Solutions

Each answer shows the steps, then the **result**.

2.1

- authority shifted from inherited texts to reproducible observation and mathematical demonstration

2.2

- experiment produces the conditions rather than waiting for them, so a factor can be isolated and varied deliberately

2.3

(a)

- who decides what is true about nature

(b)

- the answer determines authority over all future findings, not only this one

3.1 B

- regularity and prediction are what mathematics supplies

3.2 B

- method changed; belief largely did not

3.3

(a)

- reproducibility by independent investigators

(b)

- the older standard rested on the authority of a text or its interpreter, which no amount of independent observation could override

3.4

(a)

- for example: Copernicus placed the Sun at the centre (1543); Galileo's telescope showed moons orbiting Jupiter (1610); Kepler showed planets move in ellipses

(b)

- for example: Francis Bacon's inductive, empirical method built conclusions from observation and experiment; Descartes' deductive method reasoned from first principles

(c)

- for example: the Royal Society (1660) in London and the French Académie des Sciences (1666) published, discussed and tested members' findings; Newton's *Principia* (1687) was published under the Royal Society