M1.(a) **B**

1

(b) **D**

1

(c) **E**

1

(d) **C**

1

(e) 92.5 × 6 **and**
7× 7.5

1

$\frac{607.5}{100}$

1

6.075

1

6.08

1

*allow 6.08 with no working shown for **4** marks*

[8]

M2.(a) Y

1

(b) W

1

(c) V

1

(d) W

1

(e) X

1

[5]

M3.(a) (i) Na

allow sodium

1

(ii) Cu

allow copper

1

(iii) C

allow carbon

1

(iv) He

allow helium

1

(b) H

allow hydrogen

*do **not** allow H_2*

1

[5]

M4.(a) (i) atomic weight

1

(ii) groups

1

(iii) left a gap

1

(iv) had not been discovered by 1869

1

(b) protons

must be in correct order

1

electrons

1

(c) sodium and nickel are both metals

1

sodium is more reactive than nickel

1

(d) (i) bromine

allow Br_2 / Br

*do **not** allow bromide*

1

(ii) iodine is less reactive (than bromine)

it = iodine

allow converse

*do **not** allow bromide*

1

[10]

M5.(a) (i) E

1

(ii) C

1

(iii) A

1

(b) (i) quickly melted

allow melts in contact with water,

allow bp 100 °C (of water) shows mp is low

ignore one other piece of information

1

(ii) easily cut

ignore one other piece of information

1

(iii) effervescence / fizzing / bubbling

ignore named gas

ignore one other piece of information

1

[6]

M6.(a) 1 / one

1

(b) (i) protons

1

(ii) neutrons

1

(iii) 7

1

(c) (i) losing

1

(ii) a positive

1

(iii) electrostatic

1

(d) high melting points

1

strong bonds

1

(e) (i) 58.5

1

(ii) mole

1

(f) very small (particles) **or**

ignore tiny / small / smaller / microscopic etc.

1-100nm in size **or**

(particle with a) few hundred atoms

1

[12]

M7.(a) number

1

0

allow 8

1

(b) beryllium **or** magnesium **or** strontium **or** barium **or** radium

allow correct symbols

1

(c) (i) an alkali metal

1

(ii) a transition metal

1

(d) for undiscovered elements

accept so elements with similar properties were in the same groups

accept so elements fitted the pattern of properties

1

[6]

M8. (a) groups

1

(b) it is a non-metal

allow it is not a metal

1

(c) to the right of column 7 / Group 7

accept in Group 0

ignore Group 8 / noble gases

1

(d) (atomic) number

allow proton number

1

[4]

M9. (a) sodium has a lower density

1

sodium is more reactive

1

(b) hydrogen

1

(c) $OH^-(aq)$

1

[4]