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. *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, best suit your talents, or even, I suppose, those that best fit your schedule.

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 100 points, or however many points you choose to aim for.

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 *possible* to get the full 100 points with just two projects, if they are *outstanding* in the amount, level, and variety of mathematics they incorporate, most people end up doing between three and five projects; a few people end up doing more. Some students choose to put a lot of effort and mathematics into a few projects, others choose to put less effort and/or mathematics into more. For each project that you do, I will assign you points based on the correctness of the math, the extent to which you incorporated math in the work, the clarity of your explanation, and also the effort you put into the art.

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. It is very frustrating to have put a lot of effort into an art project, and then have it turn out that the underlying mathematical ideas are not correct. 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. the artwork will be assessed according to 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 much emphasis on aspects which to me are nebulous, like artistic merit. However, I clearly am going to give more credit to someone who has put a lot of effort into it 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 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.

2. the mathematical analysis will be graded on the sophistication (and correctness) of the analysis, the clarity of the presentation, and on the extent to which the mathematics in the project uses, or even supersedes, what is done in class.

3. the project will also be assessed according to how creatively and correctly you have integrated the math and the art.

To illustrate this, and hopefully make it clear, I will discuss a couple of scenarios for the perspective project. This assignment is 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 35 points. Suppose one student, Annabel, paints a fabulously beautiful painting that clearly took a lot of time but which only demonstrates an understanding of a vanishing point (which most of you already know how to do) rather than using any of the other perspective techniques we study in class. Suppose Annabel accompanies this painting with a fabulous discourse on the artistic meaning of her painting, but as far as the mathematics goes, only mentions *why* she put the vanishing point where she did. Despite the effort Annabel put into this project, the effort was not aimed at the mathematical aspect of the art, and so (with much regret) I will only be able to give Annabel 5-10 points. Suppose that instead, Annabel creates a somewhat awkward and clunky one-point perspective drawing which correctly uses techniques for reproducing rectangles that are adjacent, reproducing rectangles that are separated, and subdividing rectangles. I will look at how many such techniques she used, and the variety of contexts in which she used them. I will also carefully read her description of the work she did to see if she describes the math correctly and clearly. If she has also included a discussion of the correct viewing position (including the distance away from the drawing) then even though it might not be as good artistically as the first painting, as long as it's neat and showed a correct and creative use of the mathematics, she will receive 30-35 points on the project. If Annabel extensively incorporates math throughout the drawing and/or goes beyond the math discussed in class, I might even give her more than 35 points.

SEEING WHAT EVERYONE HAS DONE:

I will keep the completed projects, and will have a "show" of some of the best artworks at the end of the semester. (Plan on thumbtacks or tape being used on the corners of your work – if you don't want that, mount your work on some sort of matting through which I *can* put thumbtacks!)

When I say "the best", I mean those artworks that reflect a lot of mathematics in a creative and correct way. 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.