

Create a drawing or painting, rigorously using proportion (this of course means you do the calculations before you do much drawing!). (Should your work be selected for the end-of-semester art show, thumb tacks or staples will be used to display it. If you don't want that, please mount it on some sort of matting through which we *can* put thumb tacks.) Write an accompanying analysis which begins by giving your work a title and describing in broad terms what you are trying to do mathematically, and which then goes in to considerably more detail, with all the appropriate calculations. Think in terms of a description that would accompany your art in an art show – you'd want them to know how you incorporated math into the work, and what mathematical principles are illustrated. (Or think of it in terms of making clear to me all the effort that went into your work.)

To go into greater depth, (and thus to potentially earn more points), you can measure your work after you've finished it, and compare the proportions you ended up with to the ones you were aiming for, discussing the error range and whether it was small or large, and how it compared with what you expected

Some suggestions:

- One option is to use one of the systems of proportions we've learned about – the Vitruvian system, the Modulor, a system of harmonic proportions, or the Sacred Cut system.
- The most obvious way to do this project is to draw two or more versions of the same object, in differing sizes.
  1. One approach would be to have the objects diminish in size by some sort of logical progression of proportions: the second object is half the size of the first in every facet, the third is a third (or a fourth) the size of the first in every facet, the fourth (should you choose to draw so many) is a fourth (or an eighth) the size of the first in every facet, etc.
  2. Another approach would be to draw your original object, and then to purposely use radically different proportions for each facet to distort the object. Doubling the head, quadrupling the arms, etc.
  3. You could just have a series of objects, or you could draw a picture within a picture.

Be careful – remember to use ratios, not differences AND remember to either be consistent or to explain your artistic motivation for being inconsistent AND remember to show all your calculations in a well-labeled and easy-to-follow way.

And finally, remember – the more deeply and thoroughly you incorporate math into the work, the more points you will receive.

**Note:** The purpose of the project is to practice using proportions in art. Simply using a photocopy machine to enlarge or shrink by desired proportions and then copying does not

accomplish that. Your analysis must make it clear that you drew the scale (distorted or undistorted) drawing using measurements you figured out using proportion.

*Possible points:*

To give you an idea of how many points you might earn, here are a few examples. If you make one drawing, and then, through extensive and correct use of proportion, draw a scale version of it (whether it's accurate or purposely distorted) *and* include a clear description of the proportion you chose and the calculations you did to determine all the appropriate lengths, then: you can earn up to 35 points if you use more than 15 measurements and proportions, and if the drawing is challenging to copy due to a complicated shape, so that the measurements are important to the creation of the scaled version; up to 20 points if you use 7-10 measurements & proportions, and up to 15 points if you use around 5 measurements. If you are distorting something, then be sure to use some sort of pattern or reason for the different proportions you use – don't just distort first, and then calculate the proportions later.

If instead you use one of our systems of proportions to create a drawing, the extent to which you incorporate and the variety you use or create will determine your score. In general, these tend to earn fewer than 35 points, because there's less scope for measurement and proportion; however they often earn in the 20-25 point range and occasionally earn more.

A project which begins with drawing something using a system of proportions and then draws a scale or distorted version of the same thing could earn up to 50 points, if the analysis includes extensive and correct proportions that correspond to what appears in the artwork.

**Note:** A work of art submitted with out a corresponding mathematical analysis will be returned ungraded.