

2.2 Atomic Weight- MCQs

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1. Why is the mass of an individual atom difficult to measure directly?
A. Atoms are very small. B. Atoms have no mass.
C. Atoms are always moving. D. Atoms are very heavy.
2. Why was hydrogen first chosen as the standard to compare atomic mass?
a) It is the heaviest atom b) It is the lightest atom c) It has no isotopes d) It is a metal
3. What was the main problem with using hydrogen as the standard?
a) Hydrogen is radioactive b) Its isotope was not clearly fixed
c) It has too many neutrons d) It is a compound
4. Which isotope is used today as the standard for atomic mass?
a) H-1 b) O-16 c) C-12 d) He-4
5. Atomic mass of an element tells us:
a) The exact weight of 1 atom, in grams d) Only the number of neutrons
b) How many times heavier the atom is than $1/12^{\text{th}}$ of a C-12 atom c) Only the number of protons
6. Relative atomic mass tells us how many times an atom is heavier than:
A. One hydrogen atom B. One electron
C. $1/12^{\text{th}}$ of a C-12 atom D. One oxygen atom
7. One-twelfth of the mass of a C-12 atom is used as:
A. One atomic mass unit B. One gram atomic mass
C. One equivalent weight D. One mole
8. An element has relative atomic mass 40. Which statement is correct?
A. One atom has a mass of 40 g B. Its mass number must be 40
C. Its atomic mass is 40 times the C-12 reference unit D. It contains 40 protons
9. The modern standard used for comparing atomic masses is:
A. H-1 B. O-16 C. C-12 D. C-14
10. The C-12 isotope was selected as the standard by:
A. Newton B. IUPAC C. Dulong D. Petit
11. If an atom has a relative atomic mass of 24, it means that one atom is approximately:
A. 24 times heavier than a C-12 atom B. 24 times heavier than $1/12$ of a C-12 atom
C. 24 times heavier than one proton D. 24 grams in mass
12. Atomic mass has no unit because:
a) It is too small to measure b) It is a ratio (comparison) of two masses
c) It is always zero d) It is always a whole number
13. Relative atomic mass is often a decimal number because:
a) Protons have decimal mass b) Elements have isotopes, so we take an average c) It is a mistake in measurement
d) Electrons add decimal mass
14. Why can the relative atomic mass of an element be a decimal?
A. Atoms are divided into decimal parts B. It is often an average of isotopic masses
C. Protons have decimal numbers D. Neutrons have decimal numbers
15. Chlorine has more than one isotope. Therefore, its relative atomic mass can be:
A. Exactly 35 only B. Exactly 37 only C. A decimal value D. Zero
16. According to Dulong and Petit's law, atomic weight $\times$ specific heat is approximately:
a) 3.2 b) 6.4 c) 9.8 d) 12.0
17. Specific heat is the heat needed to raise the temperature of:
a) 1 kg of substance by 1°C b) 1 gram of substance by 1°C

- c) 1 gram of substance by 10°C d) 100 g of substance by 1°C
18. The product of atomic weight and specific heat is called:
a) Atomic number b) Atomic heat c) Molar heat d) Specific mass
19. If the specific heat of a metal is 0.32, its approximate atomic weight is:
a) 10 b) 20 c) 32 d) 6.4
20. Approximate valency is found by:
a) Atomic weight $\times$ Equivalent weight b) Approx. atomic weight $\div$ Exact equivalent weight
c) Equivalent weight $\div$ Atomic weight d) Specific heat $\div$ Atomic weight
21. After finding the approximate valency, what do we do next?
a) Leave it as it is b) Round it to the nearest whole number c) Multiply it by 2 d) Divide it by 2
22. The correct (exact) atomic weight is found using:
a) Equivalent weight $\times$ Valency b) Equivalent weight $\div$ Valency
c) Specific heat $\times$ Valency d) Specific heat $\div$ Valency
23. Dulong and Petit's law works best for:
a) Gases b) Liquids c) Solid elements, especially metals d) All non-metals
24. Which of these elements does NOT follow Dulong and Petit's law well?
a) Sodium b) Iron c) Carbon d) Zinc
25. Why doesn't this law work well for elements like carbon, boron, and silicon?
a) They are radioactive b) Their specific heat changes with temperature
c) They have no atomic weight d) They are gases
26. This law cannot be applied properly to:
a) Heavy metals b) Light elements with a high melting point c) All liquids d) All elements equally
27. Dulong and Petit's law is mainly used for determining the atomic weight of:
A. Gases B. Solid elements C. Liquids only D. All compounds
28. According to Dulong and Petit's law:
A. Atomic weight + specific heat = 6.4 B. Atomic weight $\times$ specific heat $\approx$ 6.4
C. Atomic weight $\div$ specific heat = 6.4 D. Atomic weight – specific heat = 6.4
29. The first step in Dulong and Petit's method is to find the:
A. Specific heat B. Atomic number C. Equivalent weight D. Mass number
30. The specific heat of an element is determined:
A. From its atomic number B. In the laboratory
C. From its symbol D. By counting neutrons
31. The approximate atomic weight is calculated using:
A. Specific heat $\times$ 6.4 B. $6.4 \div$ specific heat
C. Equivalent weight $\times$ specific heat D. Atomic number $\div$ specific heat
32. After finding the approximate atomic weight, it is divided by the equivalent weight to find approximate:
A. Atomic number B. Mass number C. Valency D. Specific heat
33. Why is the calculated approximate valency rounded to a whole number?
A. Atomic weights are always whole numbers B. Valency is taken as a whole number
C. Specific heat has no decimal D. Equivalent weight is always 1
34. If approximate atomic weight = 50 and equivalent weight = 10, the approximate valency is:
A. 2 B. 5 C. 10 D. 40
35. If equivalent weight = 12 and valency = 2, the correct atomic weight is:
A. 6 B. 12 C. 24 D. 36
36. Which formula is used to obtain the correct atomic weight in Dulong-Petit's method in the last step?
A. Equivalent weight + valency B. Equivalent weight – valency
C. Equivalent weight $\times$ valency D. Equivalent weight $\div$ valency

37. The approximate atomic weight of a metal is 32, and its equivalent weight is 16. Its approximate valency is:
A. 0.5 B. 1 C. 2 D. 4
38. A metal has specific heat 0.25 and equivalent weight 12. What is its approximate atomic weight?
A. 12 B. 19.2 C. 24 D. 48
39. A student calculates the approximate atomic weight as 24.7 and equivalent weight as 12. The calculated valency is 2.06. What should the student use as valency?
A. 2.06 B. 2 C. 3 D. 12
40. Which of the following is a limitation of Dulong and Petit's law?
A. It works perfectly for all elements
B. It is mainly useful for solid elements and heavier elements
C. It is used only for gases
D. It does not require specific heat
41. A student says, "Dulong and Petit's law can be used to determine the atomic weight of every element." What is the best response?
A. Correct, because all elements have specific heat
B. Correct, because atomic weight is always 6.4
C. Incorrect, because the law has important limitations
D. Incorrect, because atomic weight cannot be determined at all

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