

Exercise walk-through

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

eXercise

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

Method — 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.

Method — 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.

Method — 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.

Method — 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.

Practice 2.1 ■ 2 marks

State one advantage of an algorithm and one of a heuristic.

Solution 2.1

Method: Algorithm against heuristic

Worked steps

algorithm: guaranteed to find the answer if one exists **B1**; heuristic: fast and usually good enough **B1**.

Practice 2.2 ■ 2 marks

Explain the availability heuristic and give one consequence.

Solution 2.2

Worked steps

judging likelihood by how easily an example comes to mind **B1**; so vivid or heavily reported events are systematically overestimated **B1**.

Practice 2.3 ■ 1 mark

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

- (a) Name the effect being used.
- (b) State what it shows about how decisions are made.

Solution 2.3

Method: Two blocks

Worked steps

(a) framing **B1**. (b) decisions depend on how information is described, not only on the information itself **B1**.

Exam-style 3.1 ■ 1 mark

Overestimating the risk of plane crashes after seeing news coverage illustrates

A the representativeness heuristic

B the availability heuristic

C functional fixedness

D a mental set

Solution 3.1

A the representativeness heuristic

B the availability heuristic 

C functional fixedness

D a mental set

Worked steps

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

Exam-style 3.2 ■ 1 mark

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

- A** confirmation bias
- B** framing
- C** functional fixedness
- D** an algorithm

Solution 3.2

- A confirmation bias
- B framing
- C functional fixedness
- D an algorithm



Worked steps

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

Exam-style 3.3 ■ 1 mark

A researcher only cites studies agreeing with her hypothesis.

- (a) Name the bias.
- (b) Explain why it is hard to detect in oneself.

Solution 3.3

Worked steps

(a) confirmation bias **B1**. (b) the search feels like ordinary evidence-gathering **B1**, and disconfirming material is never encountered, so nothing signals that anything was missed **B1**.