

HSC Investigating Science - Mark Maximiser Drill 2

Data Analysis & Societal Influences

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 Q1)** Which of the following is a primary role of an ethics committee in scientific research?
 - (A) To ensure the research is funded adequately.
 - (B) To ensure the welfare of participants is protected.
 - (C) To ensure the research produces a positive result.
 - (D) To ensure the research is published quickly.
2. **(2023 Q12)** A news report claims that a new superfood can cure the common cold. Which of the following would be the most important factor in evaluating this claim?
 - (A) The popularity of the celebrity endorsing the superfood.
 - (B) The price of the superfood.
 - (C) The number of social media influencers promoting the claim.
 - (D) The presence of peer-reviewed scientific studies supporting the claim.
3. **(2022 Q2)** A study finds a correlation between ice cream sales and the number of drownings. What is the most likely explanation for this correlation?
 - (A) Eating ice cream causes people to be less careful when swimming.
 - (B) A third factor, such as warm weather, is likely responsible for both increases.

- (C) The study must have been conducted with a very small sample size.
- (D) The data has been deliberately manipulated by ice cream companies.
4. **(2021 Q9)** A government decides to increase funding for research into renewable energy technologies. This is an example of which influence on science?
- (A) Economic
- (B) Social
- (C) Political
- (D) Ethical
5. **(2020 Q7)** A scientist is employed by a pharmaceutical company to test a new drug. This is a potential source of what?
- (A) Random error
- (B) Systematic error
- (C) Conflict of interest
- (D) The placebo effect
6. **(2019 Q5)** Aboriginal Peoples have known of the medicinal properties of tea-tree oil for thousands of years. A company wants to develop a new drug using this knowledge. What is the most ethical first step?
- (A) Patent the formulation immediately to prevent competitors.
- (B) Begin clinical trials to test for safety and efficacy.
- (C) Consult with the relevant Aboriginal communities.
- (D) Analyse the chemical composition of the oil.
7. **(2024 Q6)** A scientific model is best described as:
- (A) A perfect replica of a real-world object or system.
- (B) A simplified representation used to understand and predict phenomena.
- (C) A definitive and unchangeable explanation of a scientific concept.
- (D) A legally binding rule that describes a pattern in nature.
8. **(2023 Q16)** The ‘publish or perish’ culture in academia can sometimes lead to:
- (A) Higher quality research due to increased competition.

- (B) An increase in fraudulent or rushed research.
 - (C) More funding being allocated to long-term, exploratory projects.
 - (D) A decrease in the number of scientific journals.
9. **(2022 Q8)** The Nuremberg Code is a set of research ethics principles for human experimentation. It was established as a result of which historical event?
- (A) The Tuskegee Syphilis Study
 - (B) The development of the atomic bomb
 - (C) The Nazi medical experiments during WWII
 - (D) The discovery of the structure of DNA
10. **(2021 Q10)** A company funds a study that finds its product is safe and effective. Studies not funded by the company have found the product to be ineffective. This is an example of potential:
- (A) Bias
 - (B) Reliability
 - (C) Validity
 - (D) Accuracy
11. **(2020 Q4)** The graph shows total distance travelled by airline passengers and the number of fatal accidents. What is the general trend?
- (A) As distance increases, accidents increase.
 - (B) As distance increases, accidents decrease.
 - (C) As distance decreases, accidents decrease.
 - (D) There is no clear relationship between the two variables.
12. **(2019 Q1)** What is the term for a testable prediction about the relationship between two or more variables?
- (A) Theory
 - (B) Law
 - (C) Observation
 - (D) Hypothesis
13. **(2024 Q7)** Which of the following is the best description of pseudoscience?

- (A) A scientific theory that has been proven wrong.
 - (B) A field of study that has not yet been tested experimentally.
 - (C) A claim or belief presented as scientific but lacking evidence and scientific method.
 - (D) A branch of science that deals with supernatural phenomena.
14. **(2023 Q20)** A large corporation provides the majority of funding for research into a particular agricultural chemical. What is the most significant risk this poses to the integrity of the research?
- (A) The research may be too expensive to conduct properly.
 - (B) The corporation may pressure scientists to produce favourable results.
 - (C) The government may decide to cut its own funding for similar research.
 - (D) The scientists may not have access to the latest technology.
15. **(2022 Q15)** The development of the telescope led to Galileo's observations of the moons of Jupiter. This is an example of:
- (A) A scientific law leading to a new technology.
 - (B) A technology enabling a new scientific discovery.
 - (C) A scientific theory being disproven by a new law.
 - (D) An ethical dilemma in scientific research.
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Answer Key: Drill 2

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

- 13. C
- 14. B
- 15. B