1 General Learning Principles

1. Why is effortful learning more effective than passive rereading?
    - Effortful learning strengthens memory and retention by requiring active engagement, such as retrieval practice, which creates stronger neural connections compared to passive rereading.
2. What are the drawbacks of massed practice (cramming)?
    - Massed practice provides short-term gains but leads to rapid forgetting. It lacks spacing and interleaving, which are critical for long-term retention and versatile application of knowledge.
3. How does retrieval practice improve learning?
    - Retrieval practice (e.g., self-quizzing) reinforces memory, identifies gaps in understanding, and makes knowledge more accessible for future use compared to simply reviewing material.

2 Effective Study Strategies

4. What is the benefit of spaced practice?
    - Spaced practice allows time for forgetting between sessions, making retrieval more effortful and strengthening long-term retention. It also leverages memory consolidation processes, like sleep.
5. How does interleaving enhance learning?
    - Interleaving mixes different topics or problem types during study, improving the ability to discriminate between concepts and apply the correct solutions in varied contexts.
6. Why is it helpful to attempt solving problems before learning the solutions?
    - Generating answers or solutions before instruction activates prior knowledge, primes the brain for learning, and makes the correct solutions more memorable.

3 Overcoming Illusions of Mastery

7. What is an “illusion of knowing,” and how can it be avoided?

- An illusion of knowing is the false belief that familiarity with material (e.g., from rereading) equals mastery. It can be avoided by self-testing, elaboration, and seeking objective feedback (e.g., peer review).

8. Why is confidence in a memory not a reliable indicator of accuracy?

    - Confidence can be influenced by factors like repetition or emotional intensity, not just factual correctness. Testing and external validation are better indicators of true mastery.

4 Advanced Techniques

9. How does elaboration deepen understanding?

    - Elaboration involves connecting new material to existing knowledge, explaining it in your own words, or creating metaphors. This builds multiple mental cues for retrieval and application.

10. What is dynamic testing, and how does it work?

    - Dynamic testing involves three steps: identifying knowledge gaps, dedicating effort to improve (using effective strategies), and retesting to measure progress and pinpoint remaining weaknesses.

11. How can mnemonics like the “memory palace” aid learning?

    - Mnemonics organize information into familiar structures (e.g., locations, rhymes, or images), making it easier to encode and retrieve complex material.

5 Mindset and Habits

12. What is the difference between a growth mindset and a fixed mindset?

    - A growth mindset believes abilities can be developed through effort and learning, while a fixed mindset sees abilities as innate and unchangeable. A growth mindset fosters resilience and better learning outcomes.

13. What is deliberate practice, and how does it differ from regular practice?

    - Deliberate practice is goal-oriented, focused on specific weaknesses, and involves feedback. Unlike repetitive practice, it pushes boundaries and is often less enjoyable but more effective for mastery.

14. How can reflection be used as a learning tool?

    - Reflection combines retrieval and elaboration by reviewing experiences, asking what worked or didn't, and connecting lessons to other knowledge. It solidifies learning and improves future performance.

6 Application

15. How would you design a study session using principles from *Make It Stick*?

    - Include spaced retrieval practice (self-quizzing), interleave topics, attempt problems before checking answers, elaborate on key ideas, and reflect on progress and gaps.

16. Why is it important to continue testing yourself on material you've already mastered?

    - Periodic retrieval prevents forgetting and maintains "habit strength." Mastered material can fade without occasional review, leading to the "familiarity trap."

17. How might you apply these learning strategies outside academics (e.g., in a job or hobby)?

    - Use retrieval practice (e.g., recalling procedures without notes), space skill practice, interleave tasks, seek feedback, and reflect on experiences to improve performance.