

Line *A* should look longer, even though both lines are actually the same length. People who come from noncarpentered cultures that do not use right angles and corners often in their building and architecture are not usually fooled by the Muller-Lyer illusion. Cross-cultural research demonstrates that some basic perceptual sets are learned from our culture.

Practice Questions

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the one that is best in each case.

1. Our sense of smell may be a powerful trigger for memories because
 - (A) we are conditioned from birth to make strong connections between smells and events.
 - (B) the nerve connecting the olfactory bulb sends impulses directly to the limbic system.
 - (C) the receptors at the top of each nostril connect with the cortex.
 - (D) smell is a powerful cue for encoding memories into long-term memory.
 - (E) strong smells encourage us to process events deeply so they will most likely be remembered.
2. The cochlea is responsible for
 - (A) protecting the surface of the eye.
 - (B) transmitting vibrations received by the eardrum to the hammer, anvil, and stirrup.
 - (C) transforming vibrations into neural signals.
 - (D) coordinating impulses from the rods and cones in the retina.
 - (E) sending messages to the brain about orientation of the head and body.
3. In a perception research lab, you are asked to describe the shape of the top of a box as the box is slowly rotated. Which concept are the researchers most likely investigating?
 - (A) feature detectors in the retina
 - (B) feature detectors in the occipital lobe
 - (C) placement of rods and cones in the retina
 - (D) binocular depth cues
 - (E) shape constancy

4. The blind spot in our eye results from
- (A) the lack of receptors at the spot where the optic nerve connects to the retina.
 - (B) the shadow the pupil makes on the retina.
 - (C) competing processing between the visual cortices in the left and right hemisphere.
 - (D) floating debris in the space between the lens and the retina.
 - (E) retinal damage from bright light.
5. Smell and taste are called _____ because _____
- (A) energy senses; they send impulses to the brain in the form of electric energy.
 - (B) chemical senses; they detect chemicals in what we taste and smell.
 - (C) flavor senses; smell and taste combine to create flavor.
 - (D) chemical senses; they send impulses to the brain in the form of chemicals.
 - (E) memory senses; they both have powerful connections to memory.
6. What is the principal difference between amplitude and frequency in the context of sound waves?
- (A) Amplitude is the tone or timbre of a sound, while frequency is the pitch.
 - (B) Amplitude is detected in the cochlea, while frequency is detected in the auditory cortex.
 - (C) Amplitude is the height of the sound wave, while frequency is a measure of how frequently the sound waves pass a given point.
 - (D) Both measure qualities of sound, but frequency is a more accurate measure since it measures the shapes of the waves rather than the strength of the waves.
 - (E) Frequency is a measure for light waves, while amplitude is a measure for sound waves.
7. Weber's law determines
- (A) absolute threshold.
 - (B) focal length of the eye.
 - (C) level of subliminal messages.
 - (D) amplitude of sound waves.
 - (E) just-noticeable difference.

8. Gate-control theory refers to
 - (A) which sensory impulses are transmitted first from each sense.
 - (B) which pain messages are perceived.
 - (C) interfering sound waves, causing some waves to be undetected.
 - (D) the gate at the optic chiasm controlling the destination hemisphere for visual information from each eye.
 - (E) how our minds choose to use either bottom-up or top-down processing.

9. If you had sight in only one eye, which of the following depth cues could you NOT use?
 - (A) texture gradient
 - (B) convergence
 - (C) linear perspective
 - (D) interposition
 - (E) shading

10. Which of the following sentences best describes the relationship between sensation and perception?
 - (A) Sensation is a strictly mechanical process, while perception is a cognitive process.
 - (B) Perception is an advanced form of sensation.
 - (C) Sensation happens in the senses, while perception happens in the brain.
 - (D) Sensation is detecting stimuli, perception is interpreting stimuli detected.
 - (E) Sensation involves learning and expectations, and perception does not.

11. What function does the retina serve?
 - (A) The retina contains the visual receptor cells.
 - (B) The retina focuses light coming in the eye through the lens.
 - (C) The retina determines how much light is let into the eye.
 - (D) The retina determines which rods and cones will be activated by incoming light.
 - (E) The retina connects the two optic nerves and sends impulses to the left and right visual cortices.

12. Color blindness and color afterimages are best explained by what theory of color vision?
 - (A) trichromatic theory
 - (B) visible hue theory
 - (C) opponent-process theory
 - (D) dichromatic theory
 - (E) binocular disparity theory

13. You are shown a picture of your grandfather's face, but the eyes and mouth are blocked out. You still recognize it as a picture of your grandfather. Which type of processing best explains this example of perception?
- (A) bottom-up processing
 - (B) signal detection theory
 - (C) top-down processing
 - (D) opponent-process theory
 - (E) gestalt replacement theory
14. What behavior would be difficult without our vestibular sense?
- (A) integrating what we see and hear
 - (B) writing our name
 - (C) repeating a list of digits
 - (D) walking a straight line with our eyes closed
 - (E) reporting to a researcher the exact position and orientation of our limbs
15. Which of the following sentences best describes the relationship between culture and perception?
- (A) Our perceptual rules are inborn and not affected by culture.
 - (B) Perceptual rules are culturally based, so rules that apply to one culture rarely apply to another.
 - (C) Most perceptual rules apply in all cultures, but some perceptual rules are learned and vary between cultures.
 - (D) Slight variations in sensory apparatuses among cultures create slight differences in perception.
 - (E) The processes involved in perception are genetically based, so genetic differences among cultures affect perception.

ANSWERS TO PRACTICE QUESTIONS

1. (B) A nerve connects the olfactory bulb directly to the amygdala and hippocampus. This connection may explain why smell may be a powerful trigger for emotions and memories. This connection has nothing to do with learning, long-term memory, or deep processing. Smells are eventually communicated to the cortex, but that does not explain the special connection to memory.
2. (C) Hair cells inside the cochlea change the mechanical vibrations received at the oval window into neural signals that are transmitted to the brain. The cochlea is part of the ear, not the eye, so choices A and D are incorrect. The hammer, anvil, and stirrup transfer vibrations to the cochlea, not the other way around. The semicircular canals send messages to the brain about the orientation of the head and body.

3. **(E)** According to shape constancy, we know shapes remain constant even when our viewing angle changes. This experiment would not be investigating feature detectors, because the equipment required to measure the firing of feature detectors is not described. Placement of rods and cones in the retina would not affect perception of the top of the box. Binocular depth cues are probably not the target of the research because the researchers are not asking questions about depth.
4. **(A)** The spot where the optic nerve connects to the retina lacks rods and cones and is thus called the blind spot. Choices B and C are distracter items and are not true. Floating debris and retinal damage could cause blind spots. However, these do not occur in everyone, and the question implies the blind spot present in everyone's eyes.
5. **(B)** We sense tastes and smells by absorbing chemicals. Energy senses are hearing, sight, and touch. Flavor senses and memory senses are not valid terms. Choice D is incorrect because all nerve impulses are sent by an electrochemical process.
6. **(C)** Amplitude is a measure of the height of the wave, creating the volume of the sound. Frequency is the measure of how quickly the waves pass a point, causing the pitch of the sound. The other choices are incorrect distractions.
7. **(E)** Weber's law calculates the difference threshold or the just-noticeable difference. It has nothing to do with sight, subliminal messages, or amplitude.
8. **(B)** Gate-control theory explains why some pain messages are perceived while others are not. This theory is specific to the sense of touch, so choices A, C, and D are incorrect. Choice E is incorrect because gate-control theory has to do with the perception of pain, not how we interpret sensations in general.
9. **(B)** All the other choices are monocular cues for depth, so they could be used by a person sighted in only one eye. Convergence is a binocular cue and would not work without two functioning eyes. When an object is close to our face and our eyes have to point toward each other slightly, our brain senses this convergence and uses it to help gauge distance.
10. **(D)** Sensation is the activation of our senses by stimuli, and perception is how we organize and interpret sensations. Choice A is incorrect because some sensation processes are more than mechanical. Choice B is too vague—advanced in what sense? Some researchers think part of perception may happen in the senses themselves, so choice C is incorrect. Choice E is false; perception involves learning and expectations.
11. **(A)** Visual receptors, rods and cones, are embedded in the retina, which is the back part of the eye. The rest of the items are incorrect because they describe functions the retina does not perform.

12. (C) The opponent-process theory explains these two phenomena, which the trichromatic theory cannot do. Visible hue is not a color vision theory. Dichromatic is a type of color blindness, not a theory of color vision. Binocular disparity is a depth cue.
13. (C) Your mind filled in the information from the picture by drawing on your experience. This is top-down processing. The example does not reflect bottom-up processing because information is being filled in, instead of an image being built from the elements present. Signal detection theory has to do with what sensations we pay attention to, not filling in missing elements in a picture. Opponent-process theory explains color vision. Gestalt theory might relate to this example because you are trying to perceive the picture as a whole, but there is no such term as gestalt replacement theory.
14. (D) Our vestibular sense helps with our sense of balance and orientation in space. Our vestibular sense has little to do with our sense of sight or hearing. Repeating digits would not be affected by the vestibular sense. Our kinesthetic sense gives us information about the position of our limbs.
15. (C) Most perceptual principles apply in all cultures. However, some perceptual sets are learned and will vary, so choices A and B are incorrect. Sensory apparatuses do not vary among cultures, and perception is not genetically based as implied in choice E.