and affix the images as you like them in your MathArt journal. This can be your small or major project you complete for this course in addition to completing the Fibonacci Numbers in Nature lapbook offered for lesson #3.

OR

3. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/phi--the-great-pyramid.html) web link:
<http://hascmathart.weebly.com/phi--the-great-pyramid.html>
4. Scroll down to where it says in big bold letters, Projects, Activities and Video Tutorials. Click through each of the links. Select a new web activity (since these are the same options from last week's lesson) or follow along and do any of the YouTube video tutorials.
5. Complete the activity.
6. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
7. Write or type below which activity you've chosen to do.

Lesson #5 – Phi & Quasicrystals

1. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/phi--quasicrystals.html) web link:
<http://hascmathart.weebly.com/phi--quasicrystals.html>
2. Scroll down to where it says in big bold letters, **Projects, Activities & Video Tutorials**. Select any of the video tutorials.
3. Complete the activity.
4. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
5. Write or type below which activity you've chosen to do.

Lesson #6 – The Mathematics of Music

1. Visit [this](http://hascmathart.weebly.com/mathematics-of-music.html) web link:
 - a. <http://hascmathart.weebly.com/mathematics-of-music.html>
2. View any of the videos of interest.
3. Create an original project based on any of the information you receive from any of the videos you view or simply write down five things of interest you learned from any of the videos below if you can't create a project.
4. Write or type your notes below or describe the activity you've created about the mathematics of music.

Lesson #7 – The Human Body & Phi

1. Look at the Projects and Activities at [this](http://hascmathart.weebly.com/human-body--phi.html) web link:
<http://hascmathart.weebly.com/human-body--phi.html>
2. Scroll down to where it says in big bold letters, Projects & Activities. Click through each of the links. Select one of the activities to complete.
3. Complete the activity.
4. Post your work on your chosen media. Put a link to your work in the appropriate lesson's comments area at the bottom of the page. After viewing one other student's work, leave a kind comment for them.
5. Write or type below which activity you've chosen to do.

Major Course Project

Student Major Course Project

Here you are at the beginning of your learning journey deciding what major project you would like to do for this course. You can use the following guidelines to assist you.

Please note: Since this course is about the Golden Ratio and Fibonacci numbers, please be sure to incorporate these numbers within your project. This will insure that you are applying the mathematics into your work and thus broadening your understanding for how these numbers can be applied.

1. Read through each of the course topics below.

Lesson #1 - [Intro & History of the Golden Ratio & Fibonacci Numbers](#)

Lesson #2 - [The Golden Number & Fibonacci in Art, Architecture & Nature](#)

Lesson #3 - [Fibonacci Numbers in Nature](#)

Lesson #4 - [History & the Golden Ratio of the Great Pyramid](#)

Lesson #5 - [Phi & Quasicrystals](#)

Lesson #6 - [The Mathematics of Music](#)

Lesson #7 - [The Human Body & Phi](#)

2. Write down the topic which sounds the most appealing and you feel you would like to learn more about it on a deeper level.

3. Next, click through the web resources from your topic of interest. Select the resource links that are the most interest to you and copy the links below.

Student Major Course Project

4. View any of the videos of interest. Copy and paste any video links of interest to you below.

2. Write down notes below in the space provided from any of the videos of interest to you around your topic.

3. Click through the Projects, Activities and Video tutorial links from your topic's web resource page. Do any of them inspire you to create a larger project? If so, give the links below that inspire you to create a larger project.

Student Major Course Project

4. What project ideas can you create out of this information? Below are some ideas, but you can write down your own ideas too. Write the type of project ideas you would like to do in the space provided.
 - a. Video
 - b. PowerPoint
 - c. Work of art – collage, painting, drawing, clay model
 - d. Report format
 - e. eBook
 - f. Poster

Major Course Project

Decide on the schedule you need helping you complete your project in a timely manner. The course is seven weeks long. Divide up your work over the course of those seven weeks to give you enough time to complete your project. Fill out the timeline below to help assist you in completing your project goals.

Week #1 – Begin your research. Write down all of your research including important links you want to use from the web resource pages below.

Major Course Project – Research

Week #2 – Continue research. Dig deeper and include more web links and book titles you're using for your project.

Major Course Project – Putting it Together

Week #3 – Start putting your project together if you haven't already. Write down your goals you are going to accomplish for your project this week below.

Major Course Project – Putting it Together

Week #4 – Write down your goals for working on your project for this week below.

Major Course Project – Putting it Together

Week #5 – Write down your goals for working on your project for this week below.

Major Course Project – Putting it Together

Week #6 – Write down your goals for working on your project for this week below.

Major Course Project – Putting it Together

Week #7 – Write down your goals for working on your project for this week below. Set up your digital media whether a YouTube video or blog and share a link to your work in lesson #7's comments section at the bottom of the page.