

Q1 What is the mass (in g) of a piece of metal ($d = 7.14 \text{ g/cm}^3$), as shown in:

(dimensions of this piece are: height = 0.2 cm, width = 1.5 cm, depth = 3.0 cm)

A] 1.43

B] 10.71

C] 21.42

D] 6.42

$$\text{volume} = \text{height} \times \text{width} \times \text{depth} = 0.2 \text{ cm} \times 1.5 \text{ cm} \times 3.0 \text{ cm} = 0.9 \text{ cm}^3$$

$$m = d \times V = 7.14 \text{ g/cm}^3 \times 0.9 \text{ cm}^3 = 6.42 \text{ g}$$

Answer: D

Q2 How many significant figures are in "4.3070"?

A] 1

B] 5

C] 4

D] 3

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Q3 How many significant figures should be reported for $(8.5701 + 2.38)$?

A] 8

B] 6

C] 4

D] 3

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Q4 NonSI unit from the following is:

A] inch

B] seconds

C] kilograms

D] meter

Base SI units are = { kg, m, s, K, cd, A } only

inch \notin SI units

Answer: A

Q5 Walking consumes 5.0 kcal per minute. How many hours are required to consume 1881 kJ? (1 kcal = 4.18 kJ)

- A] 1.75 B] 1.25 C] 1.5 D] 2.5

$$1881 \text{ kJ} \div 4.18 \text{ kJ/kcal} = 450 \text{ kcal}$$

$$450 \text{ kcal} \div 5.0 \text{ kcal/min} \times (1/60) \text{ hr/min} = 1.5 \text{ hr}$$

Answer: C

Q6 The melting point of bromine is -7°C . What is the melting point in $^\circ\text{F}$?

- A] 39.3 B] -28.8 C] -13.8 D] 19.4

$$^\circ\text{F} = 9/5 \times ^\circ\text{C} + 32 = 9/5 \times -7^\circ\text{C} + 32 = 19.4^\circ\text{F}$$

Answer: D

Q7 Which of the following is a chemical change?

- A] Oxidation of iron in air B] Mixing water and oil
C] Melting ice D] Dissolving sugar in water

Oxidation التأكسد chemical ✓

Mixing الخلط physical ✗

Melting الانصهار physical ✗

Dissolving الاذابة physical ✗

in a chemical change, the composition of substance **changes**, while in a physical change, the composition **remains the same**.

Answer: A

Q8 Which is NOT an extensive property of matter?

A] Volume

B] Mass

C] Length

D] Density

Volume الحجم extensive ✗

Mass الكتلة extensive ✗

Length الطول extensive ✗

Density الكثافة intensive ✓

Answer: D

Q9 The gold foil experiment “Rutherford’s experiment” confirmed that:

A] atoms are composed of only protons.

B] protons are located in the atom nucleus.

C] atoms are composed of only electrons.

D] electrons are located in the atom nucleus.

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Q10 How many protons (p) and electrons (e) are present in Ca^{+2} ions?

A] 20 p and 22 e

B] 18 p and 20 e

C] 20 p and 18 e

D] 22 p and 20 e

look-up the element calcium on the periodic table (first page)

11 Na 23.00	12 Mg 24.31	3 IIIB	4 IVB
19 K 39.09	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87
37 Rb	38 Sr	39 Y	40 Zr

A calcium (Ca) atom always has 20 protons.

The charge (2+) indicates that there are two more protons than electrons. ($e^- + 2 = p$)

$$20 p - 2 = 18 e^-$$

Answer: C

Q11 The formula of the ionic compound formed by calcium ions and phosphate ions, is:

A] CaPO_4

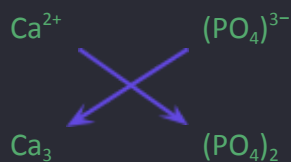
B] $\text{Ca}(\text{PO}_4)_3$

C] Ca_3PO_4

D] $\text{Ca}_3(\text{PO}_4)_2$

calcium

phosphate



Answer: D

Q12 How many protons (p), neutrons (n), and electrons (e) are there in ^{39}Cl atoms?

A] 17 p, 17 n, and 22 e

B] 17 p, 22 n, and 17 e

C] 17 p, 39 n, and 17 e

D] 22 p, 17 n, 17 e

look-up the element chlorine on the periodic table (first page)

7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.98
33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80

A chlorine (Cl) atom always has **17 protons**.

neutrons (n) = mass number (A) – protons (p) = $39 - 17 = 22$ neutrons.

The atom is neutral, therefore the number of positive and negative particles in this atom is equal ($p = e^-$) so there are **22 electrons**.

Answer: B

Q13 The correct name of CoCl_3 is:

A] cobalt chloride

B] cobalt trichloride

C] cobalt(III) chloride

D] cobalt(III) trichloride

Co: Cobalt

Cl: Chloride

Answer: C

Q14 The correct name for $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is:

A] copper(II) sulfate hydrate

B] copper(II) sulfate pentahydrate

C] copper(I) sulfate pentahydrate

D] copper sulfate pentahydrate

Cu: Copper

SO₄: Sulf-ate

5-H₂O: Hepta-hydrate

Answer: B

Q15 Two isotopes of an element differ in their:

A] atomic mass

B] atomic numbers

C] numbers of protons

D] numbers of electrons

Two isotopes always differ in the number of **neutrons, mass number, and atomic mass.**

Answer: A