HSC Investigating Science - Mark Maximiser Drill 4

Evidence & Claims

2025-08-28

Time Limit: 20 Minutes

Instructions: Circle the correct answer for each question. Aim to complete the drill in under 20 minutes.

1. **(2024 Q4)** A website promoting a new diet plan claims that it is 'scientifically proven'. Which of the following would be the LEAST reliable evidence to support this claim?

   (A) A link to a study published in a peer-reviewed journal.

   (B) A list of ingredients and their known nutritional properties.

   (C) Testimonials from celebrities who have used the diet plan.

   (D) Data from a randomised controlled trial.

2. **(2023 Q9)** What is meant by the term 'correlation' in a scientific context?

   (A) One variable directly causes a change in another variable.

   (B) A relationship or association exists between two or more variables.

   (C) The results of an experiment are both reliable and valid.

   (D) A hypothesis has been proven to be a scientific law.

3. **(2022 Q7)** A student reads an article online that claims climate change is a hoax. Which of the following would be the most important factor in assessing the credibility of this article?

   (A) The professional design and layout of the website.

   (B) The number of comments and shares the article has received.

(C) The author's qualifications and the sources they cite.

(D) The emotional language used in the article's headline.

4. **(2021 Q8)** The 'halo effect' can influence how scientific information is perceived. This cognitive bias refers to the tendency to:

   (A) Be skeptical of claims made by experts.

   (B) Assume that because a person is an expert in one field, their opinions in another field are also credible.

   (C) Only pay attention to information that confirms one's existing beliefs.

   (D) Believe that a small sample of data is representative of the whole population.

5. **(2020 Q10)** A student compared the claims made on the labels of two health supplements. One claims 'remarkable results in 28 days'. Why is this claim difficult to test scientifically?

   (A) The term 'remarkable' is subjective and not measurable.

   (B) 28 days is too short a time period for any effect to be observed.

   (C) The supplement contains B vitamins, which are known to be effective.

   (D) The claim can only be tested with a double-blind trial.

6. **(2019 Q8)** A scientific investigation is described as 'inconclusive'. What does this most likely mean?

   (A) The results of the investigation were fraudulent.

   (B) The investigation was conducted unethically.

   (C) The results did not provide enough evidence to support or refute the hypothesis.

   (D) The investigation was not published in a peer-reviewed journal.

7. **(2024 Q9)** What is a key difference between a scientific theory and a scientific law?

   (A) A law is a well-supported explanation, while a theory is just a guess.

   (B) A theory is a well-supported explanation, while a law is a description of an observed phenomenon.

   (C) A law can be proven false, but a theory cannot.

   (D) A theory eventually becomes a law after enough evidence is gathered.

8. **(2023 Q7)** A research paper concludes that a new drug is 100% effective. Which of the following would be a valid reason to be skeptical of this claim?

(A) The study was conducted on a large, diverse sample of people.

(B) The study was a randomised, double-blind, placebo-controlled trial.

(C) The results have been replicated by independent research groups.

(D) The study was funded by the company that manufactures the drug.

9. **(2022 Q10)** Which of the following is the best example of an evidence-based claim?

   (A) "This is the best movie of the year."

   (B) "In a clinical trial of 500 people, this medication reduced symptoms by 60% compared to a placebo."

   (C) "Everyone knows that chocolate is good for you."

   (D) "Our product is guaranteed to make you feel happier."

10. **(2021 Q16)** A graph in a company's annual report shows a dramatic increase in profits. The vertical axis, however, starts at a high value instead of zero. This is a common technique used to:

    (A) Ensure the data is presented as accurately as possible.

    (B) Mislead the reader by exaggerating the change.

    (C) Simplify a complex data set for a general audience.

    (D) Control for the effects of inflation over time.

11. **(2020 Q2)** Some parents claim that playing classical music will enhance their child's intelligence. What is the name given to this claim?

    (A) The halo effect

    (B) The Mozart effect

    (C) The Doppler effect

    (D) The Hawthorne effect

12. **(2019 Q10)** A headline reads: "Study shows coffee drinkers live longer". What important question should a critical reader ask before accepting this conclusion?

    (A) How many people were included in the study?

    (B) Did the study control for other lifestyle factors, like diet and exercise?

    (C) Was the study funded by a coffee company?

    (D) All of the above.

13. **(2024 Q18)** The process of science is 'self-correcting'. This means that:

    (A) Scientists never make mistakes.

    (B) Over time, new evidence and peer review lead to the revision of scientific ideas.

    (C) Once a scientific theory is established, it can never be changed.

    (D) Scientific knowledge is absolute and unchanging.

14. **(2023 Q14)** A scientist selectively publishing only the data that supports their hypothesis is an example of:

    (A) The peer-review process.

    (B) A conflict of interest.

    (C) Ethical scientific conduct.

    (D) Cherry-picking data.

15. **(2022 Q14)** What is the primary purpose of including a 'margin of error' in the results of a scientific poll?

    (A) To indicate that the pollsters made mistakes in their calculations.

    (B) To quantify the uncertainty in the results due to sampling variability.

    (C) To show that the results are not statistically significant.

    (D) To hide the fact that the sample size was too small.

Answer Key: Drill 4

1. C
2. B
3. C
4. B
5. A
6. C
7. B
8. D
9. B
10. B
11. B
12. D

13. B
14. D
15. B