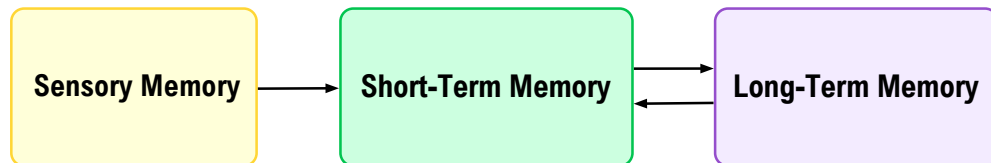## TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Introduction to the Three Box Model

◆ **Three-Box Model**: Model for memory storage that involves _____ stages.

- Information flows sequentially through each stage.
- Each stage is likened to a "_____" that holds our memories.

| Sensory Memory | → | Short-Term Memory | ⇄ | Long-Term Memory |

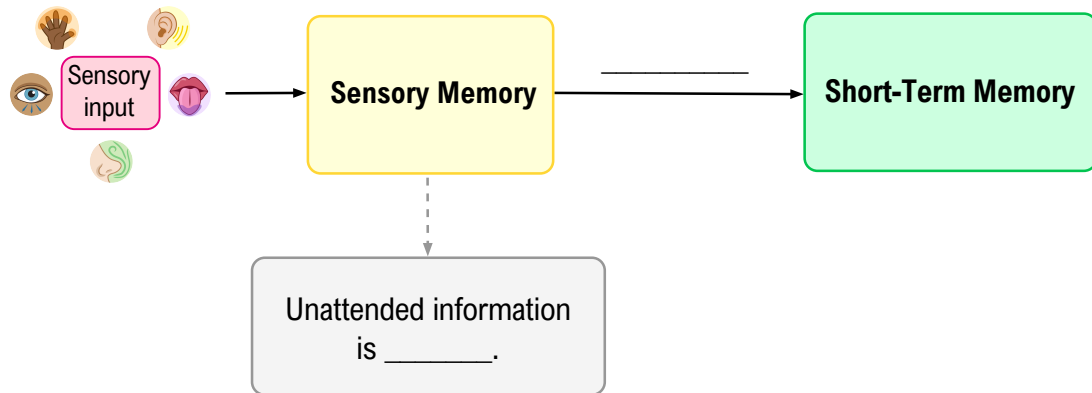## TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Sensory Memory

◆ **Sensory Memory**: Stage of storage that deals with incoming sensory _____.

- ▸ Retains stimuli for _____ than a few seconds.
  - Visual Stimuli: _____ a second.
  - Auditory Stimuli: Less than _____ seconds.

Sensory input → Sensory Memory → _____ → Short-Term Memory

Unattended information is _____.

Sensory memory holds on to incoming information for an incredibly short period of time. Why is this advantageous?

_____

_____

_____

Which of the following statements about sensory memory are true?

- I) Irrelevant stimuli are forgotten virtually immediately.
- II) Auditory stimuli are generally retained for longer than visual stimuli.
- III) Information that you pay attention to moves to short-term memory.
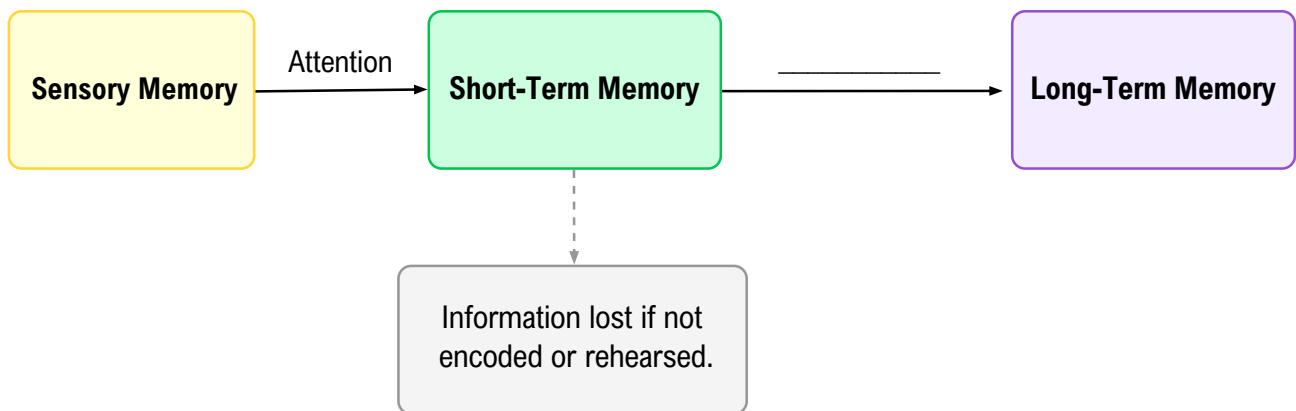
a) I & II.   b) I & III.   c) II & III.   d) I, II, & III.

TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Short-Term And Working Memory:

◆ **Short-Term Memory**: Temporary storage that holds information for about _____ seconds.

◆ **Working Memory**: The _____ manipulation of information in short term memory.

◆ Short-term memory is limited in how _____ information it can hold.

- Historically believed to be ___ items ± ____ (Miller, 1965).

- Now believed to be _____ items ± ___ (Cowan, 2010).

```
┌──────────────────┐   Attention   ┌──────────────────┐   _____   ┌──────────────────┐
│                  │ ────────────→ │                  │ ────────────→  │                  │
│  Sensory Memory  │               │ Short-Term Memory│                │ Long-Term Memory │
│                  │               │                  │                │                  │
└──────────────────┘               └──────────────────┘                └──────────────────┘
                                             ┊
                                             ↓
                                    ┌──────────────────┐
                                    │ Information lost if not │
                                    │ encoded or rehearsed. │
                                    └──────────────────┘
```

EXAMPLE

The terms 'short-term memory' and 'working memory' are sometimes used interchangeably, but they are distinct

concepts. Briefly explain the difference between them.

_____

_____

_____

PRACTICE

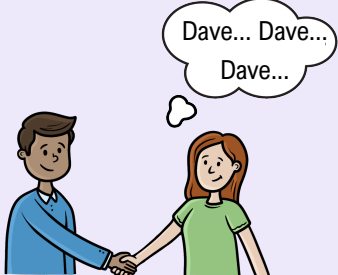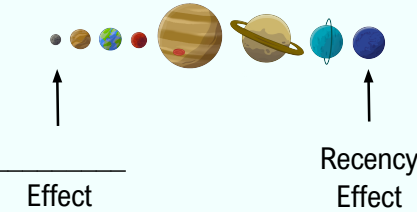True or False: if false, choose the answer that best corrects the statement.

Short-term memory is the first step in the three-box model.

_____

a) True.

b) False, short-term memory is the second step in the three-box model.

c) False, short-term memory is the third step in the three-box model.

d) False, short-term memory is part of the first *and* third steps of the three-box model.

TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Short-Term and Working Memory Capacity

◆ Strategies can increase short-term/working memory _____:

Rehearsal	Serial Position Effect	Chunking
Mental repetition of information to _____ it in short term memory.	Tendency to recall the _____ and _____ items on a list more than the items in the middle.	Grouping pieces of information into a _____ meaningful unit.

Rehearsal speech bubble: Dave... Dave... Dave...

Serial Position Effect: _____ Effect   Recency Effect

Chunking Note: Our 4 ± 1 capacity refers to chunks! — 2020 CALENDAR

◆ These strategies can be applied consciously or unconsciously.

◆ Additional factors to consider:

  ▸ Expertise in a subject can _____ capacity.

  ▸ Attention/interest can _____ capacity.

  ▸ Physical discomfort (ex: being tired, hungry, or stressed will _____ capacity).

EXAMPLE

For each situation below, determine which strategy to improve working memory is being used. If no strategy is being used, write NA.

a. Ed memorizes an account verification code by breaking it into 3 two-digit numbers instead of 6 one-digit numbers.

   _____

b. Joann notices a blue jay as she is walking to the bus stop. _____

c. While walking to her dorm, Imani mentally repeats a list of four items she needs to put in her bag when she gets home. _____
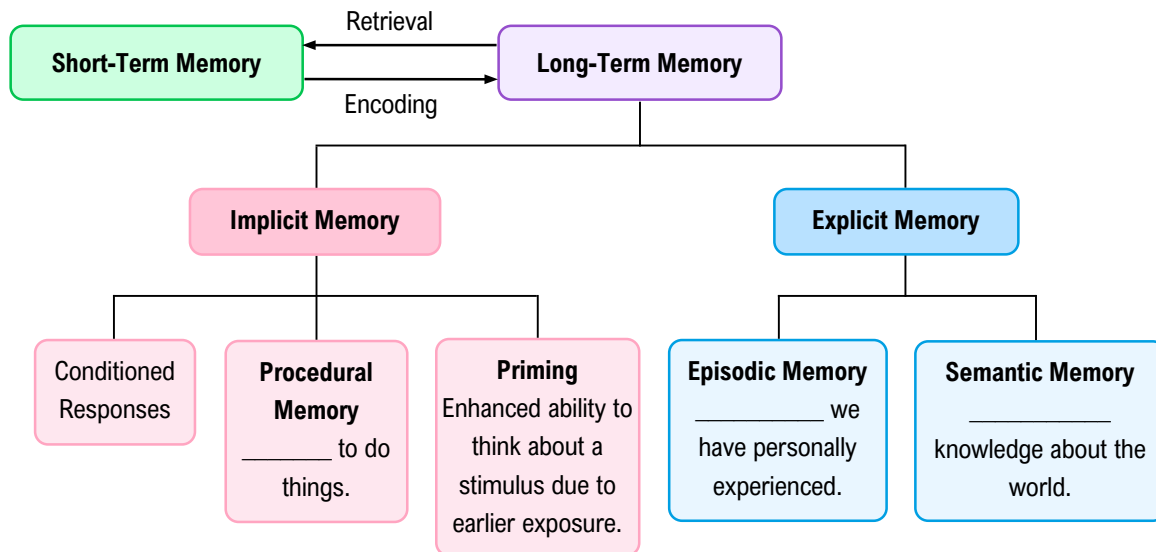

PRACTICE

Which of the following is NOT true of short-term memory?

a) Commonly impacted by the serial position effect.

b) It can hold a limited amount of information.

c) Typically holds information for a short length of time.

d) Can only process visual stimuli.

TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Long-Term Memory

◆ **Long-Term Memory**: Storage of _____ information over long periods of time; near-limitless capacity.

◆ Long-term memory can be divided into categories:

  ▸ **Implicit (Non-declarative) Memory**: Influences thoughts and behaviors _____ conscious awareness.

  ▸ _____ **(Declarative) Memory**: Memories we can consciously retrieve.

```
Retrieval
┌──────────────────┐ ←──────── ┌──────────────────┐
│ Short-Term Memory│           │ Long-Term Memory │
└──────────────────┘ ────────→ └──────────────────┘
          Encoding
```

Implicit Memory			Explicit Memory	
Conditioned Responses	**Procedural Memory** _____ to do things.	**Priming** Enhanced ability to think about a stimulus due to earlier exposure.	**Episodic Memory** _____ we have personally experienced.	**Semantic Memory** _____ knowledge about the world.

Match each situation below to the type of explicit memory that it describes. Write the letter of the statement in the appropriate box.

a. Remembering your 12th birthday.

b. Knowing the quadratic formula.

c. Memories of your childhood dog.

d. Knowing the main character of *Pride and Prejudice*.

e. The mitochondria is the powerhouse of the cell.

f. Your first kiss.

Episodic Memory: _____

Semantic Memory: _____

TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Which of the following is NOT a type of implicit memory?

a) Classical Conditioning.

b) Episodic Memory.

c) Priming.

d) Procedural Memory.

Which of the following terms are matched correctly?

a) Implicit memory: unconscious.

b) Semantic memory: unconscious.

c) Episodic memory: unconscious.

d) Nondeclarative memory: conscious.

TOPIC: STORAGE-THE THREE-BOX MODEL OF MEMORY

Organization of Long-Term Memory

◆ **Associative (semantic) networks**: Networks consisting of _____ that represent interrelated concepts.

- More frequent association = _____ link between concepts.

- Activating one node makes related nodes _____ to retrieve.

◆ _____ to each individual, but we do see overlap with common factual and cultural information.
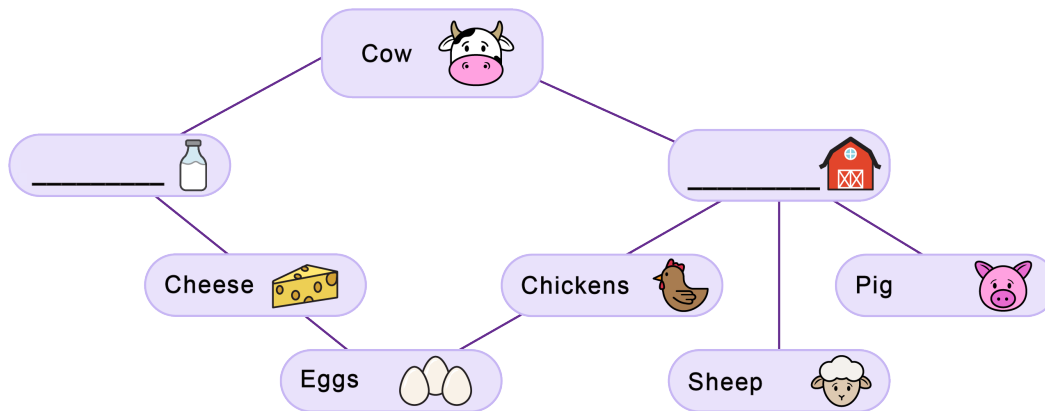
True or False: if false, choose the answer that best corrects the statement.

In associative networks, activating a node makes it more difficult to access related nodes.

a) True.

b) False: In associative networks, activating a node does not impact related nodes at all.

c) False: In associative networks, activating a node makes it easier to access related nodes.

d) False: In associative networks, activating a node makes it easier to access unrelated nodes and concepts.