

Unit 3 Real-World Unit Projects

Standards Covered

7.RP.1, 7.RP.2, 7.RP.3, 7.NS.2, 7.RIT.1, 7.W.2, 7.W.4, 7.W.6, 7.W.7, 7.W.9

Problem Solving in Social Studies: It's Golden Task

1. First, research the mathematical artist, George W. Hart. Then use your knowledge of proportions to make a drawing of a classmate. Finally, research and write a report on the Golden Ratio.
2. Create a presentation that includes the information you gathered.

Process

1a. Use the Internet to research the life and three different works of George W. Hart. Then write a 1 page report that discusses how George W. Hart used mathematics in his works.

Describe what fascinates you about George W. Hart's works and why. Cite at least 2 different Web sites in your report.

1b. Next, make a drawing of a classmate. Create a scale drawing on a sheet of grid paper by following these directions.

- First, measure the height and width of your classmate.
- Then, measure the length of your classmate's arms, legs, torso and head.
- Once you have made all of the appropriate measurements, set up proportions to create a scale drawing of their body.

For example, if the scale is 1 inch = 5 inches and your classmate's arm is 20 inches, then

you would write $\frac{x}{20} = \frac{1}{5}$. Solve for x to find the length of their arm on your drawing. Be sure to include a scale with your drawing as well as a sheet that shows all of your measurements and calculations.

1c. Finally, use the Internet to research the Golden Ratio. Then write a 1-2 page report that includes the following information:

- an explanation of the Golden Ratio in mathematical terms.
- how the Golden Ratio is used in art and how it has affected art, especially during the Renaissance period,
- a descriptive list of different examples of the Golden Ratio in art, nature, and mathematics, and
- pictures of art that makes use of the Golden Ratio, as well as an analysis of each piece of art included.

2. Create a presentation of the information that you have gathered. Include your reports on George W. Hart and the Golden Ratio. Place a copy of your scale drawing into your report. Also be sure to include your calculations.

Guidance

1. If you are having difficulties with a particular challenge, take a look at some of the helpful hints below:
 - It will be helpful to find a picture of each of the pieces of art you will be discussing in your report and include a printout of the art in your report. Also, include the names of each piece of art.
 - If you need to review proportions or scale drawings refer to the lesson in your text.
 - Remember, to be creative and use artistic skills in this Challenge.
 - When writing your report, include an introduction and a conclusion. Be sure to properly cite any information you take from the Internet.
 - Including examples of different pieces of art that use the Golden Ratio is strongly recommended. It would be beneficial if you analyzed each piece of art you used as an example, explaining where in the art the Golden Ratio are found.
 - Be certain that the Web sites you are using are credible. Be sure to thoroughly analyze a Web site before citing it. Looking at the last date of publication, its sponsor, and the different language used throughout the Web site are a few items to analyze before using a Web site.
2. Here are some ideas for your presentation.
 1. a PowerPoint presentation
 2. a video
 3. a brochure
 4. a poster board presentation

Resources

Use the internet to research keywords such as art and Golden Ratio.

Conclusion

Voila! You have finished your journey through a world full of mathematical art! Isn't it amazing how math can be found in every dimension of life? Ratios, proportions, percents and more are all an intricate part of art and mathematics. Through your hard work, you have experienced art through the perspective of a mathematician! Congratulations on completing these challenging tasks!