

- Perform the calculation below. How should the result of this calculation be expressed, taking into account the appropriate use of significant figures?

$$\frac{27.92}{14.3} - \frac{879.33}{592.1}$$
 - 0.5
 - 0.47
 - 0.467
 - 0.4673
 - 0.46734
- Perform the calculation below. How should the result of this calculation be expressed, taking into account the appropriate use of significant figures?

$$6.93 \times 10^{-5} + 2.7 \times 10^{-8} + 8.992 \times 10^{-5}$$
 - 1.6×10^{-4}
 - 1.59×10^{-4}
 - 1.592×10^{-4}
 - 1.5925×10^{-4}
 - 1.59247×10^{-4}
- How many significant figures are in the measured quantity below:

0.03080

 - 2
 - 3
 - 4
 - 5
 - 6
- What is the SI unit of mass?
 - kg
 - g
 - N
 - amu
 - lb
- Convert 0.0921 nm to pm.
 - 9.21×10^{-23} pm
 - 92.1 pm
 - 9.21×10^{-4} pm
 - 9.21×10^{-5} pm
 - 921 pm
- The density of air at ordinary atmospheric pressure and 25°C is 1.19 g/L. Convert this value to units of lb/ft³.
 - 74.3 lb/ft³
 - 8.00×10^{-5} lb/ft³
 - 0.182 lb/ft³
 - 0.0877 lb/ft³
 - 0.0743 lb/ft³
- Convert 75.0 mi/hr to m/s. (1 mi = 1.6093 km)
 - 33.5 m/s
 - 12.9 m/s
 - 43.6 m/s
 - 121 m/s
 - 335 m/s
- The density of magnesium is 1.74 g/cm³. What is the volume of 275 g of this metal?
 - 395 cm³
 - 479 cm³
 - 158 cm³
 - 522 cm³
 - 633 cm³
- Which of the symbol/name combinations below is incorrect?
 - W, tungsten
 - P, potassium
 - Na, sodium
 - Sn, tin
 - Au, gold
- A particle that has 34 protons, 36 electrons, and 44 neutrons would have the symbol
 - ³⁶Se
 - ⁷⁸Se²⁻
 - ³⁴Kr
 - ⁸¹Se²⁺
 - ⁸¹Se
- Which of the following compounds is named incorrectly?
 - CaF₂ calcium difluoride
 - Al₂O₃ aluminum oxide
 - CCl₄ carbon tetrachloride
 - SF₄ sulfur tetrafluoride
 - N₂O₄ dinitrogen tetroxide
- Which of the following compounds is molecular?
 - Fe₂O₃
 - NaCl
 - CuCl₂
 - K₂O
 - BrF₅
- What is the mass number of an isotope of ⁸⁰Hg that has 122 neutrons?
 - 80
 - 122
 - 200.59
 - 202
 - 160
- What is the product formed when calcium combines with nitrogen?
 - CaN
 - Ca₂N
 - Ca₃N₂
 - Ca₂N₃
 - Ca₃N₂
- What is the formula for aluminum dichromate?
 - AlCr₂O₇
 - Al₂Cr₂O₇
 - Al₃Cr₂O₇
 - Al₂(Cr₂O₇)₃
 - Al₃(Cr₂O₇)₂

16. What is the formula for lead(IV) oxide?
 a) PbO_2
 b) Pb_2O
 c) PbO_4
 d) Pb_4O
 e) Pb_2O_4
17. The bromate ion has the formula BrO_3^- . Which one of the following is bromous acid?
 a) HBrO_3
 b) HBrO_2
 c) HBrO_4
 d) HBrO
 e) HBr
18. An aqueous solution of which of the following is hydroselenic acid?
 a) HSe
 b) HSe_2
 c) H_2Se
 d) H_2SeO_4
 e) H_2SeO_3
19. Write the balanced equation for the complete combustion of ethanol, $\text{C}_2\text{H}_5\text{OH}$. What is the coefficient on oxygen when this equation is balanced using the smallest whole-number coefficients?
 a) 6
 b) 7
 c) 5
 d) 3
 e) 1
20. How many chloride ions are in 25.0 g of aluminum chloride?
 a) 5.02×10^{24}
 b) 1.13×10^{23}
 c) 2.41×10^{23}
 d) 3.39×10^{24}
 e) 3.39×10^{23}
21. Calculate the percent by mass of nitrogen in ammonium sulfate.
 a) 12.3%
 b) 10.6%
 c) 38.1%
 d) 24.6%
 e) 21.2%
22. What is the molar mass of calcium hydroxide?
 a) 114.2 g/mol
 b) 97.17 g/mol
 c) 57.10 g/mol
 d) 74.10 g/mol
 e) 58.10 g/mol
23. What is the empirical formula of a compound that is 54.5% carbon, 9.2% hydrogen and 36.3% oxygen by mass?
 a) C_6HO_4
 b) $\text{C}_4\text{H}_8\text{O}$
 c) $\text{C}_3\text{H}_4\text{O}$
 d) $\text{C}_2\text{H}_4\text{O}$
 e) $\text{C}_3\text{H}_4\text{O}_3$
24. Determine the mass in grams of PbI_2 produced in the complete reaction of 6.5 g of KI according to the following balanced equation:

$$\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3 \quad (\text{balanced})$$

 a) 2.3 g
 b) 9.0 g
 c) 18 g
 d) 36 g
 e) 0.039 g
25. How much hydrogen will be produced by the reaction of 4.73 g of magnesium with 1.83 g of water? (Be sure to balance the equation.)

$$\text{Mg} + \text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2 + \text{H}_2 \quad (\text{unbalanced})$$

 a) 0.0485 g
 b) 0.0162 g
 c) 0.102 g
 d) 0.219 g
 e) 0.204 g
26. The reaction of 2.5 g of aluminum with 2.5 g of oxygen produced 3.5 g of aluminum oxide. What was the percent yield? (The molar mass of Al_2O_3 is 101.96 g/mol.)

$$4 \text{Al}(\text{s}) + 3 \text{O}_2(\text{g}) \rightarrow 2 \text{Al}_2\text{O}_3 \quad (\text{balanced})$$

 a) 74%
 b) 37%
 c) 47%
 d) 66%
 e) 26%

Answers:

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|------|-------|-------|-------|-------|------|
| 1. B | 6. E | 11. A | 16. A | 21. E | 26.A |
| 2. C | 7. A | 12. E | 17. B | 22. D | |
| 3. C | 8. C | 13. D | 18. C | 23. D | |
| 4. A | 9. B | 14. E | 19. D | 24. B | |
| 5. B | 10. B | 15. D | 20. E | 25. C | |