

HSC Investigating Science - Mark Maximiser Drill 1

Core Scientific Process

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. **(2022 Q4)** An experiment was conducted to test the effectiveness of a new drug. The results were found to be reliable but not valid. Which statement best describes this finding?
 - (A) The results were consistent, but the experiment did not test the hypothesis.
 - (B) The results were not consistent, but the experiment tested the hypothesis.
 - (C) The results were consistent, but the experiment included a systematic error.
 - (D) The results were not consistent, but the experiment included a random error.
2. **(2023 Q4)** A student conducted an experiment to measure the effect of temperature on the bounce height of a tennis ball. What is the independent variable in this experiment?
 - (A) Bounce height
 - (B) Temperature
 - (C) Type of tennis ball
 - (D) Surface the ball is bounced on
3. **(2021 Q2)** A student measured the length of a piece of string three times and obtained the following results: 15.2 cm, 15.3 cm, 15.2 cm. The actual length of the string was 16.0 cm. Which statement best describes the student's measurements?
 - (A) Accurate but not reliable

- (B) Reliable but not accurate
 - (C) Both accurate and reliable
 - (D) Neither accurate nor reliable
4. **(2020 Q9)** In an experiment, what is the purpose of a control group?
- (A) To provide a baseline for comparison
 - (B) To ensure the experiment is repeatable
 - (C) To eliminate all variables
 - (D) To prove the hypothesis is correct
5. **(2019 Q7)** A student wants to investigate the claim that Brand X batteries last longer than Brand Y batteries. Which of the following would be the most important variable to keep constant?
- (A) The brand of the device used
 - (B) The total time the experiment runs for
 - (C) The device used to test the batteries
 - (D) The cost of the batteries
6. **(2023 Q8)** In a scientific report, which section should contain a detailed description of the steps taken during an investigation?
- (A) Introduction
 - (B) Method
 - (C) Results
 - (D) Conclusion
7. **(2022 Q9)** Which of the following is an essential characteristic of a fair test?
- (A) The results support the hypothesis.
 - (B) Only one variable is changed at a time.
 - (C) The experiment is conducted by a famous scientist.
 - (D) The results are published in a reputable journal.
8. **(2021 Q13)** What is the primary purpose of peer review in the scientific process?
- (A) To ensure that research is funded

- (B) To check the validity and reliability of research before publication
 - (C) To help scientists find collaborators for future research
 - (D) To ensure that the research findings are popular with the public
9. **(2020 Q1)** Which scientist's investigations were used for the development of the microwave oven?
- (A) Fleischmann
 - (B) Smolyanitsky
 - (C) Spencer
 - (D) van Helmont
10. **(2019 Q14)** A student is investigating how the angle of a ramp affects the distance a toy car travels. What would be the dependent variable?
- (A) The angle of the ramp
 - (B) The mass of the toy car
 - (C) The distance the toy car travels
 - (D) The surface of the ramp
11. **(2023 Q2)** Which of the following is a key feature of a double-blind trial?
- (A) Only the researchers know who receives the treatment.
 - (B) Only the participants know who receives the treatment.
 - (C) Both the researchers and the participants know who receives the treatment.
 - (D) Neither the researchers nor the participants know who receives the treatment until the trial is over.
12. **(2022 Q5)** What is the main reason for repeating an experiment multiple times?
- (A) To improve accuracy
 - (B) To improve reliability
 - (C) To improve validity
 - (D) To prove the hypothesis
13. **(2021 Q5)** A scientist is studying the effect of a new fertiliser on plant growth. What would be the most appropriate control for this experiment?

- (A) A plant with no fertiliser
 - (B) A plant with a different type of fertiliser
 - (C) A plant in a different type of soil
 - (D) A plant receiving a different amount of sunlight
14. **(2020 Q3)** What observation led to Edward Jenner's development of a vaccine for smallpox?
- (A) The smallpox virus had an incubation period of 1–2 weeks.
 - (B) People with smallpox developed a rash and blisters containing pus.
 - (C) People given the smallpox vaccine did not develop the symptoms of smallpox.
 - (D) Milkmaids exposed to cowpox did not generally show symptoms of smallpox.
15. **(2019 Q3)** In a scientific report, where would you typically find a graph of the data collected?
- (A) Introduction
 - (B) Method
 - (C) Results
 - (D) Conclusion
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Answer Key: Drill 1

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

- 14. D
- 15. C