**Cognition Review**

**Metacognition:** thinking about thinking

**Cognition:** all of the mental activities associated with thinking, knowing, remembering, and communicating.

**Concepts:** a mental grouping of similar objects, events, ideas, or people. Concepts can be grouped by:

1. **Definitions:** some concepts fit into a group because of their definition. Ex. by definition, a triangle has 3 sides
2. **Hierarchies:** breaking things down from broad to specific. Superordinate (broad category), basic (most common), or subordinate (specific) Ex. Fruit > apple > Granny Smith
3. **Prototypes:** a mental image of best example of a category. Ex. most people think of a robin, as opposed to a flamingo, when they hear the word “bird”.

**Schemas:** an organized mental framework about a particular topic, event, object, idea, setting, or group of people.

**Problem solving methods:**

1. **Trial and error:** just trying any method to solve an answer. Ex. typing in random numbers to figure out a pin number for an ATM card.
2. **Means-end analysis:** breaking a problem into subgoals in order to reach the ultimate goal. Ex. wanting to run a marathon, but you don’t go out the first day and run 20 miles. You have to start small, set a goal for a 5K, then a 10K, etc.
3. **Algorithm:** a logical, step-by-step procedure that, if followed correctly, will eventually solve a specific problem. Ex. typing in 0000, 0001, 0002, 0003, etc. to figure out a pin number for an ATM card.
4. **Heuristic:** a general rule of thumb or shortcut that is used to reduce the number of possible solutions to a problem. Ex. using birthdays for a pin number.
5. **Insight:** just coming up with the answer, the “aha” moment

**Obstacles to problem solving:**

1. **Fixation:** having a preoccupation with something, not being able to stop thinking of it.
2. **Mental set:** the tendency to continue using belief systems and problem-solving strategies that have worked in the past, even though it may not be working now.
3. **Functional fixedness:** the tendency to think of an object as functioning only in its usual way or customary way. As a result, individuals often do not see unusual or innovative uses of familiar objects.
4. **Availability heuristic:** judging the likelihood of an event based on readily available personal experiences or new reports. Ex. not wanting to fly after 9/11.
5. **Representative heuristic:** judging the likelihood of an event based on how well it matches a typical example. Ex. Not thinking a tall, skinny man who likes to read would be a truck driver.
6. **Anchoring effect:** the tendency to be influenced by a reference point. Ex. only buying a car because it’s the color you want even though it has a lot of miles.
7. **Framing:** posing a question or wording a phrase in such a way to persuade someone’s thoughts. Ex. buying something because it’s 95% fat free sounds better than 5% fat.
8. **Bias:** having preexisting positions or beliefs about events, people, etc.
9. **Confirmation bias:** a preference for information that confirms preexisting positions or beliefs, while ignoring or discounting contradictory evidence. Ex. only looking at good reviews of something you want.
10. **Belief perseverance:** holding onto a belief even after its been discredited. Ex. believing that fad diets work.
11. **Hindsight bias:** also known as the knew-it-all-along effect, the inclination to see events that have already occurred as being more predictable than they were before they took place
12. **Overconfidence bias:** the tendency to be more confident than correct. Ex. Hitler thinking he could invade Russia when no one else has ever successfully done it.
13. **Exaggerated fear:** being overly fearful of something to the point of a phobia. Availability heuristic plays a part in this.

**Critical Thinking:**

1. **Brainstorm:** coming up with new ideas.
2. **Creativity:** the ability to think about a problem or idea in new and unusual ways, come up with unconventional solutions to problems.
3. **Divergent thinking:** a type of thinking in which problem solvers devise a number of possible alternative approaches to problems and multiple solutions, it involves taking risks.
4. **Convergent thinking:** using logic and algorithms to solve problems, there is only one answer, doesn’t see things from various perspectives.
5. **Inductive reasoning:** reasoning from the specific to the general. Ex. evidence collected in crime scenes is used to figure out what happened.
6. **Deductive reasoning:** reasoning from the general to the specific. Ex. all birds have wings, a flamingo is a bird, therefore, it has wings.