1. The weighted mean mass of an element's atoms, compared to carbon-12, is the relative _____ mass.

   _____

2. One mole of any substance contains 6.02×10^{23} _____.

   _____

3. A balanced equation has the same number of each type of atom on both sides.

   ☐ True ☐ False

4. The simplest whole-number ratio of atoms in a compound is the _____ formula.

   _____

5. Percentage yield is the theoretical yield divided by the actual yield, times 100.

   ☐ True ☐ False

6. At room temperature and pressure, one mole of any gas occupies about _____ dm^3.

   _____

7. The relative atomic mass (Ar) of an element is:

   ☐ the number of protons in the nucleus of one atom

   ☐ the mass of its heaviest isotope compared with 1/12 of carbon-12

   ☐ the weighted average mass of its atoms over all isotopes, compared with 1/12 of carbon-12

   ☐ the mass of one atom in grams, measured directly

8. One mole of any substance contains:

   ☐ 100 particles

   ☐ 12 particles

   ☐ exactly 1 gram of particles

   ☐ 6.02×10^{23} particles

9. A Group 2 element usually forms an ion with charge:

   ☐ $+2$

   ☐ -1

   ☐ $+1$

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10. Ethane has empirical formula CH_3 and molecular formula C_2H_6. This shows:

    ☐ the molecular formula is the simpler ratio of the two

    ☐ they are the same thing written in two ways

    ☐ the empirical formula is the simplest ratio; the molecular formula is the actual count

    ☐ ethane has no true formula, only a ratio

1. **atomic**

   Ar (relative atomic mass) accounts for the abundance of each isotope.

2. **particles**

   This number is the Avogadro constant.

3. **True**

   Atoms are neither created nor destroyed, so mass is conserved.

4. **empirical**

   The molecular formula is a whole-number multiple of the empirical formula.

5. **False**

   False. Percentage yield = actual yield ÷ theoretical yield × 100. It compares what you obtained with the maximum possible.

6. **24**

   This is the molar gas volume at rtp (24 dm^3 per mole).

7. **the weighted average mass of its atoms over all isotopes, compared with 1/12 of carbon-12**

   Ar is the average over all isotopes (weighted by abundance), measured against 1/12 of a carbon-12 atom.

8. **6.02×10^{23} particles**

   A mole always contains the Avogadro number of particles, 6.02×10^{23}.

9. **+2**

   Group 2 elements lose two electrons to form 2+ ions; Group 17 form −1 ions.

10. **the empirical formula is the simplest ratio; the molecular formula is the actual count**

    Empirical = simplest whole-number ratio; molecular = the real number of atoms per molecule.

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