NAME:_______________________________________________________________________

East Carolina University
PSYC 3206 -- Developmental Psychology
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Study Questions for Chapter 8:
Memory and Information Processing


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THIS MODULE HAS 142 QUESTIONS.

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<th>Learning Objectives</th>
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<td>• Be able to define the information processing approach to learning and memory</td>
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<td>• Be able to list, identify important characteristics and recognize examples of the three aspects of memory described by Atkinson and Shiffrin.</td>
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<td>• Be able to define and recognize examples of encoding, storage and retrieval, including recognition, recall and cued recall</td>
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<td>• Be able to state what is known about infants' recognition, recall and cued recall memory; be able to define habituation and relate it to infants memory abilities</td>
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<td>• Be able to explain and recognize examples of memory strategies including: rehearsal, chunking, organization, elaboration</td>
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<td>• Be able to state at what approximate ages children use these strategies</td>
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<td>• Be able to define and recognize examples of utilization deficiency.</td>
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<td>• Be able to define and recognize examples of metamemory</td>
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<td>• Be able to state the results and implications of Michelene Chi's research on memory of child chess experts</td>
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<td>• Be able to summarize the results of research on children's eyewitness memory and its implications for professionals such as nurses, social workers, etc.</td>
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<td>• Be able to state Robert Siegler's general finding about children's problem solving skills and how his theory of problem solving development differs from Piaget's</td>
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<td>• Be able to describe Brown and Smiley's findings on how adolescents' study skills differ from those of children.</td>
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<td>• Be able to describe Miller and Weiss's findings on the development of memory for relevant and irrelevant material and relate this to the development of selective attention.</td>
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<td>• Be able to list the five important points to remember in evaluating research on learning and memory in elderly</td>
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<td>• Be able to state how the following influence cognitive performance in elderly persons: timed tasks, unfamiliar tasks, unexercised skills, recall v. recognition,</td>
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 implicit v. explicit tasks, knowledge base, metamemory, memory strategies, basic processing capacity, sensory changes, contextual contribution, motivation

The Information Processing Approach

1. An approach to human cognition based on the computer model is called the _______________ approach.

2. The computer's hardware, the machine itself, is analogous to the mind's hardware, which includes:

3. The computer's software, or the programs you run on the computer, is analogous to the mind's software which includes:

Memory systems

4. Atkinson and Schiffrin, in their model of memory, proposed that human memory includes three components. List these:

5. The part of memory that holds a stimulus exactly as you perceived it for a fraction of a second is known as the ____________ register.

6. The part of memory that holds a limited amount of information for a few seconds, long enough to do something with the information is called ______________ memory and is also known as ___________ memory.

7. If you look up a phone number and remember it long enough to dial it (and then usually forget it), you are using ____________ memory.

8. If you're talking to a friend and you remember exactly what they said long enough to comprehend it and say something in reply, you are using ____________ memory.

9. The active form of short term memory is called ____________.

10. Baddeley defines working memory as:

11. Describe the example in the text that illustrates working memory.
Now try a different task. Read the numbers out loud and ask someone to repeat them to you. How many did they get right? What does this task measure?

NOTE: This task is called the **digit span task** and will be referred to several times in this chapter. How hard would the task be if there were 15 digits? How many digits do you think a person would be likely to recall?

NOTE: Remember that working memory is one type of short term memory and not a separate category in Atkinson and Schiffrin's model. Although cognitive psychologists distinguish between working and other types of short term memory, in most of this chapter, the authors use the terms interchangeably.

12. The relatively permanent store of information (what most people mean by memory) is called __________ memory.

13. If I ask you to tell me your social security number, you retrieve that information from __________ memory.

14. If I tell you my phone number and you remember it long enough to write it down, you are using __________ memory.

15. If someone coughs while I'm telling you my phone number, you may hear the cough but a second later have no recollection of having heard it. The cough entered your __________ but did not reach __________ memory.

16. Getting information into the memory system and moving it from sensory register to short term memory (STM) and on to long term memory (LTM) is called __________.

17. Holding information in LTM is called __________.

18. The process of getting information out of LTM is called __________.

NOTE: The authors mentioned a fourth process, consolidation but then rarely mention it again in the chapter. We chose to omit it here.

19. The third stage in Piaget's theory is:
   a) sensorimotor b) preoperational c) concrete operational d) formal operational.

20. To answer this question you need to use __________ memory. In other words, you simply have to __________ the correct answer.

21. The fourth stage in Piaget's theory is the __________ stage.

To answer this question you must use __________ memory.
22. The first stage in Piaget's theory is the sen______________ stage.

Answering this question would require______________. In other words, you have a hint to remind you of the correct answer.

**NOTE**: Never forget Chapter 7! Piaget will come up again and again.

23. Rank these three types of retrieval in order of difficulty, from easiest to hardest.

24. You have stored much information in your memory that you may have difficulty retrieving without ____________.

25. You may not remember the name of your second grade teacher if I ask you but what could you do to help yourself remember it?

26. If you saw your teacher in your hometown and suddenly remembered his or her name, this would be an example of ____________ recall.

27. When I see students at restaurants or in stores, I often have trouble remembering their names. (Don't feel bad if this happens...it's not just you.) In the classroom, I would be able to recall the student's name. Outside of the classroom, I don't have the necessary ____________ to retrieve the name.

Students, on the other hand, often study material for a quiz to the point that they think they would be able to find the right answer when they see it. If faced with a fill-in-the-blank question, however, their mind goes blank. These students remember the material at the level of ____________ memory but need to study more to be able to remember the material if asked to ____________ it. Here's a useful hint: the best way to study for a multiple choice test is to study as if you were going to have an essay test. Believe it or not!

**Implicit and Explicit Memory**

28. Long term memory works differently depending on whether the task requires ____________ or ____________ memory.

29. Implicit memory refers to memory that:

30. Explicit memory refers to memory that:
31. The textbook describes a procedure known as priming which assesses implicit memory. Describe this procedure.

32. If an individual was given a list of words such as orange, tablet, forest and asked to memorize the words, this task would require ___________ memory. If the person were shown the words but not asked to memorize them and then asked to complete partial words like tab___, this task would measure ______________ memory.

33. H.M. was an epileptic patient who had a portion of the hippocampus area of his brain removed in an attempt to control the epilepsy. As a result, he suffered from memory problems. He could learn new things by practice as in the case of the Tower of Hanoi puzzle (stacking graduated disks on pegs). He practiced on the puzzle for weeks and could solve it more quickly over time. However, when a doctor commented on his improvement one day, H.M. replied, "I've never seen this puzzle before." As often happens with other amnesics, H.M. still had ___________ memory reflected by the fact that he could learn to work the puzzle. However, he lacked ___________ memory since he had no recollection of working the puzzle before.

34. As adults get older explicit memory ______ (gets better; stays the same; gets worse).

35. As adults get older, implicit memory ______ (gets better; stays the same; gets worse).

Problem Solving

36. The executive control processes:

37. Give an example of a task that requires problem solving.

What are some reasons that young children have difficulty in problem solving?

The infant

Memory

Imitation

38. Meltzoff observed newborn infants imitating adults by ______________.
39. At what age does this occur? ________ What happens to the imitation as the infants gets older.

40. Why was Meltzoff’s observation exciting to developmental psychologists?

41. What is deferred imitation and when is it observed in infants?

Habituation

42. Habituation is:

Infants _________ to repeatedly presented lights, sounds, and smells.

(NOTE: Remember Chapter 6?)

43. Infants can often drift off to sleep in spite of noise from vacuum cleaners, TVs and noisy siblings. By tuning out these repetitive stimuli, the infant is demonstrating the process of ____________.

44. The fact that newborns stop paying attention to familiar stimuli and pay more attention to novel stimuli suggests that newborns have ______________ memory. Remember Chapter 1: what is a newborn?

45. As infants get older, they habituate to a stimulus ____________ and for _________ periods of time.

Operant Conditioning

46. Carolyn Rovee-Collier demonstrated that infants have cued recall memory. Describe the study that she did and explain how that demonstrates the ability to recall.

47. In this example of operant conditioning, the response was ________ and the reinforcer was _________________.

48. How long did Rovee-Collier find that 2 month olds can recall?

49. Three month olds?

50. Six month olds?
51. Two month olds remember the mobile longer if instead of 2 9-minute training sessions, they receive ___________. Relate this to your study behavior in this class. You can remember the material longer if you:

52. Infants recall memory is better if they have _________ for recall.

53. Cued recall first appears in infants:

54. Infants recall for the mobile is worse if:

55. This suggests that infant's early memories are ______________ or ________________.

56. Relate this concept to your performance on quizzes in this class. If you memorize a definition as it appears on version 1 of the quiz and then the same word is given a slightly different definition on quiz 3, what happens?

57. What are some ways to overcome this problem? (Hint: Knowing how memory works could help you become a better student if you work to apply it to yourself.)

Recall

58. When does non-cued recall appear in infants?

59. Describe evidence for recall in young children.

60. Infants (and adults) remember better if:

61. Relate these three principles to your study strategies for this class.

Problem solving
62. Give an example of problem solving in infants. At what age is this first observed?

**The Child**

*Explaining Memory Development*

63. Flavell and Wellman propose four theories about why older children remember things better than younger children do. List the four theories and briefly explain each one.

Now we'll look at each in more detail.

*Do basic capacities change?*

64. The storage capacity of long term memory seems to be well developed by what age?

**True**  **False** The capacity of sensory registers increases substantially as children get older.

65. Robbie Case suggests that children's memories improve as they get older because:

66. If you read a list of random numbers and ask a child to repeat the list back to you immediately, you are testing:

Remember this task from earlier in the module? It's called the ______________ test and is frequently found on IQ tests.

67. How many digits would you expect someone to remember if they were in early childhood? In adulthood?

68. Another suggestion for the memory problems of young children is that mental processes are less automatic than they are for older children. Tasks that are more automatic can be performed with ________________.

69. A fourth grader who knows his multiplication tables will be able to remember the digits 2, 3 and 6 and to multiply 2 x 3 x 6 more easily than a third grader who has not learned the times tables. This supports the idea that the older child's memory is better because the mathematical operations being performed are more ____________.
70. What are some reasons that memory improves with age?

Do memory strategies change?

71. What memory strategies do preschoolers use (for instance if you asked them to try to remember which toys out of a set you just pointed to.)

72. Preschoolers rarely repeat the names of to-be-remembered items over and over again. In other words they do not use the strategy of __________.

73. At what age do most children use this strategy in memory tasks?

74. The memory strategy called organization involves:

75. What strategy would you use to recall the following list of words?

automobile
basketball
carrot
baseball
celery
airplane
soccer
celery
basketball
potato
motorcycle
hockey
lettuce
helicopter
shuffleboard
grapefruit

cucumber

duck

76. Try this list on someone and see how he or she recalls the words. Look at the difference between the order in which they recall the words and the order in which you read them. What memory strategy are they using?

77. At what age would you expect children to begin using organization?

78. What strategy would a 7 or 8 year old use?

79. One type of organization strategy is called "chunking." What is chunking?
80. John Flavell once asked children how they would try to remember a phone number. One third grader said that she would remember the number 646-8854 by thinking that first three numbers were the same as her number, and then thinking that she'd remember her age twice and her little brother's age and how old he was last year. This child is using the strategy known as ______________.

81. Elaboration is a memory strategy that involves:

82. If you recall that "sacrum" is a bone in the back by imagining carrying a "sack of crumbs" on your back, you are using the __________ strategy.

83. Give another example of this strategy from your textbook.

**NOTE:** The elaboration strategy is rarely used spontaneously until adolescence and probably depends in part on training. See note below.

84. In what order do the mnemonic strategies develop and at what ages?

In fact, elaboration is one of the most effective strategies for remembering information and one of the least often used. Many people rely on rehearsal which is fine for information like phone numbers that you have to learn verbatim and that usually have little meaning. In contrast, more complex and meaningful information requires more than rehearsal, especially if you are being tested for comprehension as well as recall. Think about memorizing Piaget's stages for Module 7. You can do this by repeating the stages over and over again or by using ______________. You can also use elaboration. One form of elaboration involves visual imagery to connect information. Ault (1983) suggested that you could remember that the third stage of Piaget's theory is the stage of concrete operations by visualizing three surgeons performing an operation on a slab of concrete (using jackhammers instead of scalpels). This rather startling image sticks in your mind and you tend to remember the important elements: three, concrete and operation. Similarly, how would you remember that the fourth stage is the stage of formal operations?

Although we are rarely trained to use elaborative processing to remember information, there is lots of research to demonstrate that it is much more effective than rehearsal. One of the things you can gain from this chapter is some insight into how you might be able to use the strategies of organization and elaboration to improve your learning. Your tutor is learning about these techniques and can help you develop these further.

85. Patricia Miller describes steps that children go through in learning to use mnemonic strategies. Describe these four steps.
86. Why might a child use a mnemonic strategy but not improve his or her memory?

87. When you try a new study strategy that a friend or instructor recommends, do you ever find that it doesn't work? If so, why do you think this happens? How could you learn to use the strategy more effectively?

88. Using a technique to pull information out of long term memory involves using ______________strategies.

89. Retrieval often involves looking for ________.

90. Pressley and Levin found that young children can be taught to use elaboration strategies but still don't remember well because:

91. Young children rely on __________ cues for encoding and retrieval. Give an example of this strategy.

92. Older children become more likely to use internal cues. Give an example of how you might use an internal cue, for instance to retrieve some lost keys.

93. Metamemory is defined as:

94. Give an example of what 2-4 year olds know about memory.

95. True False When asked to estimate their memory skills, preschoolers can do so very accurately.

96. Children make fairly accurate estimates of their memory ability by age 6.

97. Both memory and metamemory improve with age, but whether metamemory helps the improve a child's memory depends on:

98. Much of what we study in this chapter is information you already know although you may not use the same terminology. You know something about the duration of short term memory
because you know that if you look up a phone number and the doorbell rings before you can dial it that you will have to look the number up again when you finally get around to making the call. This knowledge is part of your ______________.

99. Critical Thinking Question: Try to think of an example of something you've learned about how your memory works from studying for this course (or another course). How has this knowledge helped you to study more effectively?

**Does knowledge of the world change?**

100. Your knowledge base refers to:

101. Learning new information about a topic you are familiar with is easy because:

102. In Micheline Chi’s experiment, what two types of people did she test? What two tasks were they given and what were the results?

103. What are the implications of Chi's findings?

**NOTE:** In the book, they refer to children as novices. In Chi’s study, children were the experts and adults the novices. What is a novice?

This is a case where students may miss a question because they are not familiar with a vocabulary word. Look it up if you're not familiar with this word. Hint: Something that is novel to you is ______________. A novice is someone who is ________________ with an area.

104. What four conclusions can we draw about the development of memory?

**Autobiographical Memory**

**When Do Autobiographical Memories Begin?**
105. Remembering your "Sweet Sixteen" birthday party would be an example of ________________.

106. Children have few autobiographical memories before the age of 2-3. This is referred to as ________________.

**NOTE**: There are many hypotheses about what causes childhood amnesia. The upshot is that we don't have a clue what causes this. If you are interested in this topic, feel free to read about it but don't worry about memorizing all these different theories.

**Scripts**

107. Scripts refer to:

108. What might a young child's script be for going to a birthday party for a friend?

**Eyewitness Memory**

109. How do scripts influence memory for a particular event, e.g., last Thursday's trip to McDonald's or Jessica's 4th birthday party.

110. Reporting events that you have witnessed is called ________________.

111. Why are psychologists interested in eyewitness memory?

112. How is eyewitness testimony affected by age?

113. What things besides age effect the accuracy and amount of eyewitness memory?

114. What does this suggest for teachers, social worker, nurses or parents who are involved with a child who is suspected of having been abused?
**Problem Solving**

115. Robert Siegler uses the ________________ approach in his research on the development of problem solving skills.

116. Siegler has found that most children in any age group use __________ strategies for solving problems, such as the balance beam problem or math problems such as subtraction.

117. As children get older they use ______________ strategies less and ______________ strategies more.

118. If children at all ages have multiple strategies available to them, what two factors determine which strategy they will use on a particular problem?

119. How does Sigler's approach to understanding problem solving differ from Piaget's?

**The Adolescent**

**Strategies**

120. What memory strategies develop during adolescence?

121. What changes did Brown and Smiley observe in the study skills of children between 5th grade and high school?

122. In addition to using more sophisticated memory strategies than younger children, adolescents are more likely to use these strategies ____________ and ____________.

123. Briefly describe the results of the study by Miller and Weiss, illustrated in Figure 8.8 on p. 232 in your textbook.

124. What do Miller and Weiss's results say about the development of selective attention, as well as memory?
125. Relate Miller and Weiss's findings to information learned in Chapter 6 and Chapter 7.

**Metamemory**

126. What changes develop in metamemory during adolescence?

**The Adult**

*Developing expertise.*

127. Information processing research suggests that adults function best in areas in which:

128. It takes about how long to develop expertise in an area?

129. What effect does expertise in an area have on memory for information in that field?

130. How does expertise affect problem solving skills?

**Memory and Aging**

*Explorations: Forgetting: What's normal and what's not?*

131. Look at the data presented from the study by Carlesimo et al. Compare the results for digit span versus delayed recall. What does that tell us about the effects of Alzheimer's disease on memory?

132. What does the comparison between results for very old adults versus (younger) Alzheimer's patients tell us?

133. What three things does Green suggest we look for in determining if an elderly person's memory problems are abnormal?

134. What factors can prevent memory loss in the elderly?

**Areas of strength and weakness**
135. Much evidence suggests that learning and memory is more difficult for older people than for younger people. However, your text describes 5 important things to remember about this research. List them:

136. Discuss the effects of the following on older people's cognitive performance:

a. Timed tasks:

b. Unfamiliar context and artificial task:

c. Unexercised skills:

d. Recall versus recognition tasks:

e. Explicit memory tasks:

**Explaining Declines in Old Age**

137. How is memory in elderly people affected by:

a) knowledge base

b) metamemory (their beliefs about their memory)
c) memory strategies

d) basic processing capacities

e) sensory changes

f) contextual contributions (including cohort differences, diseases, motivation, and kinds of tasks)

138. The memories of older adults work better if what things are true?

**Problem Solving and Aging**

139. Compare the responses of children, adults and elderly people on Denney's Twenty Question task.

140. Older people perform more like younger adults on the Twenty Questions task when what is true?

**Applications: Improving Memory and Study Skills**

141. Lange and Pierce tried training 4 and 5 year olds to use organization memory strategies. What effect did this training have?

142. Studies such as those by Hattie, Biggs, & Purdie with elementary school aged children show that mnemonic training has what effect on children of that age?
143. Memory and problem solving become very difficult for some elderly people, particularly those suffering from some form of dementia, such as Alzheimer's disease. Your book suggests some ways in which we can help elderly people to maintain their memory and some ways in which we can modify elderly people's environment to lessen their memory problems. Describe an example of three of these or generate some ideas of your own.