

2.2 Thinking, Problem-Solving, Judgments, and Decision-Making

Name: _____ Class: _____ Date: _____ **Total: 11 marks**

KEY WORDS heuristic 启发法 • algorithm 算法 • confirmation bias 确认偏差
• functional fixedness 功能固着 • availability 可得性

Objective

Build the skills to answer exam questions on **problem-solving** 问题解决 and **judgment** 判断.

You must be able to:

- contrast an **algorithm** 算法 with a **heuristic** 启发法
- explain the **availability** 可得性 and **representativeness** 代表性 heuristics
- describe **confirmation bias** 确认偏差 and **framing** 框架效应
- state what **functional fixedness** 功能固着 and a **mental set** 心向 block

1 Worked examples

Study these first. Each one shows the method for a task used later.

■ Algorithm against heuristic

An **algorithm** is a step-by-step procedure guaranteed to find the answer if one exists, but often slow. A **heuristic** is a shortcut that is fast and usually right, at the cost of predictable errors.

■ Two heuristics

Availability: judging how likely something is by how easily an example comes to mind — so vivid, recent or reported events are overestimated. **Representativeness:** judging by resemblance to a typical case, which ignores how common the category actually is.

■ Two biases

Confirmation bias is searching for and weighting evidence that supports what you already believe. **Framing** is the finding that the same information described differently — “90% survive” against “10% die” — produces different decisions.

■ Two blocks

Functional fixedness is being unable to see an object used in a new way. A **mental set** is persisting with a strategy that worked before but does not fit the present problem.

2 Practice

2.1 State one advantage of an algorithm and one of a heuristic. [2]

2.2 Explain the availability heuristic and give one consequence. [2]

2.3 A patient is told a treatment has “a 90% survival rate” rather than “a 10% death rate.”

(a) Name the effect being used. [1]

(b) State what it shows about how decisions are made. [1]

3 Exam-style questions

3.1 Overestimating the risk of plane crashes after seeing news coverage illustrates [1]

- **A** the representativeness heuristic
- **B** the availability heuristic
- **C** functional fixedness
- **D** a mental set

3.2 Failing to use a coin as a screwdriver is an example of

[1]

- **A** confirmation bias
 - **B** framing
 - **C** functional fixedness
 - **D** an algorithm
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3.3 A researcher only cites studies agreeing with her hypothesis.

(a) Name the bias.

[1]

(b) Explain why it is hard to detect in oneself.

[2]

Solutions

2.1 algorithm: guaranteed to find the answer if one exists; heuristic: fast and usually good enough.

2.2 judging likelihood by how easily an example comes to mind; so vivid or heavily reported events are systematically overestimated.

2.3 (a) framing. (b) decisions depend on how information is described, not only on the information itself.

3.1 B. coverage makes examples easy to recall, inflating the estimate.

3.2 C. the coin's usual function blocks the new use.

3.3 (a) confirmation bias. (b) the search feels like ordinary evidence-gathering, and disconfirming material is never encountered, so nothing signals that anything was missed.