

Unit 04: Sensation

Directions: As an introduction to the unit, this is a quote to give you the chance to think about the concepts we are about to discuss. Determine which letter from the choices above is the correct one and fits into the spaces below. When you are finished fill in the quote below.

A quote from Socrates:

K	Y			O		T	L	E	E			E			E	V											
M	E		F	R	I	U	N	S	R	Y	A	F	O		O	R	M	A	O	L	L	E	S	S	Y		
H	O		W	N	O	W	R	D	H	E	S	E	L	F	F	F	O	R	S	Y	U	C	E	A	W	N	
H	N	W	K	T	O	E	C	A	E	C	V	R	S	R	W	O	U	R	Y	O	N	R	E	P	R	E	C

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 _ _ _ _ _ _ _ _ _ _ _ .

The brain is like muscle. When it is used, we feel good.

DISCOVERING PSYCHOLOGY

SENSATION AND PERCEPTION

Directions: This will be due at the end of this film. You are to answer the following questions. The concepts are presented chronologically during the film.

1. What is it about the "Ames Room" that causes Dr. Zimbardo to appear to grow as he walks from the left side of the room to the right?
2. Our sensory abilities are usually measured by the _____, or the weakest level that a stimulus can be accurately detected at least half of the time.
3. Sensory receptors are designed to detect certain types of _____.
4. An object in the environment that one attempts to focus on is called the _____.
5. The image, as it appears and is "sensed" on the retina is called the _____.
6. What did David Hubel's research focus on...no pun intended?
7. According to the film, how many nerve cell, or fibers exist in the retina?
8. According to the film, how many nerve cell, or fibers exist in the optic nerve?
9. Pavel Misha's research seems to suggest that the perceptual system of the brain searches for _____ in order to make sense of what it senses.
10. What does the brain of a football player need to do in order to adapt to new sensory information?
11. What is perceptual constancy?
12. How does context influence what a person sees?

Sensation

An Overview of How Humans Become Aware of the Environment

How are humans able to take in information about the world in which they exist?

You should be able to describe the ways in which we measure the ability to sense the environment.

Essential Details

Absolute threshold is the measurement of the ability to detect a stimuli 50 percent of the time.

Difference threshold (JND) is the amount of stimuli needed to detect an increase in stimuli.

Weber's law states that the JND is a constant fraction of the intensity of the detected stimuli.

You should be able to describe the sense of gustation or taste.

Essential Details

Chemical receptors found in the papillae of the tongue (taste buds) respond and cause action potentials.

These receptors are sensitive to basically four chemical tastes. These are sweet located on the sides of the tongue, salty located on the tip, bitter, found at the rear and sour, located on the back sides of the tongue.

You should be able to describe the basic elements of sight, ie. the elements of the eye.

Essential Details

Light which is reflected from objects in the environment passes through the cornea.

The light hits the lens which refracts it and focuses it on the receptors found in the retina.

The receptors called rods and cones respond to light. Rods respond to dim light, cones to color. The fovea is the concentration of cones at the center of the retina. The blind spot has no receptors.

You should be able to describe the basic elements of the sense of smell or olfaction.

Essential Details

The smell receptors are located in the mucous membrane of the nasal system.

The receptors are stimulated by molecules of chemicals transported in the air.

Animals and perhaps humans are influenced by smells. Animal sexual behavior is influenced by pheromones.

You should be able to describe the basic elements of sound and hearing.

Essential Details

The auditory accessory structure collects sound vibrations and directs them into the ear drum.

In the middle ear, the ear drum passes the vibrations to the maleus, incus and stapes which vibrate.

These vibrations are received by the receptor cells in the cochlea which starts an action potential.

You should be able to identify elements of the somatic and vestibular sense and explain them.

Essential Details

The somatic sense includes proprioception and basic skin senses like touch, pressure and pain.

The proprioceptive sense provides information about the body including the location of body parts.

The basic vestibular or balance sense provides information about which way is up.

An understanding of the sensory system is essential to an understanding of psychology.

Unit 04: Sensation

Directions: Each week in Advanced Placement Psychology, there will be three quizzes. Each quiz is worth 10 test points. This sheet will be turned in at the end of the week.

Quiz 01 (02 Points Each)

1. _____
2. _____
3. _____
4. _____
5. _____

Total Points _____

Quiz 02 (02 Points Each)

1. _____
2. _____
3. _____
4. _____
5. _____

Total Points _____

Quiz 03 (02 Points Each)

1. _____
2. _____
3. _____
4. _____
5. _____

Total Points _____

Grand Total _____

Sensation

Directions: Answer each of the following questions. Explain the significance of each answer.

What is absolute threshold?

What is accomodation?

What is acuity?

What is adaptation?

What is an afterimage?

What is the Ames room?

What is amplitude?

What is the auditory nerve?

What are the auditory ossicles?

What is the basilar membrane?

What are bipolar cells?

What is the blind spot?

What is brightness?

What is the cochlea?

What is coding?

What is color blindness?

What does the term complementary mean?

What is conduction deafness?

What are cones?

What is convergence?

What is the cornea?

What is a difference threshhold?

What is the doctrine of specific nerve energies?

What are feature detectors?

What is a fovea?

What does the term frequency mean?

What is gustation?

What is hue?

What is the iris?

What is kinesthesia?

What is the lens?

What is the significance of light wavelength?

What is loudness?

What is nerve deafness?

What is olfaction?

What is the olfactory area?

What is the olfactory bulb?

What is the opponent-process theory of sensation?

What is the optic chiasm?

What is the optic nerve?

What is the organ of Corti?

What are the otolith organs?

What is the oval window?

What is papillae?

What are pheromones?

What is a photoreceptor?

What is the pinna?

What is pitch?

What is place theory?

What is the primary auditory cortex?

What is proprioception?

What is the pupil?

What are the receptive fields?

What are receptors?

What is the retina?

What is retinal disparity?

What is rhodopsin?

What are rods?

What is saturation?

What are the semicircular canals?

What is sensation?

What is sensory adaptation?

What is sensory coding?

What are sensory neurons?

What are skin receptors?

What are the skin senses?

What are the somatic senses?

What is sound?

What is the concept of spatial code?

What is a taste bud?

What is timbre?

What is topographical representation?

What is transduction?

What is the trichromatic theory?

What is the tympanic membrane?

What are the vestibular senses?

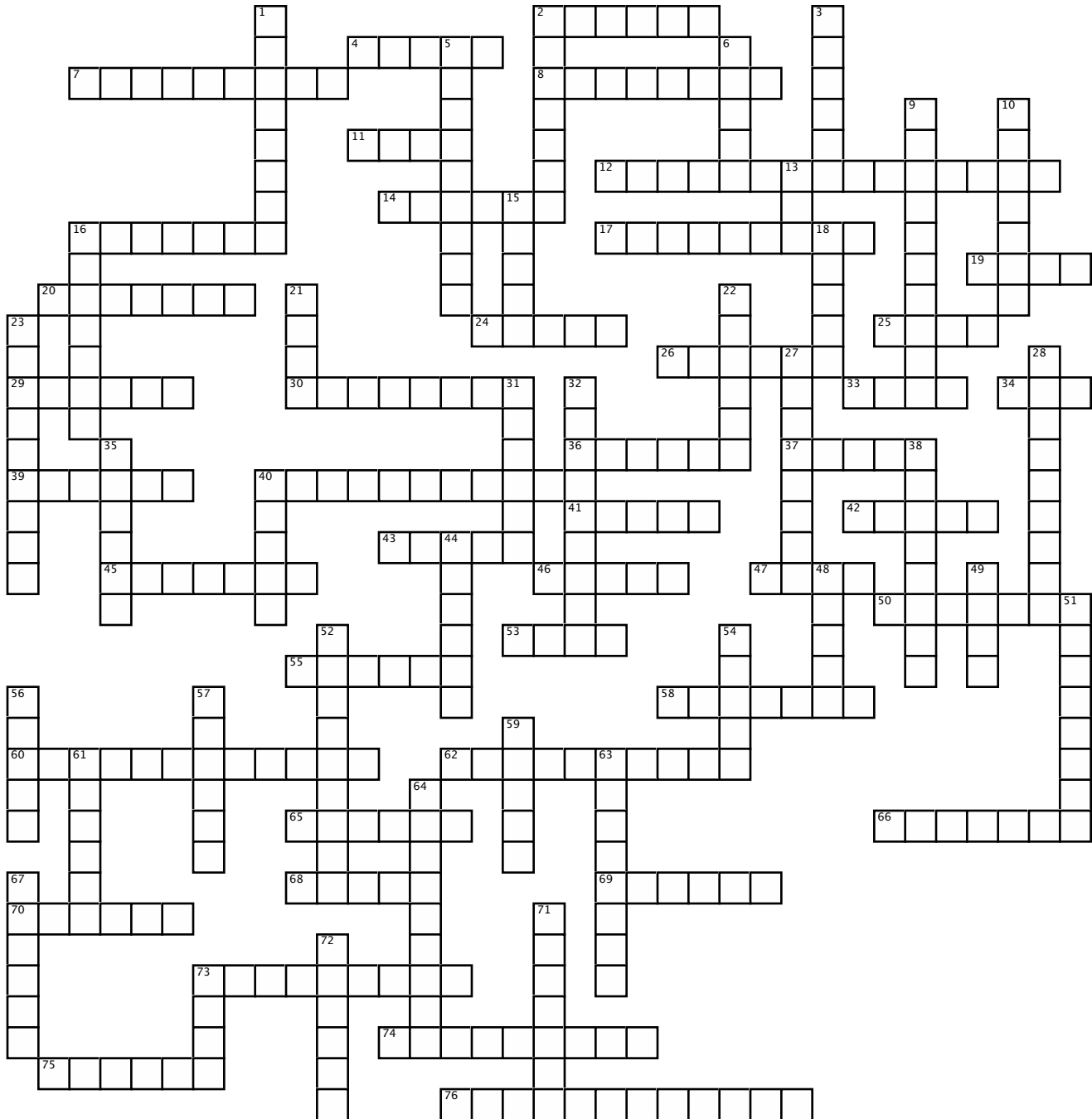
What is the visible spectrum?

What is visual acuity?

What is volley theory?

What is wave length?

Unit Review Number 04
Sensation



Across

2. Neural _____ is a neuroscience-related field concerned with how sensory and other information is represented in the brain by neurons.
4. The opponent process theory of _____ vision states that three coding systems (red or green, yellow or blue, black or white) are used by the visual system to analyze color information.

Down

1. The vestibular _____ are balance, body position, and acceleration.
2. The _____ is the snail-shaped organ that makes up the inner ear.
3. Kinesthesia is the sensation and perception of bodily _____.
5. The sense of smell is called _____.
6. The auditory _____ conducts information about the environment (in this case, acoustic energy that impinges on the external ear) to the brain.

Across

7. Wavelength is the distance between repeating units of a propagating wave of a given _____.
8. The _____ consist of the three small bones, incus, malleus and stapes, that link the eardrum to the inner ear.
11. The olfactory _____ is part of the frontal lobes where information on smell registers.
12. Topographical _____ or sensory maps are found in the cortex, exist for each sense and are part of the sensory process.
14. Light wavelength refers to the frequency of the light that is sensed by the _____.
16. Transduction is transportation of stimuli to the _____ system.
17. Acuity is the a aspect of visual perception having to do with the _____ or resolution of images.
19. The olfactory _____ is a structure of the vertebrate forebrain involved in olfaction, the perception of odors.
20. Timbre is the _____ of a musical note or sound or tone that distinguishes different types of sound production, such as voices or musical instruments.
24. The optic _____ is the nerve that transmits visual information from the retina to the brain.
25. The _____ spot at the front of the eye through which light passes is called the pupil.
26. Amplitude is a characteristic of the wave that describes its _____.
29. The Skin _____ are the senses of touch, pressure, pain, heat, and cold.
30. Doctrine of _____ Nerve Energies suggests that there is a qualitative differences between visual, auditory, tactile, olfactory, and gustatory sensations are determined by the particular sensory receptors that are stimulated.
33. The _____ room is an intentionally distorted room that interrupts perceptual constancies because none of the angles in the room are perpendicular.
34. Papillae generally refers to the _____ like structures of the tongue where the taste buds are located.
36. Complementary _____ are pairs of colors that are of "opposite" hue in some color model.
37. The _____ spot is a portion of the retina lacking visual receptors.
39. The light-sensitive layer of cells at the back of the eye is called the _____.
40. The simultaneous turning inward of the two eyes as they focus on nearby objects is known as _____.
41. The _____ is the outer part of the ear.
42. The _____ theory of hearing which says that higher- and lower-frequency tones are detected at specific locations in the cochlea.

Down

9. An _____ is a visual sensation that persists after a stimulus is removed.
10. Absolute Threshold is the _____ amount of physical energy necessary to produce a sensation.
13. Accommodation is the process by which the _____ increases optical power to maintain a clear image (focus) on an object as it draws near the eye.
15. Sensorineural hearing loss, or _____ deafness, is a type of hearing loss in which the root cause lies in the vestibulocochlear nerve (Cranial nerve VIII), the inner ear, or central processing centers of the brain.
16. Spatial coding suggests that the location of firing _____ relative to their firing neighbors provide information about the stimulus.
18. Adaptation is the reduced ability to _____ a stimulus after prolonged exposure.
21. The _____ is the structure of the eye that focuses the distal stimulus on the retina through accommodation.
22. Color blindness is the total inability to perceive _____.
23. Retinal _____ is the small discrepancy in the images falling on each retina caused by separation of the eyes.
27. The basilar _____ within the cochlea of the inner ear is a stiff structural element that separates two liquid-filled tubes that run along the coil of the cochlea, the scala media and the scala tympani.
28. The sense of taste is called _____.
31. The _____ is the transparent front part of the eye that covers the iris, pupil, and anterior chamber.
32. Visual _____ for colors and daylight visual acuity are called cones.
35. The oval _____ is a membrane on the cochlea connected to the third auditory ossicle.
38. Conduction _____ is defined as poor transfer of sounds from the eardrum to the inner ear.
40. The organ of _____ is the center part of the cochlea, containing hair cells, canals, and membranes.
44. Loudness is the _____ of the wave that is sensed by the auditory system.
48. Brightness is the intensity of _____ reflected from or emanating from a surface.
49. The _____ is the colored circular muscle of the eye that opens and closes to admit more or less light into the eye.
51. The visible _____ is the portion of the electromagnetic spectrum to which the eyes are sensitive.
52. A _____ is a chemical that triggers a natural behavioral response in another member of the same species.
54. Sensation is the immediate response in the _____ caused by excitation of a sensory organ.

Across

43. The _____ is a small depression at the center of the retina containing only cones and providing the greatest sharpness of vision.
45. The _____ organs are part of the vestibular structures which are sensitive to movement, acceleration, and gravity.
46. Frequency is the number of occurrences of a repeating event, in our case a _____ wave, per unit time.
47. A bipolar _____ is a type of neuron which has two extensions. Bipolar cells are specialized sensory neurons for the transmission of special senses. As such, they are part of the sensory pathways for smell, sight, taste, hearing and vestibular function.
50. Feature detectors are _____ in the visual cortex that receive visual information and respond to certain features such as lines, and angles.
53. The _____ noticeable difference, customarily abbreviated with lowercase letters as jnd, is the smallest difference in a specified modality of sensory input that is detectable by a human being.
55. The optic _____ is the part of the brain where the optic nerves partially cross.
58. Hue is one of the main properties of a color which describes its _____.
60. Photo receptors are sensory receptors sensitive to light and specialized for the _____ of light stimuli into neural impulses.
62. Sensory _____ is the decrease in sensory response to an unchanging stimulus.
65. The primary auditory _____ is the region of the brain that is responsible for processing of auditory (sound) information.
66. The _____ is often called the tympanic membrane.
68. Proprioception is the _____ of the relative position of neighboring parts of the body.
69. Volley _____ suggests that the organ of corti in the cochlea that transduces the sound into action potentials must combine multiple stimuli along the cochlear nerve within a volley in order to encode high frequency auditory stimuli.
70. The semicircular _____ are fluid-filled vestibular canals and are the sensory organs for balance.
73. The photosensitive pigment in the rods is called _____.
74. Skin _____ are the sensory organs for touch, pressure, pain, cold, and warmth.
75. Saturation is that quality of _____ related to their being very pure, from a narrow area of the spectrum, or free from mixture with other colors.
76. The _____ theory is the theory of color vision based on the assumption that there are three types of cones, with peak sensitivity to red, green, or blue.

Down

56. Higher or lower tones; related to the frequency of sound waves is called _____.
57. A Sensory _____ is a nerve cell that carries information from the senses toward the central nervous system.
59. Taste buds are the receptor organs for _____.
61. Receptors are any structure which, on receiving environmental stimuli, produces an _____ potential.
63. Sound is the _____ sense.
64. The _____ field of a sensory neuron is a region of space in which the presence of a stimulus will alter the firing of that neuron.
67. The clarity or sharpness of visual perception is called visual _____.
71. The _____ senses are a diverse and rich totality of receptors. The impression of touch is formed from several modalities and as a result is often called a somatic sense.
72. Sensory _____ is the term used to describe the various codes used by the sense organs to transmit information to the brain.
73. The _____ are the visual receptors that are responsive to dim light but produce only black and white sensations.