

Particle Model and Pressure

Mark Scheme

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Physics
Exam Board	AQA
Topic	6.3 Particle Model of Matter
Sub-Topic	Particle Model and Pressure
Difficulty Level	Gold Level
Booklet	Mark Scheme

Time Allowed: 16 minutes

Score: /15

Percentage: /100

Grade Boundaries:

M1.(a) random

accept in all directions

1

description must be of random motion

(b) heating increases the temperature of the gas

1

temperature is proportional to kinetic energy

1

if kinetic energy increases speed increases

1

(c) energy is needed to change the state of the water

1

to break the bonds

1

(d) $1000 = m / 2.5 \times 10^{-5}$

1

$m = 2.5 \times 10^{-5} \times 1000$

1

$m = 0.025 \text{ (kg)}$

1

$E = 0.025 \times 2\,260\,000$

1

$$E = 56\,500 \text{ (J)}$$

1

allow 56 500 (J) without working shown for 5 marks

0 marks awarded for $E = m \times L$

(e) any **four** from:

- because the water is preheated) the change in temperature of the water is less
- so less energy is used to heat the water ($E=mc\Delta\theta$)
- therefore they (condensing boilers) are more efficient
- so less energy is wasted
- less gas is burned to heat the same amount of water
- less waste gas (CO_2) is produced by the boiler **or** (because less gas is used) they are cheaper to run / save money

4

[15]