

Projects are a big part of this course. I have spread project opportunities for you to choose from throughout the semester. Some will involve drawing or painting, while others will involve reading books or articles, writing an analysis or doing some creative writing, or analyzing a famous work of art. All will involve some writing.

You must do *some* of the projects; I do not expect you to do *all* of them. Thus, to some extent, you can choose the projects that you think are most interesting or best suit your talents, although I suggest you also take your schedule into account.

HOW MANY PROJECTS? Full credit for this portion of the class will be 100 points – that would be the equivalent of getting 100% on every problem set or on every exam. For those of you who feel uncomfortable taking tests, you'll want to aim for getting the full 100 points in this portion of the course. How many projects should you do? However many you need to, to get your desired number of points.

At the end of this handout, there is a complete list of projects, along with their due dates and estimates for the maximum number of points you can earn. In some cases, I've even included ranges of points, so you can get an idea of how many points various levels of effort or mathematical understanding will earn.

While it's theoretically *possible* to get the full 100 points with just two projects, no student ever has. Most people end up doing between four and six projects; some people end up doing more. Some students choose to put a lot of mathematical and creative effort into a few projects, others choose to put less effort and/or (correct) mathematics into more. For each project that you do, I determine how many points you earned based on the correctness of the math, the depth of the math, the extent to which you incorporated math in the work, the clarity of your explanation, and also the care and effort you put into the art (if there is any art involved).

EXTRA CREDIT: If your scores on the projects add up to more than 100 points, the "extra" points will count as extra credit. Please do not, however, focus on the projects to the detriment of the homework and exams – unfortunately, full project points and a lot of extra credit points won't be enough if your exam scores and homework scores are sufficiently low.

STRATEGY FOR GETTING THE MOST OUT OF YOUR PROJECT: I strongly suggest you come to me early on in your project-planning stage to check whether your mathematical ideas are correct, particularly in the case of an art project. It is very frustrating to have put a lot of effort into creating a work of art, only to have it turn out that the underlying mathematical ideas are not correct, or are not sufficiently extensive or deep. Should this unfortunate turn of events come to pass, rest assured – while that particular project will not earn many points for you, all is not lost. This is where the flexibility of this portion of the class comes in. At that point, you could choose to continue to pursue that topic, doing the same project (possibly with a different artistic concept) again **or** you can move on to the next project. (You can only repeat a topic within certain time restrictions – you can't wait until the end of the semester, see whether you have as many points as you want, and then go back and redo projects if necessary – I couldn't possibly get them graded!)

GRADING THE PROJECTS: When I am assessing these projects, I will look at three aspects:

1. **mathematical analysis:** this will be the most important part of nearly every project. In it, you will explain how you incorporated the mathematical ideas into your work of art or your analysis or your story, and you will include any relevant measurements and/or calculations. Without a mathematical analysis, or with an insufficient one, your project will be returned ungraded; you will have a week to resubmit it, with a mathematical analysis. In your analysis, I will consider its completeness, the sophistication (and correctness) of the analysis, the clarity of the presentation, and the extent to which the mathematics in the project uses or goes beyond what is done in class.
2. **content, technique (mathematical, that is), aesthetics, and – if applicable– innovative solutions to problems you ran into:** I am not an artist (and this is not an art class), so it would not be fair, reasonable, or even possible for me to put a lot of emphasis on creative merit of a work of art or a piece of writing. However, I clearly am going to give more credit to someone who has put a lot of effort into the project and created something creative, interesting, and well-done than I am to someone whose work appears to have been done at the last minute. Specifically, I will be looking for creativity (both artistic and in the extent, depth, and variety of the math), effort (again, while I can't help but notice the artistic effort, the mathematical effort will really be what I'm looking at), and accuracy in measurement.
3. **integration of the math and the art:** the project will also be assessed according to how creatively and correctly you have integrated the math and the art. One thing (but not the only thing) I will consider is how well what you describe in your analysis corresponds to what is present in the art work.

To illustrate this, and hopefully make it clear, I will discuss a couple of scenarios for the project on perspective. This particular project asks you to create a drawing or painting using the perspective techniques we'll be learning, and then to write a description of how you incorporated math into your work and what techniques you used. This project (see below) can earn up to 50 points.

- **Scenario 1:** Amal submits a beautiful painting that clearly took a lot of time. Unfortunately, it only demonstrates an understanding of a vanishing point (which most of you already know how to do). It does not use any of the other perspective techniques we study in class.

Amal accompanies this painting with a well-written discourse on the artistic meaning of the painting, but as far as the mathematics goes, only explains the symbolic significance of the placement of the vanishing point.

Score: 5 points. Despite the effort Amal put into this project, neither the artistic nor the written work really addressed the mathematics. (10, if her analysis discussed the process of drawing using the vanishing point.)

- **Scenario 2:** Bailey submits a somewhat awkward and clunky but colorful one-point perspective drawing.

Despite the lack of artistic practice, the analysis makes it clear how much care went into accurately placing each portion, explains correctly the techniques used for reproducing rectangles that are adjacent, reproducing rectangles that are separated, and subdividing rectangles. The work and the analysis include every technique covered in class, displayed in a variety of contexts. The analysis also includes a discussion of the correct viewing position (including the distance away from the drawing the viewer should stand).

Score: 40 points. Even though the work was not as good artistically as Amal's, Bailey worked hard to create a work that carefully and creatively incorporated all the ideas we learned, and described it clearly and well. The only thing she did not do was to include an overlay that showed primary vanishing point, at least some of the lines approaching the vanishing point, and the secondary vanishing point that was used to draw a square in perspective.

SEEING WHAT EVERYONE HAS DONE:

I will keep the completed projects, and, if time allows, will have a "show" of some of the best artworks at the end of the semester. When I say "the best", I mean those artworks that reflect a lot of mathematics in a creative and correct way, and whose analyses explain the math clearly. They will not always be done by the best artists in the class. No matter how much I like a work, if the math is not correct, or is not particularly deep, it will not be displayed.