

**University of California, Berkeley**  
**Department of Psychology**

**Psychology W1**  
**Summer 2018**

**Midterm Examination 1**

Choose the *best* answer to each of the following 50 questions. Questions are drawn from the text and lectures in roughly equal proportions, with the understanding that there is considerable overlap between the two sources. Usually, only one question is drawn from each major section of each chapter of the required readings; again, sometimes this question also draws on material discussed in class. Read the entire exam through before answering any questions: sometimes one question will help you answer another one.

Most questions can be correctly answered in one of two ways: (1) by fact-retrieval, meaning that you remember the answer from your reading of the text or listening to the lecture; or (2) inference, meaning that you can infer the answer from some general principle discussed in the text or lecture. If you cannot determine the correct answer by either of these methods, try to eliminate at least one option as clearly wrong: this maximizes the likelihood that you will get the correct answer by chance. Also, go with your intuitions: if you have actually done the assigned readings and attended the lectures, your "informed guesses" will likely be right more often than they are wrong.

A provisional answer key will be posted to the course website tomorrow, after the window for the exam has closed. The exam will be provisionally scored to identify and eliminate bad items. The exam will then be rescored with bad items keyed correct for all responses. Grades on the *rescored* exam will be posted to the course website. A final, revised, answer key, and analyses of the exam items, will be posted on the course website after grades are posted.

***This is a closed-book, closed-notes exam.***

1. What does someone who supports the position of determinism believe?

- a. With strong effort, anyone can overcome early handicaps.
- b. Scientific research can discover explanations of behavior. \*\*
- c. The best way to know why people act as they do is simply to ask them.
- d. Behavioral development depends mainly on genetic influences.

Chapter 1. Determinism is the philosophical view that all events are the effects of prior events, linked in a causal chain. Because no effect can exist without a cause, determinism is usually interpreted as excluding the possibility of free will. But more generally, determinism means simply that every event in the world can be explained in terms of natural causes, and that these causal explanations can be identified by scientific research.

2. Dualism—the idea that mind and brain exist separately—conflicts most directly with which of these?

- a. Statisticians' principle of regression to the mean
- b. Psychologists' law of effect
- c. Physicists' principle of conservation of matter and energy \*\*
- d. Biologists' principle of evolution by natural selection

Chapter 1. There are lots of dualisms in philosophy and psychology, but the one that really counts is the dualistic distinction between mind and body. Descartes, who is responsible for this, held that mind is composed of an immaterial substance, and so there was a strict separation between mind and body. But he also held that mind and body interacted. Basic Newtonian physics holds that, in order for something to exert a causal influence on a material object, that thing must also be a material object. In this way, Cartesian dualism violates the principle of conservation of matter and energy.

3. The history of psychology differs from the history of other scientific fields in what way?

- a. Other fields began gradually over centuries from the work of amateurs. \*\*
- b. Other fields received government grant money from the start.
- c. Other fields use the experimental method.
- d. Other fields made less use of mathematical models.

Chapter 1. Psychology separated itself quickly from both philosophy and physiology, first in the hands of the psychophysicists, in the early part of the 19<sup>th</sup> century, then the “physiological” psychologists like Helmholtz in the middle part, and finally by James and Wundt before the turn of the 20<sup>th</sup> century – less than 100 years.

4. In the early days of psychology, how did functionalists differ from structuralists?

- a. Functionalists used laboratory research. Structuralists observed behavior in nature.
- b. Functionalists studied behaviors. Structuralists analyzed the contents of the mind. \*\*
- c. Functionalists measured brain activity. Structuralists measured attitudes.
- d. Functionalists studied normal people. Structuralists studied those with mental illness.

Chapter 1. The structuralists, as their name implies, were primarily interested in decomposing complex mental events into their elementary “atomic” constituents. Functionalism, influenced by Darwin’s theory of evolution by natural selection, was more interested in what the mind *does*, and emphasized topics like learning – including animal learning.

5. Behaviorists of the mid-1900s thought they could discover general laws of behavior by studying what?

- a. People’s introspections as they experienced various stimuli
- b. Brain recordings as people experienced various stimuli
- c. Rats in a maze \*\*
- d. People’s reports of their dreams

Chapter 1. The behaviorists weren’t interested in consciousness, dreams, or any other aspect of mental life, and they weren’t particularly interested in the brain, either. What they were particularly interested in was learning, and especially animal learning, from which they hoped to generalize to the human case.

6. Immanuel Kant believed that psychology could not be a science because:

- a. Mental illness was caused by demons.
- b. The mind was essentially spiritual in nature. \*\*
- c. Thinking was too complex to be brought under laboratory control.
- d. Behavior was inherently historical in nature, and thus could only be described, not experimented upon.

Lecture 1. Science is based on objective measurement. According to Kant, the mind is composed of an immaterial substance, and therefore can't be measured. Therefore, psychology, the science of the mind, can't ever be a true science.

7. The 19<sup>th</sup>-century psychophysicists:

- a. conceived of behavior as physiological responses to environmental stimuli.
- b. showed that sensory experience followed mathematical laws. \*\*
- c. linked perception to the physiology of the nervous system.
- d. argued that all sciences were derived from physics.

Lecture 1. Psychophysics shattered Kant's doubts by showing that subjects could reliably assign numbers to represent various aspects of their sensory experiences, and that these numbers varied lawfully with the physical properties of the stimuli. These psychophysical laws indicated that at least some aspects of mental activity could be measured after all.

8. Which of these is true for action potentials?

- a. Action potentials carry a message across synapses.
- b. Action potentials are important for humans, but not for other animal species.
- c. An action potential travels as fast as electrical conduction.
- d. An action potential keeps its strength as it travels. \*\*

Chapter 3. Action potentials occur in the cell bodies of all neurons, and then travels down the axon to the terminal fibers, where it meets the synapse and initiates the process of synaptic transmission. The impulse travels fast, but not as fast as electricity, because it's a chemical process, not an electrical one.

9. Dopamine synapses are most important for which of the following?

- a. Rapid responses to visual or auditory stimuli
- b. Communication between the left and right hemispheres of the brain
- c. Maintaining equilibrium and balance
- d. Strong motivations such as sex or drug use \*\*

Chapter 3. The “dopamine system” in the brain is an important mediator of reward and reinforcement.

10. Someone blind because of damage to the visual cortex continues feeling wakeful when the sun rises and sleepy at night. How can we explain this tendency?

- a. The light excites certain receptors in the skin.
- b. After many years, people have learned habits of waking and sleeping at certain times.
- c. The eyes send information to other brain areas that control waking. \*\*
- d. Certain parts of the brain can grow back after damage.

Chapter 3. In addition to transmission via the optical nerve to the visual areas of the brain, the visual receptors in the retina also send signals to other brain areas, including the pineal gland, which regulate the 24-hour cycle of waking and sleeping.

11. Damage or impairment of the prefrontal cortex often leads to which of these?

- a. Inability to recognize faces
- b. Impulsive decisions \*\*
- c. Itchy sensations throughout the body
- d. Increased interest in sports

Chapter 3. The prefrontal cortex is involved with executive control; damage to this area leads to a loss of executive control, and, thus, impulsive decision-making and action. Face recognition is mediated by the fusiform cortex linking the occipital and temporal lobes; itchy sensations, like other tactile sensations, is mediated by the somatosensory area of the parietal lobe. Where increased interest in sports comes from nobody knows, but I'm sure some athletically minded phrenologist is looking for it!

12. The multiplier effect causes heritability estimates to be higher for whom?

- a. Higher for women than for men
- b. Higher for men than for women
- c. Higher for children than for adults
- d. Higher for adults than for children \*\*

Chapter 3. The multiplier effect is a version of the person-situation interaction, in which a small genetic disposition on the part of the person leads to behaviors that change future situations, which elicit behaviors that magnify the original disposition, which leads to more behaviors of the same sort, which leads to.... You get the idea.

13. In afferent neurons, action potentials flow from the:

- a. cell body to the dendrites.
- b. axon to the cell body.
- c. cell body to the axon. \*\*
- d. ion channels through the glial body.

Lecture 2. In *all* neurons, action potentials flow from the cell body to the axon. The dendrites are sometimes considered to be the “afferent” portion of the neuron, because they’re on the receiving end of synaptic transmission; and the terminal fibers are sometimes considered to be the “efferent” portion of the neuron, because they’re on the transmitting end of synaptic transmission. But in any case, action potentials begin in the cell body and flow down the axon.

14. One function of the parasympathetic nervous system is to:

- a. organize the “flight or fight” response.
- b. organize the “tend or befriend” response.
- c. deplete the supply of noradrenaline as quickly as possible.
- d. modulate emotional response. \*\*

Lecture 2. The sympathetic branch of the autonomic nervous system organizes the “flight or fight” response to a stressor stimulus, which is more completely known as “flight, fight, or freeze”, and which also includes “tend and befriend”; emotional responses to the stressor involve sympathetic activity. Sympathetic activity consumes bodily resources, including adrenalin, which are conserved and restored by the parasympathetic branch, whose activity releases noradrenalin; in the process, parasympathetic activity tends to dampen emotional responses.

15. Coma is caused by lesions in the:

- a. medulla oblongata and pons.
- b. reticular formation and pons.
- c. reticular formation or thalamus. \*\*
- d. pons or thalamus.

Lecture 3. The brain is kept awake and alert (otherwise known as conscious) by activity rising from the reticular formation (otherwise known as the activating system) and passing through the thalamus to project to other areas of cortex. Therefore, damage to either the reticular formation or the thalamus, or both, causes coma. Damage to the pons causes the locked-in syndrome, but not a loss of consciousness.

16. Which match between brain and function is *correct*?

- a. movement: fusiform gyrus.
- b. audition: superior temporal gyrus. \*\*
- c. vision: postcentral gyrus.
- d. tactile sensation: striate cortex.

Lecture 4. The superior temporal gyrus, at the very top of the temporal lobe, is the primary auditory projection area. The fusiform gyrus, linking the visual areas of the occipital lobe with the temporal lobe, and thus the medial temporal-lobe memory system, is involved in face recognition. The postcentral gyrus, posterior to the central fissure, is the primary somatosensory cortex of the parietal lobe. Striate cortex, part of the occipital lobe, is the primary visual area of the brain.

17. A neurological patient's speech is inarticulate but comprehensible. This patient is likely to:

- a. have difficulty understanding speech.
- b. have difficulty moving on the left side of her body.
- c. be able to understand written communications. \*\*
- d. have problems with detecting and correcting errors in motion.

Lecture 4. Inarticulate but comprehensible speech is the hallmark of Broca's, or expressive, aphasia, due to damage in "Broca's area" in the left frontal lobe. Such patients have no difficulty understanding speech, however, or reading text. Patients with damage to Wernicke's area, in the left temporal lobe, have speech that may be articulate but incomprehensible, and they have difficulty understanding both oral and written communication; this is known as Wernicke's or receptive aphasia. Sometimes aphasia is accompanied by paralysis, or at least weakness on one side of the body; but because of contralateral projection, the paralysis affects the right, not the left side.

18. The right cerebral hemisphere is particularly good at:

- a. analysis of sequential patterns.
- b. mathematical computations.
- c. promoting transcortical communication.
- d. pattern recognition. \*\*

Lecture 5. For most people, especially right-handed males with no family history of left-handedness, the left hemisphere is specialized for language, and also for sequential analysis and mathematical computations. The right hemisphere can perform simple versions of these functions, but it is specialized for pattern recognition.

19. Neurogenesis following central nervous system damage:

- a. is possible in some cases of paraplegia.
- b. is enabled by redundancy in neural organization.
- c. can occur if the organism is exposed to a rich, stimulating environment. \*\*
- d. provides evidence for somatotopic cortical mapping.

Lecture 5. The question of neurogenesis remains controversial, especially with respect to cerebral cortex, but the best evidence is that it is most likely to occur if the organism is exposed to a rich environment with lots of opportunities for learning, and thus for the growth of not just new neural connections, but new neurons as well.

20. Which of the following claims would *not* be falsifiable?

- a. "Anxiety is more common in young adults than in old people."
- b. "Mothers who take folic acid during pregnancy tend to have healthier children."
- c. "Dreams are often disguised to hide their true meaning." \*\*
- d. "Early music training improves children's language development."

Chapter 2. Who's to say what the "true meaning" of a dream is? As Freud showed us, albeit inadvertently, if you're determined you can interpret just about anything as representing something else. True, he did say that "Sometimes, a cigar is just a cigar", but he didn't say under what circumstances that was the case. The other three statements, however, are amenable to relatively straightforward empirical confirmation (or, more correctly stated, *disconfirmation*).

21. Which of the following could be an operational definition of "sadness"?

- a. An inability to experience joy or laughter
- b. A general feeling of discouragement or despair
- c. The number of tears shed during a day \*\*
- d. The emotional outcome after someone has felt an important loss

Chapter 2. An operational definition of a construct is stated in terms of the procedures that would be employed to measure it. So, one quantitative measure of sadness would be the number of tears shed. The other choices all require operational definitions of their own.

22. If the correlation between variables A and B is negative, what can we conclude?

- a. Increases in A are associated with decreases in B. \*\*
- b. Measurements of A are lower than the measurements of B.
- c. The values of A are unrelated to the values of B.
- d. The strength of the relationship between A and B has been growing weaker over time.

Chapter 2. The correlation coefficient measures the strength and direction of the relationship between two variables. If the correlation is positive, the two variables move up and down together. If it is negative, increases in one variable are associated with decreases

23. A researcher, who predicts that left-handers are better artists than right-handers, watches people draw and evaluates their art. What would be the most important way to improve this study?

- a. Randomly assign people to being left- or right-handed.
- b. Evaluate their music as well as their art.
- c. Use a “blind” observer. \*\*
- d. Be sure to have an equal number of left- and right-handers.

Chapter 2. The researcher has a hypothesis, but he isn't blind to the condition of the subjects whom he's testing. Therefore, she is at risk of experimenter bias, behaving in such a manner as to lead subjects in a way that would confirm the hypothesis that she's testing. Experimenter bias is a special case of confirmation bias, which comes in two major forms: behavioral confirmation bias, in which an actor elicits behavior from a target that would objectively confirm the hypothesis; and perceptual confirmation bias, in which the actor subjectively interprets the target's ambiguous behavior as confirming the hypothesis.

24. On the first test, the mean is 75, your score is 90, and the standard deviation is 15. On the second test, the mean is 75, your score is 85, and the standard deviation is 5. Compared to other students, how well did you do on the two tests?

- a. You did better on the first test.
- b. You did better on the second test. \*\*
- c. You did equally well on both tests.
- d. Not enough information is given to answer the question.

Chapter 2. Remember the “Rule of 68, 95, and 99”. If 69% of subjects have scores within 1 standard deviation of the mean, then 34% of subjects have scores within 1 SD above the mean. And if 95% of subjects have scores within 2 standard deviations of the mean, then 47.5% of subjects have scores within 2 SD above the mean. And 50% of subjects have scores below the mean. So on the first test, your score is 1 standard deviation above the mean, scoring higher than approximately 84% of the class (50% below the mean, plus 34% above the mean); but on the second test, your score is 2 standard deviations above the mean, scoring higher than 98% of the class (50% + 47.5). Even though your numerical score is the same on the two tests, relative to the rest of the class, you did much better on the second test.

25. One criterion for the diagnosis of “intellectual deficiency” (formerly known as “mental retardation”) is an IQ score less than 70. By this standard alone, approximately \_\_\_\_\_% of the population has this condition.

- a. 5.0
- b. 2.5 \*\*
- c. 1.0
- d. 0.5

Lecture 6. Remember the “Rule of 68, 95, and 99”. It's an important rule. An IQ of 70 is 2 standard deviations below the mean. Only 5% of the population have IQ scores more than 2 standard deviations from the mean; half of those have IQs less than 2 SDs below the mean, the other half have IQs more than 2 SDs above the mean.

26. The criterion variable in a correlational study is analogous to the \_\_\_\_\_ variable in an experimental study.

- a. independent
- b. dependent \*\*
- c. control
- d. confounding

Lecture 6. The criterion variable is analogous to the dependent variable; it is correlated with the predictor variable, which is analogous to the independent variable.

27. In Pavlov's experiments, which two elements were similar to each other?

- a. The CS and the UCS
- b. The CS and the CR
- c. The CR and the UCR \*\*
- d. The UCS and the UCR

Chapter 6. In Pavlov's experiments, the conditioned stimulus was a bell, and the unconditioned stimulus was food, which aren't similar to each other. But the unconditioned response to food was salivation, and so was the conditioned response to the bell.

28. Under which circumstance would drug tolerance develop quickly?

- a. The user gradually increases the dose of the drug.
- b. The user is unaware of when he/she receives the drug.
- c. The user varies the location and procedure for taking the drug.
- d. The user always takes the drug in the same environment. \*\*

Chapter 6. Drug tolerance is partly a physiological effect of drug use, but it's also, partly, a conditioned response. Therefore, it's stronger when the environmental cues for drug taking, and thus the environmental cues for tolerance, are the same from "trial" to "trial".

29. A bell rings, an animal sits up and salivates, and then the experimenter delivers food. This could be either classical or operant conditioning. To decide which one it is, what do we need to know?

- a. How rapidly the animal forgets during a period without training
- b. Whether the animal sits up immediately after the bell, or after a delay
- c. Which happens first, sitting up or salivating
- d. Whether the bell always predicts food, or if only after the animal sits up \*\*

Chapter 6. Classically (sorry), classical conditioning applies to reflexes and other involuntary behaviors, of which salivation is a good example. Instrumental (operant) conditioning applies to so-called voluntary behaviors, like pressing a bar to get food. In the classical case, the bell should be a reliable predictor of food, regardless of the animal's behavior. In the instrumental case, the bell would be a cue for the animal to sit up, after which – and only after which – the animal would be rewarded with food.

30. You occasionally check for new email message, but they appear at unpredictable times. Which schedule of reinforcement is present in this case?

- a. Fixed-interval
- b. Variable-interval \*\*
- c. Fixed-ratio
- d. Variable-ratio

Chapter 6. This is a classic example of a variable-interval schedule of reinforcement, which leads to high rates of conditioned response on the part of the subject. Which is exactly what Silicon Valley wants you to do.

31. The idea of preparedness in learning is consistent with which of these assumptions?

- a. Animal species with larger brains tend to learn faster than those with smaller brains.
- b. Learning proceeds more swiftly if it combines classical and operant conditioning.
- c. It is easiest to learn something that is likely to be useful in nature. \*\*
- d. Learning proceeds more swiftly if it activates the left and right hemispheres equally.

Chapter 6. Conditioned responses are “prepared by evolution” precisely because they have proved highly adaptive in the animal’s evolutionary past, by increasing fitness and survival. Therefore, it is not surprising that, over the course of evolutionary time, individuals of a certain species become predisposed to form certain stimulus-response associations. The associations are not exactly hard-wired, but they’re ready to be activated under the right conditions.

32. The limitations on instincts (fixed action patterns) indicate that:

- a. complex behaviors cannot be transmitted genetically.
- b. social learning is critical for the acquisition of adaptive behaviors.
- c. evolution affects body morphology, but not behavior.
- d. evolution does not enable individuals to adjust to changing environmental circumstances. \*\*

Lecture 7. Evolution shapes behavior at the level of the species. It doesn’t do anything for the individual except to predispose it to form certain “prepared” stimulus-response associations. But evolutionary change takes a long time, longer than the life of any individual species member. Therefore, there has to be some mechanism that allows individuals to acquire new adaptive behaviors rapidly, in response to changing environmental circumstances. That mechanism is called learning.

33. The “S-shaped” learning curve is found:

- a. in partial reinforcement.
- b. in continuous reinforcement.
- c. if the organism is naïve to the experimental setting. \*\*
- d. if organism is experienced with the experimental setting.

Lecture 8. The “S-shaped” or “ogival” learning curve is actually two curves: a positively accelerated learning curve for the early trials, and a negatively accelerated learning curve, leading to a plateau, for the later trials. But if the organism is already experienced with learning, we don’t always see the positively accelerated portion. Apparently, the positive acceleration has to do with the organism catching on that there is something to be learned – which is something that naïve organisms have to do, and experienced organisms don’t. So if the organism has had any prior learning experience at all, the learning curve will show only the negatively accelerated portion, ending in the plateau.

34. Discrimination learning:

- a. sets limits on generalization. \*\*
- b. substitutes one unconditioned response for another.
- c. is most rapid when the CS+ and CS- resemble each other.
- d. violates the “Matching Law”.

Lecture 8. After conditioning has occurred, in generalization the organism responds to lots of different stimuli, especially those that resemble the original CSs. In discrimination learning, response to some generalization stimuli is reinforced and response to others is not (and thereby extinguished). In principle, at least, the generalization gradient could extend out forever; discrimination learning, by reinforcing only selected stimuli, even if they are highly similar, sets limits on generalization.

35. According to the Preparedness Principle:

- a. a state of heightened motivation is necessary in order for instrumental conditioning to take place.
- b. the “arbitrariness assumption” of stimulus-response learning theory is invalid. \*\*
- c. the organism can be viewed as a “black box” that correlates stimuli and responses.
- d. reinforcements are effective to the extent that the organism anticipates them.

Lecture 9. The “Arbitrariness Assumption” is that, by virtue of reinforcement, any stimulus (or pattern of stimuli) can be connected to any response (or pattern of responses). This isn’t true: while some S-R connections are prepared, and thus easy to learn, and others are unprepared, but still learnable, some connections are contraprepared, and can’t be learned even under optimal conditions.

36. What is the most important feature of an effective conditioned stimulus?

- a. It is salient enough to cross the threshold for stimulus detection.
- b. It is a reliable predictor of reinforcement. \*\*
- c. It is not subject to sensory preconditioning.
- d. It is easily generalizable to other stimulus modalities.

Lecture 9. Conditioning is governed by contingency, not contiguity. Even a weak stimulus can serve as a CS, provided that it is a reliable predictor of the US. Sensory preconditioning is simply an extension of this principle: CS1 predicts CS2, which in turn predicts US.

37. In learned helplessness unconditioned stimuli are:

- a. unpredictable but avoidable.
- b. avoidable but predictable.
- c. predictable but unavoidable. \*\*
- d. unavoidable and unpredictable.

Lecture 10. Learned helplessness occurs when the US is unavoidable – that is, when the organism realizes that there is nothing it can do to avoid the US. A US can be unpredictable but still controllable, as in escape learning. But when a US is unpredictable, the result is anxiety, not depression.

38. Observational learning in Bandura's "Bobo Doll" experiment in that differs from traditional classical conditioning in that:

- a. there is no reinforcement. \*\*
- b. there is no conditioned stimulus.
- c. the child does not acquire any expectations concerning behavior.
- d. learning occurs by virtue of trial and error.

Lecture 10. Observational learning occurs in the absence of direct experience with CSs, USs, and CRs. If you're a monkey and you see another monkey react with fear towards a snake, you react with fear too, even though you yourself have never had any experience with snakes. If you're a child and you see another person punch a Bobo Doll, you get the idea that you can punch the Bobo Doll too.

39. After you have thoroughly adapted to extremely dim light, which of these occurs?

- a. The objects you see seem more familiar than usual.
- b. Colors seem more distinct than usual.
- c. You see best in the periphery of your retina. \*\*
- d. You see best in the fovea.

Chapter 4. Color vision, mediated by rods, is relatively poor in dim light. Black-and-white vision, mediated by rods, is much better. There are more cones than rods, proportionally, near the fovea, and more rods than cones, proportionally, in the periphery. So if you look just a little bit away from the object of regard, you'll see it better in dim light.

40. What was the theoretical significance in the discovery of color vision deficiency?

- a. It was the first case of identifying a specific gene that influences behavior.
- b. It demonstrated the difference between cones and rods.
- c. It demonstrated the importance of early experience for visual development.
- d. It showed that color is in the brain, not in the light. \*\*

Chapter 4. Light just has wavelengths. It's the visual system in the brain, beginning with the cones, continuing with the opponent-process mechanism in the lateral geniculate nucleus, and ending with the "color area" in the occipital lobe, that determines whether you see color or not.

41. When you hear a 4000 Hz tone, hair cells at one point on the basilar membrane become active. What happens when they double their rate of activity?

- a. The pitch is the same, but it is louder. \*\*
- b. The pitch is the same, but it is softer.
- c. The pitch is one octave higher.
- d. The pitch is half an octave higher.

Chapter 4. According to the duplex theory of pitch perception, very low-frequency tones below 100 cycles per second, are perceived via a frequency principle, while higher-frequency tones, including 4000 cps, are perceived via the volley and place principles. So, if the hair cells in the location stimulated by a 4000 cps tone increase their activity, the pitch will stay the same, but the tone will just appear louder – because the same *place* is being stimulated.

42. What causes a phantom limb sensation?

- a. The spinal cord gets out of alignment.
- b. The stump where the limb was amputated continues to irritate receptors.
- c. Neurons form altered connections in the cerebral cortex. \*\*
- d. People who cannot accept their loss experience an emotional reaction.

Chapter 4. “Phantom limb” refers to the pain in a limb which, because it’s been amputated, isn’t part of the body anymore. So the pain isn’t coming from the amputated limb, or from the stump, or even from the spinal cord. What has happened is that the neurons in somatosensory cortex, which previously received stimulation from the amputated limb, are now receiving stimulation from other parts of the body, resulting in the illusory sensation of pain.

43. You stare at narrow black-and-white lines for a minute and then look at wider lines. The second set of lines appears even wider than usual. What did staring at the first set of lines cause?

- a. Retinal disparity
- b. Fatigue of feature detectors \*\*
- c. A shift in the signal-detection function
- d. Motion parallax

Chapter 4. This was a hard one. Looking at the narrow lines stimulates neurons that are specialized to be activated by narrow lines, but these feature detectors become fatigued, and thus inactive, by the constant stimulation. When you then shift your attention to the wider lines, you experience a kind of negative afterimage, in which the afterimage of the narrow lines adds to the image of the wider lines, making them look even wider.

44. The skin senses all share the same:

- a. proximal stimulus and receptor organs.
- b. receptor organs and sensory tracts.
- c. proximal stimuli and projection areas.
- d. sensory tracts and projection areas. \*\*

Lecture 11. What makes the skin senses – touch and pain – so complex, and so interesting, is that while there are lots of different sensory receptors embedded in the skin, the signals arising from them all go over the same sensory tracts (chiefly, the spinal cord) and end up in the same somatosensory projection area in the parietal lobe.

45. According to the duplex theory of auditory pitch, very high pitches are represented by a \_\_\_\_\_ principle.

- a. frequency
- b. place. \*\*
- c. volley
- d. saturation

Lecture 12. Low pitches (<100 cps) are represented by a frequency principle; moderately high pitches (100-4000 cps) are represented by a volley principle; very high pitches (>4000 cps) are represented by a place principle.

46. According to Fechner' Law:

- a. sensation grows more slowly than stimulation. \*\*
- b. sensation is isomorphic with stimulation.
- c. sensation grows more rapidly than stimulation.
- d. sensory mechanisms magnify stimulation so that it is above the threshold for detection.

Lecture 13. Sensation compresses stimulation, so that it takes a relatively large change in stimulation to become noticeable (which is what Weber's Law, from which Fechner's Law is derivevd, is all about). There are exceptions, though, which is how we got Stevens's Law.

47. In signal detection theory, a conservative response bias (i.e., toward saying “No”) would be induced by:

- a. increasing the number of catch trials. \*\*
- b. increasing the proportion of correct rejections.
- c. decreasing the payoff for “hits”.
- d. decreasing the penalty for a false alarm.

Lecture 13. You can't increase the proportion of correct rejections, because rejection is not under the experimenter's control. But if you increase the number of catch trials, the subject will catch on (sorry), and start saying “No” more often. If you decrease the payoff for hits, the subject will probably still say “Yes”, because there's still something to gain and nothing to lose. If you decrease the penalty for a false alarm, the subject will say “Yes” more often, again because there is less to lose. Signal-detection theory is a very rational system: think of what you'd do, and that's what (most) everybody would do.

48. Among the cues for the perception of depth and distance, motion parallax is \_\_\_\_\_ in nature.

- a. binocular and ocular
- b. monocular and optical
- c. binocular and ocular
- d. monocular and optical \*\*

Lecture 14. Ocular cues come from the muscles that control the eyes; optical cues are those that the observer gets from the image. Binocular cues require the operation of both eyes; monocular cues require only one eye. Motion parallax is a feature of the retinal image, thus optical; and you can experience it with only one eye (try it the next time you're a passenger in a car), thus monocular.

49. The “word-letter phenomenon” illustrates the importance of \_\_\_\_\_ in perception.

- a. bottom-up processing
- b. feature detection
- c. top-down processing \*\*
- d. unconscious inference

Lecture 15. The word-letter phenomenon occurs when processing individual letters is influenced by the words in which they're embedded, and happens only if you know how to read. Top-down processing occurs when performance is influenced by the subject's knowledge, expectations, and beliefs. Bottom-up processing occurs when performance is influenced by physical aspects of the stimulus. Feature-detection is the classic example of bottom-up processing. Pattern-recognition is the classic example of top-down processing.

50. In ambiguous figures:

- a. the proximal stimulus changes but perception remains constant.
- b. the proximal stimulus remains constant but perception changes. \*\*
- c. the distal stimulus changes but the proximal stimulus remains constant.
- d. the distal stimulus remains constant but the proximal stimulus changes.

Lecture 16. The distal stimulus is the object you're looking at; the proximal stimulus is the pattern of stimulus energies falling on the sensory receptors. In the ambiguous figures, the proximal stimulus remains constant, and the *perception* of the distal stimulus changes. In the perceptual constancies, the proximal stimulus changes, but the perception remains constant – hence the name.