<table>
<thead>
<tr>
<th>S &amp; P Review Terms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, November 28, 2011</td>
<td>8:38 AM</td>
</tr>
<tr>
<td>Parts of the Ear and their function</td>
<td>Linear Perspective</td>
</tr>
<tr>
<td>Process of Hearing</td>
<td>Texture Gradient</td>
</tr>
<tr>
<td>Parts of the Eye and their function</td>
<td>Sensation</td>
</tr>
<tr>
<td>Process of Vision</td>
<td>Bipolar and Ganglion Cells</td>
</tr>
<tr>
<td>8 Senses - Stimuli and Receptors</td>
<td>Blind spot</td>
</tr>
<tr>
<td>Accommodation</td>
<td>Optic Chiasm</td>
</tr>
<tr>
<td>Gate Control Theory</td>
<td>Hue</td>
</tr>
<tr>
<td>Weber's Law</td>
<td>Intensity</td>
</tr>
<tr>
<td>Amplitude and Frequency</td>
<td>Oval Window</td>
</tr>
<tr>
<td>Rods / Cones</td>
<td>Inattentional Blindness</td>
</tr>
<tr>
<td>Transduction</td>
<td>Figure Ground</td>
</tr>
<tr>
<td>Place Theory</td>
<td>Relative Clarity</td>
</tr>
<tr>
<td>Monocular vs. Binocular Cues</td>
<td>Linear Perspective</td>
</tr>
<tr>
<td>Proximity</td>
<td>Size and Shape Constancy</td>
</tr>
<tr>
<td>Similarity</td>
<td>Relative Height</td>
</tr>
<tr>
<td>Continuity</td>
<td>Closure</td>
</tr>
<tr>
<td>Phi Phenomenon Threshold</td>
<td>Opponent Process Theory</td>
</tr>
<tr>
<td>Binocular Disparity / Retinal Disparity</td>
<td>Convergence</td>
</tr>
<tr>
<td>Cocktail Party Phenomenon</td>
<td>Top Down Processing</td>
</tr>
<tr>
<td>Bottom Up Processing</td>
<td>Figure Ground</td>
</tr>
<tr>
<td>Nearsightedness</td>
<td>Farsightedness</td>
</tr>
<tr>
<td>Absolute Threshold</td>
<td>Subliminal Message</td>
</tr>
<tr>
<td>Signal Detection Theory</td>
<td>Feature Detectors</td>
</tr>
<tr>
<td>Parallel Processing</td>
<td>Abstraction</td>
</tr>
<tr>
<td>Trichromatic Theory of Vision</td>
<td>Sensorineural Deafness</td>
</tr>
<tr>
<td></td>
<td>Just Noticeable Difference / Difference</td>
</tr>
</tbody>
</table>
PROGRESS TEST 2

Progress Test 2 should be completed during a final unit review. Answer the following questions after you thoroughly understand the correct answers for the section reviews and Progress Test 1.

Multiple-Choice Questions

1. Which of the following is NOT one of the basic tastes?
   a. sweet     c. umami
   b. salty     d. bland

2. Of the four distinct skin senses, the only one that has definable receptors is
   a. warmth.   c. pressure.
   b. cold.     d. pain.

3. The process by which sensory information is converted into neural energy is
   a. sensory adaptation.  c. sensory interaction.
   b. feature detection.   d. transduction.

4. The receptors for taste are located in the
   a. taste buds.    c. fovea.
   b. cochlea.      d. cortex.

5. The inner ear contains receptors for
   a. audition and kinesthesis.
   b. kinesthesis and the vestibular sense.
   c. audition and the vestibular sense.
   d. audition, kinesthesis, and the vestibular sense.

6. According to the opponent-process theory
   a. there are three types of color-sensitive cones.
   b. the process of color vision begins in the cortex.
   c. neurons involved in color vision are stimulated by one color’s wavelength and inhibited by another’s.
   d. people with color-deficient vision lack functioning red-sensitive cones.

7. What enables you to feel yourself wiggling your toes even with your eyes closed?
   a. vestibular sense
   b. kinesthesis
   c. the skin senses
   d. sensory interaction

8. Hubel and Wiesel discovered feature detectors in the visual
   a. fovea.      c. iris.
   b. optic nerve. d. cortex.

9. Weber’s law states that
   a. the absolute threshold for any stimulus is a constant.
   b. the jnd for any stimulus is a constant.
   c. the absolute threshold for any stimulus is a constant proportion.
   d. the jnd for any stimulus is a constant proportion.

10. The principle that one sense may influence another is
    a. transduction.   c. Weber’s law.
    b. sensory adaptation. d. sensory interaction.

11. The correct order of the structures through which light passes after entering the eye is
    a. lens, pupil, cornea, retina.
    b. pupil, cornea, lens, retina.
    c. pupil, lens, cornea, retina.
    d. cornea, pupil, lens, retina.

12. In the opponent-process theory, the three pairs of processes are
    a. red-green, blue-yellow, black-white.
    b. red-blue, green-yellow, black-white.
    c. red-yellow, blue-green, black-white.
    d. dependent upon the individual’s experience.

13. Wavelength is to _________ as _________ is to brightness.
    a. hue; intensity
    b. intensity; hue
    c. frequency; amplitude
    d. brightness; hue

14. Concerning the evidence for subliminal stimulation, which of the following is the best answer?
    a. The brain processes some information without our awareness.
    b. Stimuli too weak to cross our thresholds for awareness may trigger a response in our sense receptors.
    c. Because the “absolute” threshold is a statistical average, we are able to detect weaker stimuli some of the time.
    d. All of these statements are true.

15. Which of the following is the most accurate description of how we process color?
    a. Throughout the visual system, color processing is divided into separate red, green, and blue systems.
    b. Red-green, blue-yellow, and black-white opponent processes operate throughout the visual system.
c. Color processing occurs in two stages: (1) a three-color system in the retina and (2) opponent-process cells en route to the visual cortex.

d. Color processing occurs in two stages: (1) an opponent-process system in the retina and (2) a three-color system en route to the visual cortex.

16. One reason that your ability to detect fine visual details is greatest when scenes are focused on the fovea of your retina is that

a. there are more feature detectors in the fovea than in the peripheral regions of the retina.
b. cones in the fovea are nearer to the optic nerve than those in peripheral regions of the retina.
c. many rods, which are clustered in the fovea, have individual bipolar cells to relay their information to the cortex.
d. many cones, which are clustered in the fovea, have individual bipolar cells to relay their information to the cortex.

17. Given normal sensory ability, a person standing atop a mountain on a dark, clear night can see a candle flame atop a mountain 30 miles away. This is a description of vision's

a. difference threshold. c. absolute threshold. 
b. jnd. d. feature detection.

18. The tendency to organize stimuli into smooth, uninterrupted patterns is called

a. closure. c. similarity. 
b. continuity. d. proximity.

19. Which of the following statements is consistent with the Gestalt theory of perception?

a. Perception develops largely through learning. 
b. Perception is the product of heredity. 
c. The mind organizes sensations into meaningful perceptions. 
d. Perception results directly from sensation.

20. Experiments with distorted visual environments demonstrate that

a. adaptation rarely takes place. 
b. animals adapt readily, but humans do not. 
c. humans adapt readily, while lower animals typically do not. 
d. adaptation is possible during a critical period in infancy but not thereafter.

21. The phenomenon that refers to the ways in which an individual’s expectations influence perception is called

a. perceptual set. c. interposition. 
b. retinal disparity. d. kinesthesia.

22. According to the philosopher ________ , we learn to perceive the world.

a. John Locke 
 b. Immanuel Kant
 c. Eleanor Gibson 
 d. Richard Walk

23. The phenomenon of size constancy is based on the close connection between an object's perceived ________ and its perceived ________ .

a. size; shape  c. size; brightness 
b. size; distance 
 d. shape; distance

24. Which of the following statements best describes the effects of sensory restriction?

a. It produces functional blindness when experienced for any length of time at any age.
b. It has greater effects on humans than on animals. 
c. It has more damaging effects when experienced during infancy. 
d. It has greater effects on adults than on children.

25. Selective attention is most accurately defined as

a. the focusing of conscious awareness on a particular stimulus. 
b. our awareness of ourselves and our environment. 
c. failing to see visible objects when our attention is directed elsewhere. 
d. separating our conscious awareness to focus on two tasks at the same time.

26. Psychologists who study ESP are called

a. clairvoyants. c. parapsychologists. 
b. telepaths. d. levitators.

27. The depth cue that occurs when we watch stable objects at different distances as we are moving is

a. linear perspective. c. relative size. 
b. interposition. d. relative motion.

28. Which of the following statements concerning ESP is true?

a. Most ESP researchers are quacks. 
b. There have been a large number of reliable demonstrations of ESP. 
c. Most research psychologists are skeptical of the claims of defenders of ESP. 
d. There have been reliable laboratory demonstrations of ESP, but the results are no different from those that would occur by chance.
29. Each time you see your car, it projects a different image on the retinas of your eyes, yet you do not perceive it as changing. This is because of
   a. perceptual set.
   b. retinal disparity.
   c. perceptual constancy.
   d. figure-ground.

30. The term *gestalt* means
   a. grouping.  c. perception.
   b. sensation. d. whole.

31. Studies of the visual cliff have provided evidence that much of depth perception is
   a. innate.
   b. learned.
   c. innate in lower animals, learned in humans.
   d. innate in humans, learned in lower animals.

32. All of the following are laws of perceptual organization EXCEPT
   a. proximity.  c. continuity.
   b. closure. d. retinal disparity.

33. You probably perceive the diagram above as three separate objects due to the principle of
   a. proximity. c. closure.
   b. continuity. d. connectedness.

34. ______ processing refers to how our knowledge and expectations influence perception.
   a. Top-down  c. Parapsychological
   b. Bottom-up  d. Psychophysical

35. The place theory of pitch perception cannot account for how we hear
   a. low-pitched sounds.
   b. middle-pitched sounds.
   c. high-pitched sounds.
   d. chords (three or more pitches simultaneously).

36. Sensorineural hearing loss is caused by
   a. wax buildup in the outer ear.
   b. damage to the eardrum.
   c. blockage in the middle ear because of infection.
   d. damage to the cochlea.

*True–False Items*

Indicate whether each statement is true or false by placing T or F in the blank next to the item.

1. Once we perceive an item as a figure, it is impossible to see it as ground.
   ______

2. Laboratory experiments have laid to rest all criticisms of ESP.
   ______

3. Six-month-old infants will cross a visual cliff if their mother calls.
   ______

4. Unlike other animals, humans have no critical period for visual stimulation.
   ______

5. Immanuel Kant argued that experience determined how we perceive the world.
   ______

6. It is just as easy to touch two pencil tips together with only one eye open as it is with both eyes open.
   ______

7. After a period of time, humans are able to adjust to living in a world made upside down by distorting goggles.
   ______

8. As our distance from an object changes, the object's size seems to change.
   ______

9. Perception is influenced by psychological factors such as set and expectation as well as by physiological events.
   ______

10. John Locke argued that perception is inborn.
    ______

**PSYCHOLOGY APPLIED**

Answer these questions the day before a test as a final check on your understanding of the unit's terms and concepts.

**Multiple-Choice Questions**

1. In shopping for a new stereo, you discover that you cannot differentiate between the sounds of models X and Y. The difference between X and Y is below your
   a. absolute threshold.  c. receptor threshold.
   b. subliminal threshold. d. difference threshold.

2. To maximize your sensitivity to fine visual detail you should
   a. stare off to one side of the object you are attempting to see.
   b. close one eye.
   c. decrease the intensity of the light falling upon the object.
   d. stare directly at the object.
3. The phantom limb sensation indicates that
   a. pain is a purely sensory phenomenon.
   b. the central nervous system plays only a minor role in the experience of pain.
   c. pain involves the brain’s interpretation of neural activity.
   d. all of these are true.

4. While competing in the Olympic trials, marathoner Kirsten O’Brien suffered a stress fracture in her left leg. That she did not experience significant pain until the race was over is probably attributable to the fact that during the race
   a. the pain gate in her spinal cord was closed by information coming from her brain.
   b. her body’s production of endorphins decreased.
   c. an increase in the activity of small pain fibers closed the pain gate.
   d. a decrease in the activity of large pain fibers closed the pain gate.

5. Which of the following is an example of sensory interaction?
   a. finding that despite its delicious aroma, a weird-looking meal tastes awful
   b. finding that food tastes bland when you have a bad cold
   c. finding it difficult to maintain your balance when you have an ear infection
   d. All of these are examples.

6. In comparing the human eye to a camera, the film would be located in the eye’s
   a. pupil.
   b. lens.
   c. cornea.
   d. retina.

7. Sensation is to _______ as perception is to ________.
   a. recognizing a stimulus; interpreting a stimulus
   b. detecting a stimulus; recognizing a stimulus
   c. interpreting a stimulus; detecting a stimulus
   d. seeing; hearing

8. I am a cell in the thalamus that is excited by red and inhibited by green. I am an
   a. feature detector.
   b. cone.
   c. bipolar cell.
   d. opponent-process cell.

9. The correct order of structures through which sound travels after entering the ear is
   a. auditory canal, eardrum, middle ear, cochlea.
   b. eardrum, auditory canal, middle ear, cochlea.
   c. eardrum, middle ear, cochlea, auditory canal.
   d. cochlea, eardrum, middle ear, auditory canal.

10. Dr. Frankenstein has forgotten to give his monster an important part; as a result, the monster cannot transduce sound. Dr. Frankenstein omitted the
    a. eardrum.
    b. middle ear.
    c. semicircular canals.
    d. basilar membrane.

11. Assuming that the visual systems of humans and other mammals function similarly, you would expect that the retina of a nocturnal mammal (one active only at night) would contain
    a. mostly cones.
    b. mostly rods.
    c. an equal number of rods and cones.
    d. more bipolar cells than an animal active only during the day.

12. As the football game continued into the night, LeVar noticed that he was having difficulty distinguishing the colors of the players’ uniforms. This is because the ________, which enable color vision, have a ________ absolute threshold for brightness than the available light intensity.
    a. rods; higher
    b. cones; higher
    c. rods; lower
    d. cones; lower

13. After staring at a very intense red stimulus for a few minutes, Carrie shifted her gaze to a beige wall and “saw” the color _______. Carrie’s experience provides support for the _______ theory.
    a. green; trichromatic
    b. blue; opponent-process
    c. green; opponent-process
    d. blue; trichromatic

14. Seventy-year-old Mrs. Martinez finds that she must spice her food heavily or she cannot taste it. Unfortunately, her son often finds her cooking inedible because it is so spicy. What is the likely explanation for their taste differences?
    a. Women have higher taste thresholds than men.
    b. Men have higher taste thresholds than women.
    c. Being 70 years old, Mrs. Martinez probably has fewer taste buds than her son.
    d. Her son inherited a taste for bland food.
15. When admiring the texture of a piece of fabric, Calvin usually runs his fingertips over the cloth’s surface. He does this because
   a. if the cloth were held motionless, sensory adaptation to its feel would quickly occur.
   b. the sense of touch does not adapt.
   c. a relatively small amount of brain tissue is devoted to processing touch from the fingertips.
   d. he needs to touch the fabric to activate his feature detectors.

16. Superman’s eyes used _________, while his brain used _________.
   a. perception; sensation
   b. top-down processing; bottom-up processing
   c. bottom-up processing; top-down processing
   d. sensory adaptation; subliminal perception

17. Tamiko hates the bitter taste of her cough syrup. Which of the following would she find most helpful in minimizing the syrup’s bad taste?
   a. tasting something very sweet before taking the cough syrup
   b. keeping the syrup in her mouth for several seconds before swallowing it
   c. holding her nose while taking the cough syrup
   d. gulping the cough syrup so that it misses her tongue

18. Although carpenter Smith perceived a briefly viewed object as a screwdriver, police officer Wesson perceived the same object as a knife. This illustrates that perception is guided by
   a. linear perspective
   b. shape constancy
   c. retinal disparity
   d. perceptual set

19. The fact that a white object under dim illumination appears lighter than a gray object under bright illumination is called
   a. relative luminance
   b. perceptual adaptation
   c. color contrast
   d. lightness constancy

20. When two familiar objects of equal size cast unequal retinal images, the object that casts the smaller retinal image will be perceived as being
   a. closer than the other object.
   b. more distant than the other object.
   c. larger than the other object.
   d. smaller than the other object.

21. Concluding her presentation on sensation and perception, Kelly notes that
   a. perception is bottom-up processing.
   b. sensation is top-down processing.
   c. without sensation there is no perception.
   d. sensation and perception blend into one continuous process.

22. As her friend Milo walks toward her, Noriko perceives his size as remaining constant because his perceived distance ________ at the same time that her retinal image of him ________.
   a. increases; decreases
   b. increases; increases
   c. decreases; decreases
   d. decreases; increases

23. In the absence of perceptual constancy
   a. objects would appear to change size as their distance from us changed.
   b. depth perception would be based exclusively on monocular cues.
   c. depth perception would be based exclusively on binocular cues.
   d. depth perception would be impossible.

24. How do we perceive a pole that partially covers a wall?
   a. as farther away
   b. as nearer
   c. as larger
   d. There is not enough information to determine the object’s size or distance.

25. An artist paints a tree orchard so that the parallel rows of trees converge at the top of the canvas. Which cue has the artist used to convey distance?
   a. interposition
   b. retinal disparity
   c. linear perspective
   d. figure-ground

26. Objects higher in our field of vision are perceived as ________ due to the principle of ________.
   a. nearer; relative height
   b. nearer; linear perspective
   c. farther away; relative height
   d. farther away; linear perspective

27. Your friend tosses you a frisbee. You know that it is getting closer instead of larger because of
   a. shape constancy
   b. relative motion
   c. size constancy
   d. all of the above.
Summing Up

Use the diagrams to identify the parts of the eye and ear, then describe how each contributes to vision or hearing. Also, briefly explain the role of each structure.

The Eye
1. 
2. 
3. 
4. 
5. 
6. 
7. 

The Ear
1. 
2. 
3. 
4. 
5. 
6. 
7. 
8.
The figure-ground relationship refers to the organization of the visual field into objects (figures) that stand out from their surroundings (ground).

31. d. is the answer. (p. 116)
   a. & b. The study of sensation is concerned with these processes.
   c. Although studying illusions has helped psychologists understand ordinary perceptual mechanisms, it is not the primary focus of the field of perception.

32. c. is the answer. (p. 166)
   a. This answer would be correct had Jack claimed to be able to read someone else's mind.
   b. This answer would be correct had Jack claimed to be able to sense remote events, such as a friend in distress.
   d. This answer would be correct had Jack claimed to be able to levitate objects or bend spoons without applying any physical force.

33. d. is the answer. (p. 168)

34. a. is the answer. Frequency theory best explains the lowest pitches. Place theory best explains the highest pitches, and some combination of the two theories probably accounts for our sensation of intermediate-range pitches. (p. 137)

35. b. is the answer. (p. 118)

Matching Items
1. e (p. 126) 6. a (p. 135) 11. j (p. 142)
2. d (p. 126) 7. i (p. 135)
3. g (p. 126) 8. b (p. 144)
4. h (p. 126) 9. f (p. 144)
5. k (p. 126) 10. c (p. 142)

Progress Test 2

Multiple-Choice Questions
1. d. is the answer. (pp. 146–147)
2. c. is the answer. Researchers have identified receptors for pressure but have been unable to do so for the other skin senses. (p. 141)
3. d. is the answer. (p. 124)
   a. Sensory adaptation refers to the diminished sensitivity that occurs with unchanging stimulation.
   b. Feature detection refers to the process by which nerve cells in the brain respond to specific aspects of visual stimuli, such as movement or shape.
   c. Sensory interaction is the principle that one sense may influence another.

4. a. is the answer. (p. 147)
   b. The cochlea contains receptors for hearing.
   c. The fovea contains receptors for vision (the cones).
   d. The cortex is the outer layer of the brain, where information detected by the receptors is processed.

5. c. is the answer. The inner ear contains the receptors for audition (hearing) and the vestibular sense; those for kinesthesia are located in the tendons, joints, bones, and ears. (pp. 135, 142)

6. c. is the answer. After leaving the receptor cells, visual information is analyzed in terms of pairs of opponent colors; neurons stimulated by one member of a pair are inhibited by the other. (p. 133)
   a. The idea that there are three types of color-sensitive cones is the basis of the Young-Helmholtz three-color theory.
   b. According to the opponent-process theory, and all other theories of color vision, the process of color vision begins in the retina.

7. b. is the answer. Kinesthesia, the sense of movement of body parts, would enable you to feel your toes wiggling. (p. 142)
   a. The vestibular sense is concerned with movement and position, or balance, of the whole body, not of its parts.
   c. The skin, or tactile, senses are pressure, pain, warmth, and cold; they have nothing to do with movement of body parts.
   d. Sensory interaction, the principle that the senses influence each other, does not play a role in this example, which involves only the sense of kinesthesia.

8. d. is the answer. Feature detectors are cortical neurons and hence are located in the visual cortex. (p. 129)
   a. The fovea contains cones.
   b. The optic nerve contains neurons that relay nerve impulses from the retina to higher centers in the visual system.
   c. The iris is simply a ring of muscle tissue, which controls the diameter of the pupil.

9. d. is the answer. Weber’s law concerns difference thresholds (jnd’s), not absolute thresholds, and states that these are constant proportions of the stimuli, not that they remain constant. (p. 123)

10. d. is the answer. (p. 147)
   a. Transduction is the process by which stimulus energy is converted into nerve impulses.
b. Sensory adaptation is diminished sensitivity to unchanging stimulation.
c. Weber's law states that the jnd is a constant proportion of a stimulus.

11. d. is the answer. (p. 126)
12. a. is the answer. (p. 133)
13. a. is the answer. Wavelength determines hue, and intensity determines brightness. (p. 125)
14. d. is the answer. (pp. 121–122)
15. c. is the answer. (p. 133)
   a. This answer is incorrect because separate red, green, and blue systems operate only in the retina.
   b. This answer is incorrect because opponent-process systems operate en route to the brain, after visual processing in the receptors is completed.
   d. This answer is incorrect because it reverses the correct order of the two stages of processing.
16. d. is the answer. (p. 127)
   a. Feature detectors are nerve cells located in the visual cortex, not in the fovea of the retina.
   b. The proximity of rods and cones to the optic nerve does not influence their ability to resolve fine details.
   c. Rods are concentrated in the peripheral regions of the retina, not in the fovea; moreover, several rods share a single bipolar cell.
17. c. is the answer. The absolute threshold is the minimum stimulation needed to detect a stimulus. (p. 120)
   a. & b. The difference threshold, which is also known as the jnd, is the minimum difference between two stimuli that a person can detect. In this example, there is only one stimulus—the sight of the flame.
   d. Feature detection refers to nerve cells in the brain responding to specific features of a stimulus.
18. b. is the answer. (p. 152)
   a. Closure refers to the tendency to perceptually fill in gaps in recognizable objects in the visual field.
   c. Similarity refers to the tendency to group items that are similar.
   d. Proximity refers to the tendency to group items that are near one another.
19. c. is the answer. (pp. 151)
   a. & b. The Gestalt psychologists did not deal with the origins of perception; they were more concerned with its form.
   d. In fact, they argued just the opposite: Perception is more than mere sensory experience.
20. c. is the answer. Humans are able to adjust to upside-down worlds and other visual distortions, figuring out the relationship between the perceived and the actual reality; lower animals, such as chicks, are typically unable to adapt. (p. 160)
   a. Humans are able to adapt quite well to distorted visual environments (and then to readapt)
   b. This answer is incorrect because humans are the most adaptable of creatures.
   d. Humans are able to adapt at any age to distorted visual environments.
21. a. is the answer. (p. 161)
   b. Retinal disparity is a binocular depth cue based on the fact that each eye receives a slightly different view of the world.
   c. Interposition is the monocular distance cue in which an object that partially blocks another object is seen as closer.
   d. Kinesthesia is the sense of the position and movement of the parts of the body.
22. a. is the answer. (p. 159)
   b. Kant claimed that knowledge is inborn.
   c. & d. Gibson and Walk make no claims about the origins of perception.
23. b. is the answer. (p. 156)
24. c. is the answer. There appears to be a critical period for perceptual development, in that sensory restriction has severe, even permanent, disruptive effects when it occurs in infancy but not when it occurs later in life. (p. 160)
   a. & d. Sensory restriction does not have the same effects at all ages, and it is more damaging to children than to adults. This is because there is a critical period for perceptual development; whether functional blindness will result depends in part on the nature of the sensory restriction.
   b. Research studies have not indicated that sensory restriction is more damaging to humans than to animals.
25. a. is the answer. (p. 117)
   b. This is the definition of consciousness.
   c. This defines inattentional blindness.
   d. In selective attention, awareness is focused on one stimulus.
26. c. is the answer. (p. 166)
   a., b., & d. These psychics claim to exhibit the phenomena studied by parapsychologists.
27. d. is the answer. When we move, stable objects we see also appear to move, and the distance and speed of the apparent motion cue us to the objects' relative distances. (p. 155)
a., b., & c. These depth cues are unrelated to movement and thus work even when we are stationary.

28. c. is the answer. (p. 155)
   a. Many ESP researchers are sincere, reputable researchers.
   b. & d. There have been no reliable demonstrations of ESP.

29. c. is the answer. Because of perceptual constancy, we see the car’s shape and size as always the same. (p. 156)
   a. Perceptual set is a mental predisposition to perceive one thing and not another.
   b. Retinal disparity means that our right and left eyes each receive slightly different images.
   d. Figure-ground refers to the organization of the visual field into two parts.

30. d. is the answer. Gestalt means a “form” or “organized whole.” (p. 151)

31. a. is the answer. Most infants refused to crawl out over the “cliff” even when coaxed, suggesting that much of depth perception is innate. Studies with the young of “lower” animals show the same thing. (p. 153)

32. d. is the answer. (pp. 153, 155)

33. d. is the answer. (p. 152)
   a. Proximity is the tendency to group objects near to one another. The diagram is perceived as three distinct units, even though the points are evenly spaced.
   b. Continuity is the tendency to group stimuli into smooth, uninterrupted patterns. There is no such continuity in the diagram.
   c. Closure is the perceptual tendency to fill in gaps in a form. In the diagram, three disconnected units are perceived rather than a single whole.

34. a. is the answer. (p. 116)
   b. Bottom-up processing refers to the physical characteristics of stimuli rather than their perceptual interpretation.
   c. Parapsychology is the study of perception outside normal sensory input.
   d. Psychophysics is the study of the relationship between the physical characteristics of objects and our psychological experience of them.

35. a. is the answer. (p. 137)
   b. & c. Although the localization of low-pitched sounds along the basilar membrane is poor, that for sounds of middle and, especially, high pitch is good. Therefore, place theory accounts well for high-pitched sounds and, together with frequency theory, can account for middle-pitched sounds.

   d. As long as the notes of a chord are within the range of responsiveness of the basilar membrane, place theory can account for chord perception.

36. d. is the answer. Sensorineural hearing loss is caused by destruction of neural tissue as a result of problems with the cochlea’s receptors or the auditory nerve. (p. 138)
   a. & c. Wax buildup and blockage because of infection are temporary states; sensorineural hearing loss is permanent. Moreover, sensorineural hearing loss involves the inner ear rather than the outer or middle ear.
   b. Damage to the eardrum impairs the mechanical system that conducts sound waves; it could therefore cause conduction hearing loss, not sensorineural hearing loss.

**True-False Items**

1. F (p. 151)  
2. F (p. 168)  
3. F (p. 153)  
4. F (p. 160)  
5. F (p. 159)  
6. F (p. 153)  
7. T (p. 160)  
8. F (p. 156)  
9. T (pp. 161–162)  
10. F (p. 159)

**Psychology Applied**

**Multiple-Choice Questions**

1. d. is the answer. (p. 122)
   a. The absolute threshold refers to whether a single stimulus can be detected, not to whether two stimuli can be differentiated.
   b. Subliminal refers to stimuli below the absolute threshold.
   c. A receptor threshold is a minimum amount of energy that will elicit a neural impulse in a receptor cell.

2. d. is the answer. Greater sensitivity to fine visual detail is associated with the cones, which have their own bipolar cells to relay information to the cortex. The cones are concentrated in the fovea, the retina’s point of central focus. For this reason, staring directly at an object maximizes sensitivity to fine detail. (p. 127)
   a. If you stare off to one side, the image falls onto peripheral regions of the retina, where rods are concentrated and sensitivity to fine visual detail is poor.
   b. Sensitivity to detail is not directly influenced by whether one or both eyes are stimulated.
   c. Decreasing the intensity of light would only impair the functioning of the cones, which are sensitive to visual detail but have a high threshold for light intensity.
3. c. is the answer. Since pain is felt in the limb that does not exist, the pain is simply the brain's (mis)interpretation of neural activity. (p. 144) 
   a. If pain were a purely sensory phenomenon, phantom limb pain would not occur, since the receptors are no longer present. 
   b. That pain is experienced when a limb is missing indicates that the central nervous system, especially the brain, is where pain is sensed.

4. a. is the answer. (p. 144) 
   b. Since endorphins relieve pain, a decrease in their production would have made Kirsten more likely to experience pain. Moreover, because endorphins are released in response to pain, their production probably would have increased. 
   c. Neural activity in small fibers tends to open the pain gate. 
   d. An increase in large-fiber activity would tend to close the pain gate.

5. d. is the answer. Each of these is an example of the interaction of two senses—vision and taste in the case of (a), taste and smell in the case of (b), and hearing and the vestibular sense in the case of (c). (p. 147)

6. d. is the answer. Just as light strikes the film of a camera, visual images entering the eye are projected onto the retina. (p. 126) 
   a. The pupil would be analogous to the aperture of a camera, since both control the amount of light permitted to enter. 
   b. The lens of the eye performs a focusing function similar to the lens of the camera. 
   c. The cornea would be analogous to a camera’s lens cap in that both protect delicate inner structures.

7. b. is the answer. (p. 116) 
   a. Both recognition and interpretation are examples of perception. 
   c. This answer would have been correct if the question had read, “Perception is to sensation as ______ is to ______.” 
   d. Sensation and perception are important processes in both hearing and seeing.

8. d. is the answer. (p. 133) 
   a. Feature detectors are located in the visual cortex and respond to features such as movement, shape, and angle. 
   b. & c. Cones and bipolar cells are located in the retina. Moreover, neither are excited by some colors and inhibited by others.

9. a. is the answer. (p. 135)

10. d. is the answer. The hair cells, which transduce sound energy, are located on the basilar membrane. (p. 135) 

a. & b. The eardrum and bones of the middle ear merely conduct sound waves to the inner ear, where they are transduced. 
   c. The semicircular canals are involved in the vestibular sense, not hearing.

11. b. is the answer. Rods and cones enable vision in dim and bright light, respectively. If an animal is active only at night, it is likely to have more rods than cones in its retinas. (p. 128) 
   d. Bipolar cells link both cones and rods to ganglion cells. There is no reason to expect that a nocturnal mammal would have more bipolar cells than a mammal active both during the day and at night. If anything, because several rods share a single bipolar cell, whereas many cones have their own, a nocturnal animal (with a visual system consisting mostly of rods) might be expected to have fewer bipolar cells than an animal active during the day (with a visual system consisting mostly of cones).

12. b. is the answer. (pp. 127–128) 
   a. & c. It is the cones, rather than the rods, that enable color vision. 
   d. If the cones’ threshold were lower than the available light intensity, they would be able to function and therefore detect the colors of the players’ uniforms.

13. c. is the answer. (p. 133) 
   a. The trichromatic theory cannot account for the experience of afterimages. 
   b. & d. Afterimages are experienced as the complementary color of a stimulus. Green, not blue, is red’s complement.

14. c. is the answer. As people age they lose taste buds and their taste thresholds increase. For this reason, Mrs. Martinez needs more concentrated tastes than her son to find food palatable. (p. 147) 
   a. & b. There is no evidence that women and men differ in their absolute thresholds for taste.

15. a. is the answer. (p. 123) 
   b. The sense of touch (pressure) adapts very quickly. 
   c. On the contrary, the extreme sensitivity of the fingertips is due to the relatively large amount of cortical tissue that processes neural impulses from the fingertips.

16. c. is the answer. (p. 116) 

17. c. is the answer. Because of the powerful sensory interaction between taste and smell, eliminating the odor of the cough syrup should make its taste more pleasant. (p. 147) 
   a. If anything, the contrasting tastes might make the bitter syrup even less palatable.
b. If Tamiko keeps the syrup in her mouth for several seconds, it will ensure that her taste pores fully "catch" the stimulus, thus intensifying the bitter taste.
d. It's probably impossible to miss the tongue completely.

18. d. is the answer. The two people interpreted a briefly perceived object in terms of their perceptual sets, or mental predispositions, in this case conditioned by their work experiences. (p. 161)
a. Both Smith and Wesson had the same sensory experience of the object, so linear perspective cues would not cause their differing perceptions.
b. Shape constancy refers to the perception that objects remain constant in shape even when our retinal images of them change.
c. Retinal disparity is a binocular depth cue; it has nothing to do with individual differences in perception.

19. d. is the answer. Although the amount of light reflected from a white object is less in dim light than in bright light—and may be less than the amount of light reflected from a brightly lit gray object—the brightness of the white object is perceived as remaining constant. Because a white object reflects a higher percentage of the light falling on it than does a gray object, and the brightness of objects is perceived as constant despite variations in illumination, white is perceived as brighter than gray even under dim illumination. (p. 158)
a. Relative luminance refers to the relative intensity of light falling on surfaces that are in proximity. Lightness constancy is perceived despite variations in illumination.
b. Perceptual adaptation refers to the ability to adjust to an artificially modified perceptual environment, such as an inverted visual field.
c. Color contrast is not discussed in this text.

20. b. is the answer. The phenomenon described is the basis for the monocular cue of relative size. (p. 155)
a. The object casting the larger retinal image would be perceived as closer.
c. & d. Because of size constancy, the perceived size of familiar objects remains constant, despite changes in their retinal image size.

21. d. is the answer. (p. 116)

22. d. is the answer. (p. 156)

23. a. is the answer. Because we perceive the size of a familiar object as constant even as its retinal image grows smaller, we perceive the object as being farther away. (p. 156)

b. & c. Perceptual constancy is a cognitive, rather than sensory, phenomenon. Therefore, the absence of perceptual constancy would not alter sensitivity to monocular or binocular cues.
d. Although the absence of perceptual constancy would impair depth perception based on the size-distance relationship, other cues to depth, such as texture gradient, could still be used.

24. b. is the answer. This is an example of the principle of interposition in depth perception. (p. 155)
a. The partially obscured object is perceived as farther away.
c. The perceived size of an object is not altered when that object overlaps another.

25. c. is the answer. (p. 155)
a. Interposition is a monocular depth cue in which an object that partially covers another is perceived as closer.
b. Retinal disparity refers to the difference between the two images received by our eyes that allows us to perceive depth. It has nothing to do with the way the artist placed the trees.
d. Figure-ground refers to the organization of the field into objects that stand out from their surroundings.

26. c. is the answer. (p. 155)

b. & d. Linear perspective is the apparent convergence of parallel lines as a cue to distance.

27. a. is the answer. (p. 156)

28. d. is the answer. (p. 166). 

a. Telepathy is the claimed ability to "read" minds.
b. Clairvoyance refers to the claimed ability to perceive remote events.
c. Precognition refers to the claimed ability to perceive future events.

29. c. is the answer. She perceives the line for the road as continuous, even though it is interrupted by lines indicating other roads. (p. 152)
a. Closure refers to the perceptual filling in of gaps in a stimulus to create a complete, whole object.
b. Similarity is the tendency to perceive similar objects as belonging together. On a road map, all the lines representing roads appear similar. Thus, this cue could not be the basis for Colleen's ability to trace the route of a particular road.
d. Proximity is the tendency to group objects near to one another as a single unit.

Essay Question 1

The senses that are most important to dancers are vision, hearing, kinesthesis, and the vestibular sense.
3. Pupil. The adjustable opening in the iris, the pupil allows light to enter.
4. Lens. This transparent structure behind the pupil changes shape to focus images on the retina.
5. Retina. The light-sensitive inner surface of the eye, the retina contains the rods and cones, which transduce light energy into neural impulses.
6. Blind spot. The region of the retina where the optic nerve leaves the eye, the blind spot contains no rods or cones and so there is no vision here.
7. Optic nerve. This bundle of nerve fibers carries neural impulses from the retina to the brain.

The Ear
1. Outer ear. Hearing begins as sound waves enter the auditory canal of the outer ear.
2. Auditory canal. Sound waves passing through the auditory canal are brought to a point of focus at the eardrum.
3. Eardrum. Lying between the outer and middle ear, this membrane vibrates in response to sound waves.
4. Middle ear. Lying between the outer and inner ear, this air-filled chamber contains the hammer, anvil, and stirrup.
5. Hammer, anvil, and stirrup. These tiny bones of the middle ear concentrate the eardrum’s vibrations on the cochlea’s oval window.
6. Inner ear. This region of the ear contains the cochlea and the semicircular canals, which play an important role in balance.
7. Cochlea. This fluid-filled multichambered structure contains the hair cell receptors that transduce sound waves into neural impulses.
8. Auditory nerve. This bundle of fibers carries nerve impulses from the inner ear to the brain.

Key Terms
1. Sensation is the process by which our sensory receptors and nervous system receive and represent physical energy from the environment. (p. 116)
2. Perception is the process by which we organize and interpret sensory information. (p. 116)
3. Bottom-up processing is analysis that begins with the sensory receptors and works up to the brain’s integration of sensory information. (p. 116)
4. Top-down processing is information processing guided by higher-level mental processes. (p. 116)
5. Selective attention is the focusing of conscious awareness on a particular stimulus. (p. 117)