

Answer Key

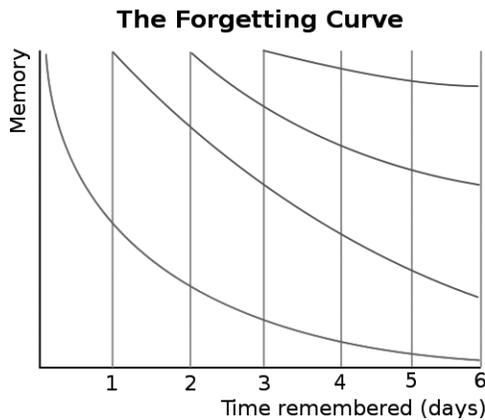
Memory

- 1. A**—The model asserts that human memory has three separate components: A sensory register, where sensory information enters memory. A short-term store, also called working memory or short-term memory, which receives and holds input from both the sensory register and the long-term store. A long-term store, where information which has been rehearsed in the short-term store is held indefinitely.
- 2. B**—Long-term memory is divided into implicit and explicit memory. Explicit memory is divided into semantic memory and episodic memory. Semantic memory involves facts and general knowledge. Episodic memory involves personally experienced events.
- 3. C**—The *primacy effect* will help her remember the first two names (probably from greater rehearsal), and the *recency effect* will help her remember the last two which are more likely to still be in working memory. She's more likely to forget the names in the middle.
- 4. A**—Anterograde amnesia is a loss of the ability to create new memories after the event that caused the amnesia, leading to a partial or complete inability to recall the recent past, while long-term memories from before the event remain intact.
- 5. D**—Sensory information is stored in sensory memory just long enough to be transferred to short-term memory. Humans have five traditional senses: sight, The visual sensory store is known as iconic memory. Auditory information is stored in echoic memory.
- 6. D**—The encoding specificity principle provides a framework for understanding how the conditions present while encoding information relate to memory and recall of that information. Recall is most effective when the conditions at the time of encoding match the conditions at the time of retrieval. These conditions may refer to the context in which the information was encoded, the physical location or surroundings, as well as the mental or physical state of the individual at the time of encoding.
- 7. C**—The levels-of-processing effect describes memory recall of stimuli as a function of the depth of mental processing. Deeper levels of analysis produce more elaborate, longer-lasting, and stronger memory traces than shallow levels of analysis. Depth of processing falls on a shallow to deep continuum. Shallow processing (e.g., processing based on phonemic and orthographic components) leads to a fragile memory trace that is susceptible to rapid decay. Conversely, deep processing (e.g., semantic processing) results in a more durable memory trace.
- 8. D**—Iconic memory is the visual sensory register. It is a fast-decaying (< 1 sec) store of visual information.
- 9. B**—The implications of experimental findings with dual-task paradigms are crucial to understanding Baddeley's model of working memory, a three part working memory model (with the visio-spatial sketchpad and phonological loop under control of the central executive) as an alternative to the short-term store in Atkinson & Shiffrin's memory model. This model is later expanded upon by Baddeley and other co-workers to add a fourth component, episodic memory, and has become the dominant view in the field of working memory.
- 10. B**—Thalamic groups were generally impaired on the DA task, in which recall was assessed over intervals ranging between 0 and 80 s. Working memory, a core executive function, is a cognitive system with a limited capacity that is responsible for the transient holding, process-

ing, and manipulation of information.

11. **C**—The central executive is a flexible system responsible for the control and regulation of cognitive processes. The functions of the central executive include binding information from a number of sources into coherent episodes, coordination of the slave systems, shifting between tasks or retrieval strategies, selective attention and inhibition. The central executive can be thought of as a supervisory system that controls cognitive processes and intervenes when they go astray.
12. **B**—Working memory can access both the short-term register and the long-term register. Contamination from long-term memory is a problem for short-term recall experiments. For example, short-term recall of IRSFBICIA is much easier because it combines the anagrams of prominent federal agencies.
13. **A**—Sperling's method of partial report demonstrated that an iconic memory (visual sensory memory) decays in less than 1000ms. An auditory analog to this experiment would have similar experimental goals for echoic memory. Choice 'A' is the only one addressing the purpose of such an experiment. Echoic memory traces have a longer decay period, approximately 4s, which makes sense given the requirements for verbal information to be presented to working memory in semantically meaningful units.
14. **A**—The lack of hippocampal activity and the observation of the recency effect in Korsakoff's syndrome point to there being a register for short-term memory storage which is separate from long-term memory.
15. **A**—Working memory tasks correlate with intelligence and aptitude measures much more highly than do simple, traditional, short-term memory tasks such as serial recall. Individuals scoring high on tests of working memory notice extraneous stimuli *less* often than other groups.
16. **C**—Memory has the ability to encode, store and recall information. Encoding allows the perceived item of use or interest to be converted into a construct that can be stored within the brain.
17. **B**—Elaborative encoding involves using a mnemonic device technique where connections can be made visually, spatially, semantically or acoustically. Multiple techniques, such as the method of loci, the link system, the peg word method, PAO (person, action, object), etc., are used to store information in long-term memory and make it easier to recall this information in the future. Maintenance rehearsal is a type of memory rehearsal that is useful in maintaining information in short term memory or working memory. However, it is not an effective way of having information processed and transferred into long term memory. This type of rehearsal usually involves repeating information without thinking about its meaning or connecting it to other information. This is why the information is not usually transferred to long term memory.
18. **C**—Iconic memory is the visual sensory memory register pertaining to the visual domain and a fast-decaying store of visual information. It is a component of the visual memory system which also includes visual short-term memory (VSTM) and long-term memory (LTM). The visuospatial sketchpad is a VSTM subcomponent within the theoretical model of working memory proposed by Alan Baddeley.
19. **B**—Forgetting or disremembering is the apparent loss or modification of information already encoded and stored in an individual's long term memory. As first described in the 19th century by Ebbinghaus, forgetting is a process characterized by exponential decay. The sharpest decline occurs in the first twenty minutes and the decay

is significant through the first hour. The curve levels off after about one day.



20. **A**—Retroactive interference is when new memories interfere with retrieval of older memories. Proactive interference occurs when old memories interfere with the retrieval of new memories.
21. **D**—Memory consolidation is a category of processes that stabilize a memory trace after its initial acquisition. Consolidation is distinguished into two specific processes, synaptic consolidation, which is synonymous with late-phase long-term potentiation and occurs within the first few hours after learning, and systems consolidation, where hippocampus-dependent memories become independent of the hippocampus over a period of weeks to years.
22. **C**—Relearning forgotten material is faster than learning the first time. This phenomenon was first described by Ebbinghaus, who termed the phenomenon ‘savings’.
23. **B**—Relating an event you personally witnessed is an example of episodic memory, which, like semantic memory, is a type of declarative memory. Declarative memory is the conscious, intentional recollection of factual information, previous experiences and concepts. Episodic memory stores specific personal experiences. Semantic memory stores factual information.
24. **D**—A schema (plural schemata or schemas) de-

scribes a pattern of thought or behavior that organizes categories of information and the relationships among them. It can also be described as a mental structure of preconceived ideas, a framework representing some aspect of the world, or a system of organizing and perceiving new information.

25. **A**—Spreading activation is how the brain moves through an entire network of ideas to retrieve specific information. The spreading activation theory presents the array of concepts within our memory as cognitive units, each consisting of a node and its associated elements or characteristics, all connected together by edges. A spreading activation network can be represented schematically, in a sort of web diagram with shorter lines between two nodes meaning the ideas are more closely related and will typically be associated more quickly to the original concept.
26. **A**—Proactive interference is the forgetting due to interference from the traces of events or learning that occurred prior to the materials to be remembered. Retroactive interference occurs when newly learned information interferes with and impedes the recall of previously learned information.
27. **C**—Cryptomnesia occurs when a forgotten memory returns without it being recognized as such by the subject, who believes it is something new and original.
28. **A**—To a large degree, anterograde amnesia remains a mysterious ailment because the precise mechanism of storing memories is not yet well understood, although it is known that the regions involved are certain sites in the medial temporal cortex, especially in the hippocampus and nearby subcortical regions.
29. **B**—The amygdala is involved in the modulation of memory consolidation, mediating the effects of emotional arousal on the strength of the memory for the event. It also plays a role in fear conditioning, choice ‘C’, but that involves the

formation of implicit, not explicit (declarative) long-term memories. Choice 'D' is a hippocampal function, and choice 'A' is a frontal cortex function.

30. **B**—A flashbulb memory is a highly detailed, exceptionally vivid 'snapshot' of the moment and circumstances in which a piece of surprising and consequential (or emotionally arousing) news was heard. The role of the amygdala in memory is modulation of consolidation in long-term storage associated with increased arousal induced by the emotional event.
31. **D**—The von Restorff effect, also known as the "isolation effect", predicts that when multiple homogenous stimuli are presented, the stimulus that differs from the rest is more likely to be remembered.
32. **C**—Suggestibility is the process of memory distortion as the result of deliberate or inadvertent suggestion. Suggestibility can lead to fabricated memory.
33. **D**—Short-term memory is the capacity for holding a small amount of information in mind in an active, readily available state for a short period of time.
34. **B**—Regarding choice 'I', Baddeley re-defined the theory of short-term memory as a working memory to explain this phenomenon, that the visuo-spatial sketchpad does not inhibit the short term processes of the phonological loop. This is in contrast to the original theory of short-term memory, where it was understood that a person only has one store of immediate information processing which could only hold a total of 7 items plus or minus two items to be stored in a very short period of time, sometimes a matter of seconds. Regarding choice 'II', as a general principle, working memory is a theoretical framework referring to structures and processes used for temporarily storing and manipulating information. As such, working memory might also be referred to as working attention.

Working memory and attention together play a major role in the processes of thinking. Short-term memory in general refers, in a theory-neutral manner, to the short-term storage of information, and it does not entail the manipulation or organization of material held in memory. In Baddeley's theory, the concept of working attention is embodied in the central executive. Choice 'III' describes standard short-term memory processes of encoding and rehearsal. Choice 'IV' reflects a subject of much current debate. In Baddeley's original theory, forgetting was conceptualized as occurring through decay not through replacement or interference.

35. **A**—Anterograde amnesia is the inability to create new memories due to brain damage, while long-term memories from before the event remain intact. Retrograde amnesia is inability to recall memories before onset of amnesia.
36. **C**—Massed practice, consists of a few, longer training sessions. It is generally a less effective method of learning than distributed practice, where practice is broken up into a number of short sessions – over a longer period of time. Humans and animals learn items in a list more effectively when they are studied in several sessions spread out over a long period of time, rather than studied repeatedly in a short period of time, a phenomenon called the spacing effect.
37. **D**—Priming is an implicit memory effect in which exposure to one stimulus (i.e., perceptual pattern) influences the response to another stimulus.
38. **B**—Chronic alcoholism often leads to a thiamine (vitamin B1) deficiency in the brain, causing Korsakoff's syndrome, a neurological disorder which is generally preceded by an acute neurological condition known as Wernicke's encephalopathy (WE). The memory impairment that is pathognomonic (meaning specifically characteristic or indicative of a particular disease or condition) to Korsakoff's syndrome

predominantly affects the episodic component of declarative memory, leaving non-declarative memory that is often procedural in nature relatively intact. The disproportionate severity in anterograde episodic memory processes in contrast to other cognitive processes is what differentiates Korsakoff syndrome from other conditions such as alcohol-related dementia.

39. **D**—Reconstructive memory is a theory of elaborate memory recall proposed within the field of cognitive psychology, in which the act of remembering is influenced by various other cognitive processes. People view their memories as being a coherent and truthful account of episodic memory and believe that their perspective is free from error during recall. However the reconstructive process of memory recall is subject to distortion by other intervening cognitive functions such as individual perceptions, social influences, and world knowledge, all of which can lead to errors during reconstruction.
40. **D**—The prevailing theory of interference based forgetting is that interference leads to forgetting when there is an inability of a retrieval cue to activate a memory code (the neural representation of stored information) because it overlaps with other memory codes.
41. **C**—Priming refers to an increased sensitivity to certain stimuli due to prior experience. Priming is believed to occur outside of conscious awareness, which makes it different from memory that relies on the direct retrieval of information and interfere with reconstructive memory. The subject of this experiment is proactive interference on the recall of eyewitness events. The difference between this group and the others was that they were primed with the word “smashed” in the questionnaire. By changing one word in the questionnaire, their memories were re-encoded with new details.
42. **C**—The serial position effect is the tendency of a person to recall the first and last items in a series best, and the middle items worst. When

asked to recall a list of items in any order (free recall), people tend to begin recall with the end of the list, recalling those items best (the recency effect). Among earlier list items, the first few items are recalled more frequently than the middle items (the primacy effect).

43. **C**—The most widely accepted reason for the primacy effect is that the initial items presented are most effectively stored in long-term memory because of the greater amount of processing devoted to them. (The first list item can be rehearsed by itself; the second must be rehearsed along with the first, the third along with the first and second, and so on.) The primacy effect is reduced when items are presented quickly and is enhanced when presented slowly (factors that reduce and enhance processing of each item and thus permanent storage).
44. **D**—There are three main types of memory recall: free recall, serial recall, and cued recall. Retrieval cues are stimuli that help you retrieve a certain memory in cued recall.
45. **B**—The method of loci uses visualizations with the use of spatial memory, familiar information about one’s environment, to quickly and efficiently recall information. In this technique the subject memorizes the layout of some building, or the arrangement of shops on a street, or any geographical entity which is composed of a number of discrete loci. When desiring to remember a set of items the subject ‘walks’ through these loci in their imagination and commits an item to each one by forming an image between the item and any feature of that locus. Retrieval of items is achieved by ‘walking’ through the loci, allowing the latter to activate the desired items. The success of the method is based on utilizing the resistance to decay and ease of recall in visual and spatial memory as a tool to encode semantic information in long-term memory. Choices ‘II’ and ‘III’, levels of processing and elaborative rehearsal, are primarily concerned with improving memory of semantic information by forming more durable

memory traces through deeper semantic processing.

- 46. A**—The left inferior prefrontal cortex is central to semantic memory. The hippocampus and the left posterior temporal areas (including Wernicke’s area) are other areas involved in semantic memory.
- 47. D**—The truth effect can consistently be observed even in the absence of explicit recollection. This nonreferential, implicit part of the truth effect that is thought to be driven by processing fluency (the metacognitive experience of ease during information processing). Explicit memory is not necessary for the effect, which is why it has been termed the illusory truth effect.
- 48. D**—Previous attempts at the puzzle created memory traces in procedural memory of the same efficacy in both groups. This was not the case for declarative memory.
- 49. C**—This is the process dissociation framework of L. L. Jacoby, a procedure to separate the contributions of different types of processes to performance of a task, employed in the false fame experiment. Theoretically, the probability of saying “yes” in the exclusion condition is the probability of the name being remembered only unconsciously. The probability of saying “yes” in the inclusion condition is the probability of a name being remembered either consciously or unconsciously. Comparison of these two yields an estimate of conscious influences, in this case distinguishing the performance of implicit and explicit memory.
- 50. C**—Habituation is a decrease in response to a benign stimulus when the stimulus is presented repeatedly, a form of non-associative learning occurring subconsciously in implicit memory.