

Extra-Credit Project

Algebra 1, Geometry, Algebra 2

It is never too early to begin planning your extra-credit project. All students are invited to improve their semester average by completing an extra-credit project. Those seeking Honors Credit are required to complete one project per semester. Below are a few projects that I have come up with. You can probably come up with some even better ideas. If you have your own idea, be sure to run it by me.

Your project should reflect time management on your part as well as creativity and/or research. I want to see your best work, not something scribbled on a torn piece of notebook paper the night before the due date.

The possibilities are endless. One year a creative student made **brownies** with geometric shapes and their area formulas iced on top. Another time a student created a **Christmas ornament** with mathematical formulas and phrases. You might think of your own unique way to promote math. I have had students design **T-shirts** with humorous math puns.

Math is far more than what you see in textbooks. I am thrilled when my students take the time to explore and discover the beauty of math in creation.

I am looking forward to seeing what my students come up with this semester.

Word Problems: Those word problems in our textbooks can be pretty corny and/or ridiculous. (I have heard you snicker and seen you roll your eyes.) Find three different types of word problems, and rewrite them, making them more cool and relevant. Carefully work out each of the three problems and annotate (describe in a written way) each step of the solution. Finally, add a drawing or diagram to each problem. Neatness and originality are important aspects of this project. Extra Credit Points: +10

Math Video: I have a new favorite website. <http://www.khanacademy.org/> This cool site might put me out of a job. It has hundreds and hundreds of math and science how-to videos and practice problems. I want you to make your own math video. Choose from one of the following topics or come up with your own math-related topic (get my approval first):

- Completing the Square (Algebra I or II)
- How to graph a hyperbola, circle, ellipse, or parabola (Algebra II)
- How to multiply two Binomials using FOIL (Algebra I)
- How to factor a trinomial using FOIL in reverse. (Algebra I)
- How to find the height of a tall building, basketball goal, ladder, etc. using sine, cosine, or tangent. (Geometry).
- How to study for a math test. There is a myth going around that actually studying for a math quiz is unnecessary. GASP! Debunk this myth by detailing how a

student might improve his grade on the next math test. Here is a [great article](#) to get your creative juices flowing. (ALL classes)

The videos should be no longer than 2 minutes in length. A clear presentation of the facts is a must; humor, music, and clever graphics are definitely a plus. Hand in your video on a CD. Extra Credit Points: +20

Measuring Trees: The Native Americans had a very interesting way of measuring trees. You need to read about it [here](#). The same article tells how to measure a tree using shadows. Now I want you to find a tree in your yard or neighborhood and measure it using the procedures discussed in the article. If the two measurements are not very close, give a reason as to why this might be. Document the process and use pictures in your report if at all possible. Submit your report in digital form if possible so that I can publish it on my website. Extra Credit: up to +15 points

Mathematical Disasters: I am sure you have heard tales of collapsing bridges, imploding buildings, or failed space missions resulting in calamity and loss of life not to mention billions of dollars all due to a basic error in mathematics. But are they true? Did a dropped negative sign or a misplaced decimal result in big scale tragedy? Do some research and report on what you find. A picture, video, or diagram would be nice. Be sure to cite your sources. Extra Credit: up to +15 points.

Mathematical Rap: Compose your own mathematical Rap along the lines of these:
<http://rhymenlearn.com/math-rap/pemdas/>

<http://youtu.be/nbopLhP4kpo>

You could choose another math topic to “rap” about. This project lends itself to video or audio recording. (up to +15 points)

Bad Math: Collect, display, and write a commentary on “bad math” that you discover in advertising. (up to +15 points)



Coloring Fun: Do the work and [color the design](#). I have more of these if you want more options.



Fractals!: Try your hand at building a Sierpinski Triangle. You can find directions here

<http://Sierpinskih.rice.edu/~lanius/fractals/> there are lots of other places on the internet that explain how to do this. Find one that you think you can handle and make it colorful! Make sure to include a description on what a Sierpinski Triangle is. (up to +20 points)

Fibonacci Sequence: What is it? Can you explain it? Can you find examples in nature or architecture? Do some research and come up with your own presentation that includes photos or artwork. Start here for inspiration.

<http://discovermagazine.com/2004/jul/fibonacci-cactus0708>

<http://www.wikihow.com/Draw-the-Golden-Spiral>

<https://youtu.be/NXxggr2c2jE>

(up to +20 points)



Yet Another Fibonacci Art Project: I have a weakness for combining art with math, that is for sure!

<http://www.whatdowedoallday.com/2015/01/fibonacci-art-project.html>

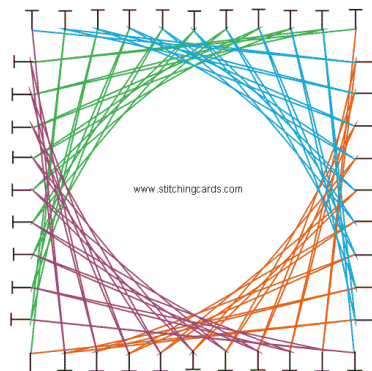
(up to +20 points)

What Every Algebra Student Should Know: This very practical project is for all of my students. When I saw this, I immediately recognized how helpful this would be to any of my students. I envisioned homework becoming easier and careless mistakes on chapter tests diminishing. I even dreamed of increased SAT scores. Here is what you need to do: Copy [these](#) flashcards by carefully following the instructions. Then practice until you can go through the whole stack correctly in under 5 minutes. You can record yourself via video and email the file to me or actually let me quiz you on the cards. You will have to start a few weeks before the due date to accomplish this feat, but you will not be sorry. (up to +20 points)

Himmeli: At last! I have long been suggesting that my students create geometric polyhedra with sticks or straws. Some brave students have taken on the challenge, and I even have one creation hanging in my basement. I never knew that they had another name – Himmeli. I also love the fact that they can be made with cocktail straws and wire. Genius!! Click [here for a tutorial](#). Try to come up with your own variations. (up to +20 points)



String Art: Go exploring on the internet. Try Pinterest. Look for an easy to follow tutorial on string art and come up with an amazing geometric work of art. This could also double as a Mother's Day gift for your dear mother. (up to +20 points)



YUM! Algebra 2 students, you might want to try this:

<http://ispeakmath.org/2015/02/25/rice-krispie-conic-sections/>



Pi Day

<http://blog.sfgate.com/techchron/2013/03/14/its-pi-day-the-possibilities-are-infinite/>

<http://www.my3monsters.com/2013/03/you-know-what-today-day-is-right.html>

Impress me with the importance and beauty of Pi. Who discovered it. What is it? What does it mean? Where can we find it in everyday life? Be sure to include a few amazing facts in your presentation. Your presentation could take the form of a poster, PowerPoint presentation, or written article. Be sure to cite your sources. (up to +20 points)

Escher Coloring Pages

<http://krokotak.com/2012/11/escher-coloring-pages/>

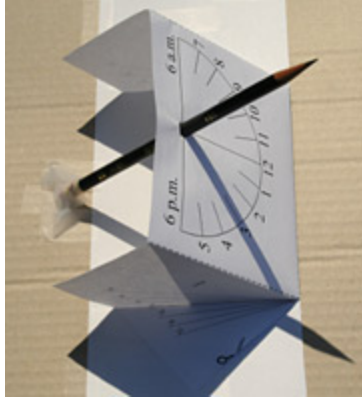
Learn how to create a tessellation, create one, and explain how it is done. I would love to feature your creation on my website. (up to +20)



Build a Sundial: This project combines two of my favorite subjects, science and mathematics. Follow the instructions and record the time from your sundial throughout

a sunny day. Write a brief report on how accurate your sundial was and how it works.
(up to +20 points)

<http://www.skyandtelescope.com/astronomy-resources/how-to-make-a-sundial/>



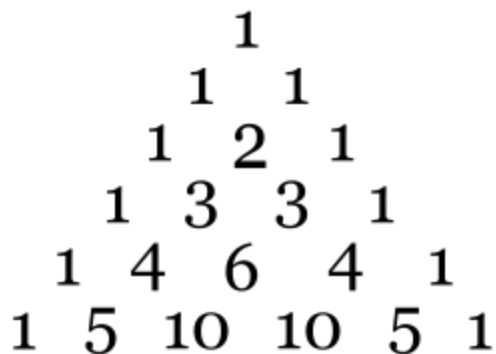
Mandala Project: Art and Math collide once more! Try making your own Mandala design. Here are the instructions.

<http://mrspicassosartroom.blogspot.com/search/label/math>

(up to +20 points)



Pascal's Triangle: Watch [this video](#) and be amazed! Then come up with a presentation based on what you learned. Spread the joy of math. (up to +20 points)



Read a relevant math article, and write a report or create a PowerPoint presentation.
[Here is a site](#) with several great links. (up to +20 points)

3-D geometric shapes. Print out these [nets](#) and create these polyhedra. It is not as easy as it looks. Be sure to write out how to find the surface area and volume of each one. (+10 points)



Infographics: This is the wave of the future for learning! Plan and create your own infographic on a math-related topic. Open your textbook and choose any topic you would like. Then go to town creating an infographic that will relay the important facts concerning that topic in a memorable way. Who knows, I might even share your infographic with my students to help them learn and remember facts for chapter tests!

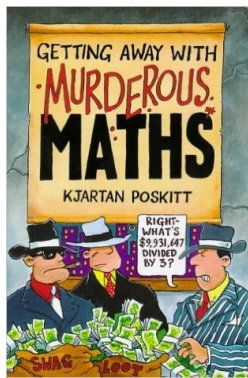
[This site](#) has some helpful hints. (up to +20 points)

"When would I ever use this?" To find out, watch a micro-documentary from the largest STEM video library of its kind --- The Futures Channel. Teachers tell us >> *"I like to motivate the students to learn math by showing applications for math and*

science in real life, and your videos are a valuable resource. You do a great job. Thank you..” F.A. El Paso, Texas **Math, Science, Technology, Engineering - - On Location, On Video, On Demand.**

Go to [this site](#) and watch three different featured videos. Then write a thoughtful review of each video. Be sure to discuss the occupation and the types of math that are used. They keep changing the featured videos, so check back often. (up to +15 points)

Murderous Maths! If you would rather read a good book than work a math problem any day than this series is for you. Read one of the books from the series and write a one-page review. These books are captivating, informative, and fun! Mrs. Russell owns a copy of the first book in the series. She just might let you borrow it. (up to +20 points)



Watch a TED Talk Watch one of these cool TED Talks on math and write a one-page synopsis telling me what you learned. (up to +15 points)



Watch [this video](#) and write a review. How did it impress you? Did it change your view of mathematics? How? Who should watch this video? What did you learn that you did not know before? Your report should be one page, double spaced.

