

Past-paper walk-through

Kinetic Molecular Theory ■ 3.5

eXercise

Questions in this set

- 2024 Q4
- 2021 Q7
- 2019 Q4

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 4

2024 ■ Q4

- 1 A student performs an experiment to determine the specific heat capacity of a metal. The student places a cube of the metal in boiling water so its temperature will be 100.0°C . The student then places the metal cube into a calorimeter that contains water and records the highest temperature of the water. A data table and a diagram of the thermometer at the highest temperature are shown.

Mass of metal cube	98.1 g
Mass of water	52.0 g
Initial temperature of metal cube	100.0°C
Initial temperature of water	25.0°C
Highest temperature of water	?

Question 4

[Diagram: a calorimeter (styrofoam cup) with a thermometer inserted, and a magnified circular inset of the thermometer scale showing markings from below 30 to above 40, with labeled gridlines at “40” and “30”; the liquid column in the thermometer is shown filled to a level between the two labels, with the top of the mercury column reaching a point just below the “40” mark — the fine gradations between 30 and 40 appear to be in increments of 1, with the meniscus resting at approximately 38.]

(a) What should the student report as the highest temperature of the water?

Question 4

Mass of metal cube	98.1 g
Mass of water	52.0 g
Initial temperature of metal cube	100.0°C
Initial temperature of water	25.0°C
Highest temperature of water	?

