Midterm Exam

1. Why can’t the coffers (i.e., sunken square panels) in the vaulted ceiling in Masaccio’s *Trinity* be used to determine the distance point for this fresco?

2. How can you tell if a painting, containing a pavimento (tile) floor, that is hung in a gallery, is mounted too high or too low relative to where the painter probably intended you to view it?

3. Yes or no: A pair of parallel straight lines that are on a plane in a 3D scene that is parallel to the picture plane will project under linear perspective to parallel straight lines (i.e., without a vanishing point) in (a) 1-point perspective? (b) 2-point perspective? (c) 3-point perspective?

4. True or false: If a drawing is true linear perspective and there are a set of parallel lines in the picture, then those lines must also be parallel in the 3D scene.

5. Describe three ways that enhance the perception of depth when viewing a flat picture, as used in Brunelleschi’s peepshow or in trompe l’oeil painting.

6. Can a drawing contain two horizon lines (aka vanishing lines)? If so, give an example and explanation. If not, explain why not.

7. Why are camera obscuras made using a lens at the aperture rather than just using a small “pinhole”?

8. Describe what an anamorphic image is in terms of linear perspective, eye position, and the position of the horizon line.

9. Describe what robustness of perspective means, using issues such as the station point paradox and Leonardo’s writings. As part of your answer describe to what extent (i) trompe l’oeil paintings, and (ii) portraits with eyes that follow you, are robust or not, and briefly why.
10. Say you are looking at the center of a flat, rectangular wall in front of you and on it are vertical white and black stripes of equal width that are spaced equally far apart from one another as shown in the following figure.

(a) If you look at this wall from a close distance, resulting in a wide-angle perspective view, describe two types of distortion caused by linear perspective onto a flat (planar) picture plane that were observed by Leonardo.

(b) How can distortions caused by wide-angle perspectives of close-up objects viewed in the periphery be avoided or minimized?

11. Suppose there are two identical objects in a scene and they are distance $L=8$ braccia apart, and the closer of the two is distance $L=8$ from the viewer as shown below. In the figure the picture plane is shown behind the eye (aka center of projection), on the right.

(a) If the picture plane is distance 2 braccia from the eye, what is the relative size of the nearer object to the farther one in the picture?
(b) If the picture plane is moved to distance 4 from the eye, what is the relative size of the nearer object to the farther one in the picture?
(c) If the farther object from the eye is moved so that it is $24 (=3L)$ braccia from the closer object, and the closer object stays at distance $8 (=L)$ from the eye, what is the relative size of the closer object to the farther one when the picture plane is 2 braccia from the eye?

12. (a) Draw the vanishing point(s), horizon line, and distance point for Giovanni Bellini’s *Blood of the Redeemer*, which is 34 cm wide by 47 cm high.

(b) Where should you position your eye in order to correctly view this painting? That is, how high and how far away in centimeters should a person’s eye be?