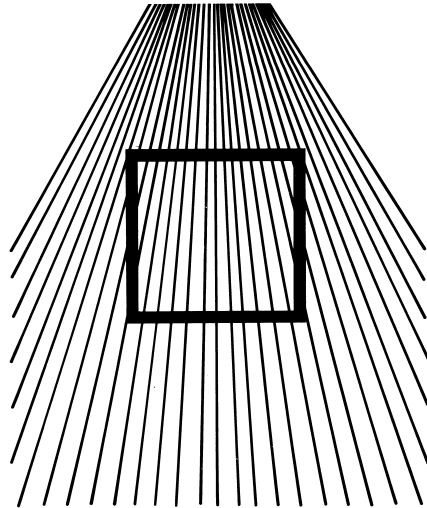


Read each question carefully and answer it completely. Keep your eyes foveated on your own exam. I think of a point as a minute, and each multiple choice question is worth one point. Other point values are as indicated. Because each essay question is worth 20 points, you should expect to spend 20 minutes in answering the essay. Use the attached lined sheets of paper to answer the essays. Good luck on the exam. Please have a safe and relaxing Spring Break. I look forward to seeing you back here after the break.

Essay #1. What is a constancy? Illustrate the importance of constancy by discussing size and lightness constancy. What does the moon illusion tell us about size constancy? [20 pts]

Essay #2. How are depth and lightness interrelated? Be sure to describe several pieces of evidence that illustrate the relationship. [20 pts]

1. In the figure below, you will perceive a square as a trapezoid. Use what you know about monocular depth cues, visual angle, and perceived size (length) to explain how the illusion occurs. [5 pts]



2. A person with a problem in his or her M-cone system
 - a. would have difficulty seeing greens.
 - b. would have difficulty seeing blues.
 - c. would have difficulty seeing reds and greens.
 - d. would have difficulty seeing yellows and blues.

3. Binocular rivalry exists when
 - a. the images on corresponding retinal points cannot be fused.
 - b. cyclopean perception is achieved.
 - c. the images on corresponding retinal points can be fused.
 - d. we are viewing an ambiguous figure and the perception keeps changing.

4. Suppose that you are looking at a 3" black square on a white surface, two feet from your eyes. You then shift your gaze to a medium-gray, distant wall. According to Emmert's Law, you are likely to see on that wall
 - a. a 3" black square.
 - b. a 3" white square.
 - c. a white square that is larger than 3".
 - d. a white square that is smaller than 3".

5. Which of the following is the main advantage of a small pupil?
 - a. the restriction of light permitted to enter the eye
 - b. the greater admittance of light permitted to enter the eye
 - c. the increased distance over which objects will be in focus
 - d. the increased pressure that's provided to the eye

6. Biederman's recognition-by-components approach proposes that we
 - a. recognize penguins more rapidly than other birds.
 - b. build up complex shapes through combinations of geons.
 - c. build up complex shapes through zero-crossings.
 - d. build up complex shapes through combinations of other complex shapes.

7. Pairs of lights that look exactly the same but are composed of physically different stimuli are known as
 - a. complementary colors.
 - b. metamers.
 - c. tritanopes.
 - d. dichromats.

8. The difficulties we experience in accurately perceiving stimuli in unusual orientations (such as the upside-down Mrs. Thatcher) is support for
 - a. a data-driven (bottom-up) approach to shape perception.
 - b. a conceptually driven (top-down) approach to shape perception.
 - c. the spatial-frequency approach.
 - d. the prototype-matching approach.

9. Which statement best summarizes current color vision theory?
 - a. Trichromatic theory, by itself, explains color vision.
 - b. Opponent-process theory, by itself, explains color vision.
 - c. Trichromatic theory operates at the receptor level; opponent-process theory operates at higher levels of processing.
 - d. Opponent-process theory operates at the receptor level; trichromatic theory operates at higher levels of processing.

10. In the kinetic depth effect,
 - a. the distance to an object becomes apparent as the observer moves.
 - b. several other depth cues aid the perception of depth.
 - c. a figure appears flat when stationary but solid when in motion.
 - d. the effect arises from the disparity of information provided to the two eyes.

11. Shape constancy means that
 - a. in spite of changes in the proximal shape, the distal shape will appear to remain roughly constant.
 - b. in spite of changes in the distal shape, the proximal shape will appear to remain roughly constant.
 - c. when presented with an ambiguous figure, a person will see it in only one way.
 - d. changes in lighting have little effect on the perceived shape of an object.

12. The parasol ganglion cells
 - a. are found at the beginning of the parvo pathway.
 - b. are found at the beginning of the magno pathway.
 - c. are predominantly connected to cones.
 - d. provide us with information about the details of a stimulus.

13. Suppose you know a person who is a true monochromat. When this person looks at a brightly colored painting, the painting would look
 - a. blurry, because acuity is strongly affected.
 - b. as if it were painted in shades of gray.
 - c. exclusively red, exclusively blue, or exclusively green, depending upon the kind of monochromat this person is.
 - d. normal in color, because this person only has trouble in matching colors the way a normal trichromat would.

14. Color constancy
 - a. arises when we call colors the same name, in spite of differences in the wavelengths striking our retinas.
 - b. is only roughly accurate — color perceptions are influenced by illumination differences.
 - c. was thought by Helmholtz to be due to unconscious inferences.
 - d. All of the above.

15. Most of the ganglion cells leaving the eye have their first synapse in the
 - a. superior colliculus.
 - b. primary visual cortex.
 - c. lateral geniculate nucleus.
 - d. optic nerve.

16. If you were to move an object closer to you, its visual angle would
 - a. stay the same.
 - b. increase.
 - c. decrease.

17. Accommodation is
 - a. used only by nearsighted people.
 - b. used during all pursuit movements.
 - c. used to focus the light rays on a point about a centimeter in front of the retina.
 - d. used to change the shape of the lens.

18. According to Helmholtz's theory of lightness constancy,
- viewers gather all the necessary information from the world "out there."
 - we take illumination into account when we judge brightness.
 - brightness constancy occurs because the intensity of an object, relative to its background, remains constant.
 - we have greater brightness constancy as children than as adults.
19. Binocular disparity
- is most effective for determining the depth of nearby objects.
 - is most effective for determining the depth of distant objects.
 - is more effective than any of the monocular cues for depth.
 - is an important pictorial depth cue.
20. The _____ is (are) responsible for carrying information about illumination differences and moderate or rapid movement.
- magno pathway
 - parvo pathway
 - horizontal cells
 - amacrine cells

21. Describe the receptive field for a simple cortical cell and a complex cortical cell to illustrate how they differ. [2 pts]

22. You saw (in class and in the book) an illustration of Margaret Thatcher's face upside down. What important point is illustrated by such a demonstration? [2 pts]

23. What evidence was used to support the trichromatic theory of color vision? [2 pts]