

# HSC Investigating Science - Mark Maximiser Drill 3

## Technology & Application

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 Q3)** The development of the scanning tunnelling microscope was a significant technological advancement because it allowed scientists to:  
  
(A) See distant galaxies for the first time.  
(B) Image individual atoms for the first time.  
(C) Sequence the human genome for the first time.  
(D) Observe living cells in real-time.
2. **(2023 Q3)** Which technology is most directly associated with the discovery of the structure of DNA?  
  
(A) Electron microscopy  
(B) X-ray crystallography  
(C) Polymerase Chain Reaction (PCR)  
(D) Gel electrophoresis
3. **(2022 Q6)** The discovery of penicillin by Alexander Fleming is often cited as an example of serendipity in science. What does this mean?  
  
(A) The discovery was the result of a carefully planned experiment.  
(B) The discovery was made by accident or chance.

- (C) The discovery was funded by a large corporation.
- (D) The discovery was immediately accepted by the scientific community.
4. **(2021 Q1)** The Hubble Space Telescope has provided images that have led to new understandings of the age and expansion of the universe. This demonstrates how technology can:
- (A) Limit the scope of scientific inquiry.
- (B) Create new ethical problems for society.
- (C) Drive advancements in scientific knowledge.
- (D) Be influenced by political agendas.
5. **(2020 Q13)** The use of GPS for navigation is a direct application of which scientific theory?
- (A) The Big Bang Theory
- (B) The Theory of Evolution
- (C) The Theory of Plate Tectonics
- (D) The Theory of Relativity
6. **(2019 Q6)** A scientist uses a computer model to simulate the effects of climate change. What is a key advantage of using a model in this situation?
- (A) It provides a perfect and error-free prediction of the future.
- (B) It allows scientists to test scenarios that would be impossible or unethical to conduct in the real world.
- (C) It is cheaper and faster than collecting any real-world data.
- (D) It guarantees that the scientist's hypothesis will be supported.
7. **(2024 Q8)** The pasteurisation process, developed by Louis Pasteur, involves heating liquids to kill bacteria. This technology had a major impact on:
- (A) The development of antibiotics.
- (B) Food safety and public health.
- (C) The understanding of atomic structure.
- (D) The exploration of space.
8. **(2023 Q10)** What is a primary function of the Large Hadron Collider (LHC)?

- (A) To search for new planets and exoplanets.
  - (B) To study the fundamental particles and forces of nature.
  - (C) To develop new sources of renewable energy.
  - (D) To monitor changes in Earth's climate.
9. **(2022 Q12)** The development of CRISPR gene-editing technology has raised significant ethical concerns. These concerns primarily relate to:
- (A) The cost of the technology.
  - (B) The potential for misuse in humans.
  - (C) The reliability of the results.
  - (D) The intellectual property rights.
10. **(2021 Q7)** Which of the following is an example of a technology that has been developed based on an understanding of the Doppler effect?
- (A) Microwave ovens
  - (B) Radar guns used by police
  - (C) X-ray machines in hospitals
  - (D) Solar panels on rooftops
11. **(2020 Q15)** The development of sterile surgical techniques by Joseph Lister was based on his understanding of:
- (A) The Theory of Relativity
  - (B) The Laws of Motion
  - (C) Germ Theory of Disease
  - (D) The Theory of Plate Tectonics
12. **(2019 Q20)** The use of endoscopes in medicine allows for minimally invasive surgery. This has had a significant positive impact by:
- (A) Eliminating the need for all other types of surgery.
  - (B) Reducing patient recovery times and risk of infection.
  - (C) Making surgical procedures much cheaper.
  - (D) Allowing surgeons to work from remote locations.

13. **(2024 Q13)** The Human Genome Project was a massive international scientific research project. What was its primary goal?
- (A) To find a cure for all genetic diseases.
  - (B) To determine the sequence of nucleotide base pairs that make up human DNA.
  - (C) To create the first genetically modified human.
  - (D) To prove that all humans have identical DNA.
14. **(2023 Q15)** The use of satellites for global communication is an application of scientific principles first described by:
- (A) Marie Curie
  - (B) Isaac Newton
  - (C) Charles Darwin
  - (D) Albert Einstein
15. **(2022 Q18)** The invention of the printing press had a profound impact on the advancement of science primarily because it:
- (A) Allowed scientists to perform experiments more quickly.
  - (B) Enabled the widespread and rapid dissemination of scientific knowledge.
  - (C) Provided a new source of funding for scientific research.
  - (D) Led to the development of the first universities.
- 

**Answer Key: Drill 3**

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

- 12. B
- 13. B
- 14. B
- 15. B