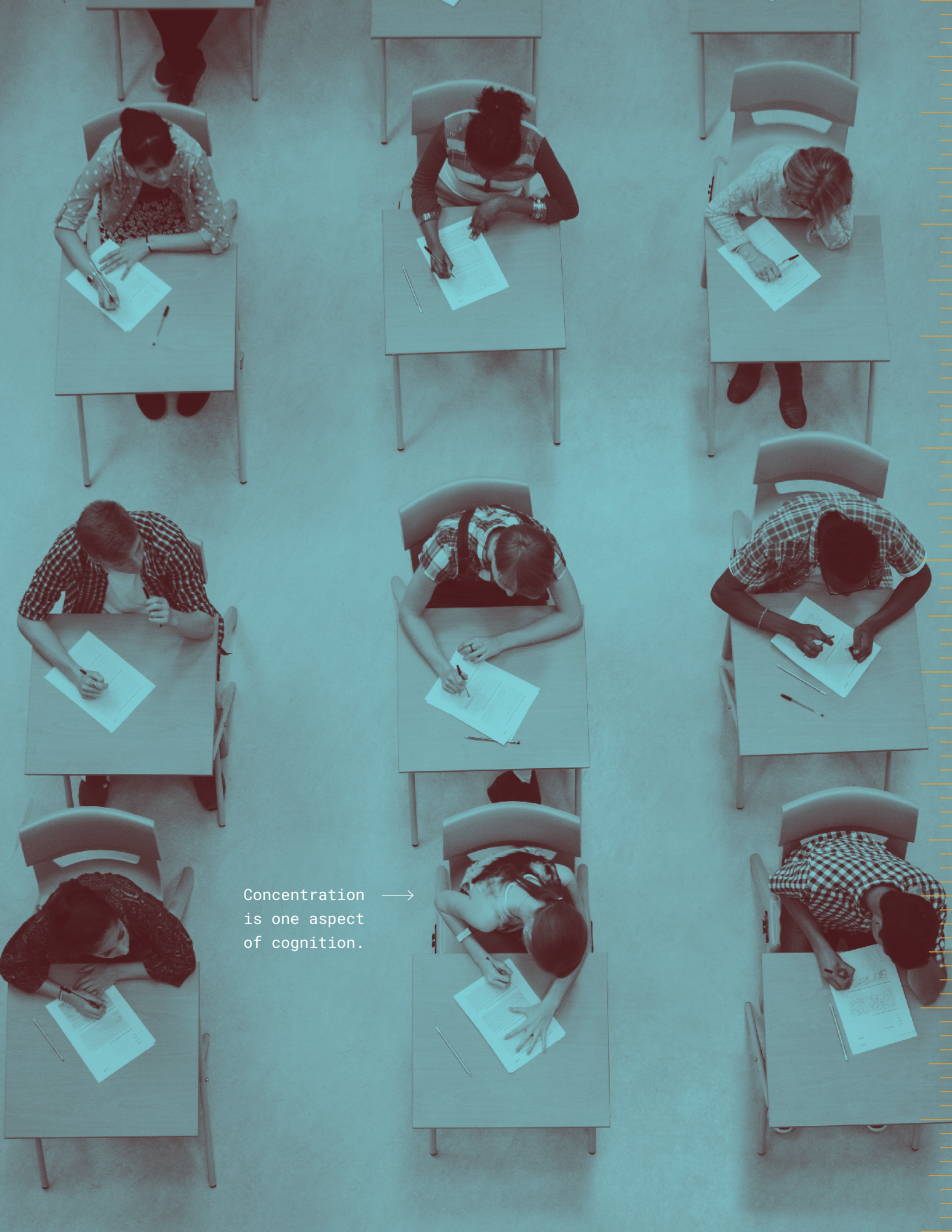




ACTIVITY 1

Types of Cognition

INVESTIGATION



Concentration →
is one aspect
of cognition.



1 : TYPES OF COGNITION

GUIDING QUESTION

What are two different modes of thinking?

INTRODUCTION

Society often sends mixed messages regarding how people should think. On one hand, movies and social media make trusting your gut look like a superpower. You may hear stories about people such as Thomas Edison or Rosalind Franklin having a sudden *aha!* moment that led to new discoveries. But then you go to school, and the advice flips. You may be told to slow down, double-check your facts, and think everything through as carefully as possible. **Cognition** is the set of mental processes that people use to interpret, imagine, and reason. Cognition helps us learn, draw conclusions, solve problems, and make decisions. In this activity, you will explore two different modes of cognition.

FRONTAL LOBE

Planning and decisions
Focus and attention
Reasoning
Personality
Motor control

TEMPORAL LOBE

Hearing
Memory
Language and speech
Object recognition



PARIETAL LOBE

Spatial awareness
Navigation
Touch and body senses

OCCIPITAL LOBE

Visual processing
Color and shape perception

CEREBELLUM

Balance and coordination
Motor learning (muscle memory)

FIGURE 1.1

Various aspects of cognition occur in different areas of the brain.

CONCEPTUAL TOOLS



MATERIALS LIST

FOR EACH STUDENT

STUDENT SHEET 1.1
"Brain Teasers"

PROCEDURE

- 1 Your teacher will provide you with Student Sheet 1.1, "Brain Teasers." Complete the questions on your own as quickly as you can.
- 2 With your partner, slowly work through all the questions together. Revise your answers as needed and record why you changed your mind. Keep the original answers so you can see which ones were revised.
- 3 Your teacher will provide the answers to all the questions. Check your answers.
- 4 With your partner, discuss which questions were easiest to make a mistake when answering and why. Share your ideas with the class.
- 5 People use different ways of thinking to evaluate information and to reach conclusions. It is likely you used the following two different modes of cognition while answering the questions.

Fast thinking is quick, automatic thinking that uses shortcuts to reach conclusions.

Slow thinking is careful, reflective thinking that uses reasoning to reach conclusions.

With your partner, identify one brain-teaser question when you used fast thinking and one question when you used slow thinking to answer it.

- 6 Share your ideas from Step 5 with the class.
- 7 Each thinking mode, fast and slow, has different characteristics. Read the information in Table 1.1 on the following page that describes the differences.

TABLE 1.1

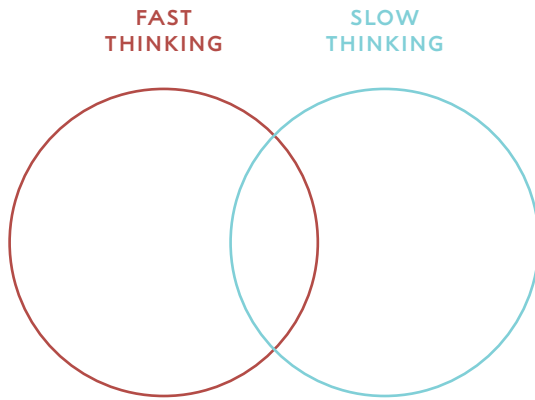
Characteristics of Fast Thinking vs. Slow Thinking

FAST THINKING	SLOW THINKING
Jumps to conclusions Relies on: • simple information. • information that first catches one's attention. • information that comes easily to mind.	Double-checks reasoning Considers: • complex information. • math or reasoning steps. • the likelihood of an event. • alternative possible causes.

- 8 Choose your favorite brain-teaser question.
 - a Using the characteristics from Table 1.1, explain how fast thinking could lead to the wrong answer for that question.
 - b Then explain how the slow-thinking characteristic(s) could lead to the correct answer.
- 9 Share your examples from Step 8 with the class. Then provide some additional examples from your everyday life that use fast, slow, or both kinds of thinking. Discuss the examples and how the mode of cognition may have impacted the outcome for those examples.

BUILD UNDERSTANDING

- ① Make a Venn diagram like the one below. Fill out the areas in the circles to compare and contrast fast thinking and slow thinking. Consider the features of each mode of thinking, the advantages and disadvantages of each, and situations in which each is useful.



The Build Understanding and Connections to Everyday Life items are intended to guide your understanding. Some of these items may be discussed with a partner, be part of a class discussion, or require an individual written response. Your teacher will guide you as to how these items will be used in your class.

- ② Which would be more useful to apply in the following situations: fast thinking and/or slow thinking? Explain your reasoning.
 - a Choosing what to eat for breakfast.
 - b Responding to a fire alarm that goes off in your classroom.
 - c Changing your diet to improve your health.
 - d Communicating to the coach what has happened when a teammate gets hurt.
 - e Deciding who to vote for in the class election.
 - f Providing directions to a location that you are very familiar with.
 - g Responding to a common question such as, *What's your favorite movie?*
- ③ Imagine that an emergency responder comes upon a scene where someone has been badly hurt. Think about the knowledge, skills, and experience the emergency responder has. How would the responder's fast thinking be different from an ordinary person's fast thinking?

CONNECTIONS TO EVERYDAY LIFE

- ④ You are meeting friends downtown. The fastest way for you to get there is on your bike, but your bike lock is broken. Your only other option is to walk, which will take much longer. You have recently seen a news headline that states: *The City Experienced a 300% Increase in Bicycle Thefts Last Month!*
- a What would you be most likely to do? Explain your reasoning.
 - b You later find out that the average number of stolen bikes in the city was 1 per month, but there were 4 bikes stolen in the previous month—a 300% increase. How would this information change, or not change, your behavior?
 - c Was your decision affected by fast thinking and/or slow thinking? Explain.



← School bike rack

- ⑤ Describe a recent example when you used fast thinking but would have been better served by using slow thinking. How could slow thinking have changed the outcome?

EXTENSION

Have a friend or family member solve the brain teasers on Student Sheet 1.1. Evaluate which thinking strategies they used.

KEY SCIENTIFIC TERMS

cognition

fast thinking

slow thinking