

CHEMISTRY: MOLES / MASS / MOLECULES

CONCEPT: **1 Mole = Molecular Mass (MM) in grams = 6.02×10^{23} atoms/molecules**

Answers are at the bottom of the page. All atomic masses were taken to the nearest 0.01

Moles / Grams

1. How many moles are equal to 4.04 grams of H_2 ?
2. How many moles are equal to 36.0 grams of O_2 ?
3. 84.0 grams of NH_3 are equal to how many moles?
4. 56.0 grams of $AlCl_3$ are equal to how many moles?
5. You have 3.50 moles of $BaBr_2$. How many grams are present?
6. You have 4.65 moles of $NaCl$. How many grams are present?
7. How many grams of KCl are equal to 5.00 moles?
8. How many grams of H_2SO_4 are equal to 2.26 moles?

Moles / Molecules

9. How many molecules are in 1.00 moles of $AlCl_3$?
10. How many molecules are in 2.50 moles of H_2 ?
11. 5.67×10^{23} molecules of $NaOH$ contain how many moles?
12. 8.08×10^{23} molecules of O_2 contain how many moles?
13. How many moles are equal to 6.02×10^{23} atoms of Al ?
14. How many moles are equal to 3.45×10^{23} molecules of $NaCl$?
15. You have 1.20×10^{24} molecules of $Al_2(SO_4)_3$. How many moles?
16. 8.90×10^{24} molecules of $NaCl$ are in your beaker. How many moles?

Grams / Molecules

17. You have 6.02×10^{23} molecules of O_2 . How many grams are present?
18. You have 1.20×10^{24} molecules of CO_2 . How many grams?
19. How many grams of $NaCl$ are present if you have 8.79×10^{23} molecules?
20. How many grams of $BaBr_2$ are present if you have 3.01×10^{23} molecules?
21. You have 45.6 grams of H_2O . How many molecules are present?
22. You have 6.78 grams of Oxygen (O_2). How many molecules are present?
23. How many molecules are present if you have 56.0 grams of $BaBr_2$?
24. How many molecules are present if you have 34.0 grams of $(NH_4)_2CO_3$?

Mix and Match

25. How many moles are present if you have 56.0 grams of $BaBr_2$?
26. How many grams are present if you have 1.12×10^{23} atoms of Au ?
27. How many grams are present if you have 4.50 moles of KCl ?
28. How many molecules are present if you have 6.70 moles of Al_2O_3 ?
29. How many grams are present if you have 4.56×10^{23} molecules of $NaOH$?
30. How many grams are equal to 12.0 moles of H_2 ?
31. How many moles are equal to 3.50 grams of $BaBr_2$?
32. How many moles are equal to 6.02×10^{24} molecules of $Ca_3(PO_4)_2$?

Answers

- | | | | |
|--------------|---------------------------|---------------------------|---------------------------|
| 1. 2.00 mol | 9. 6.02×10^{23} | 17. 32.0 g | 25. 0.188 mol |
| 2. 1.13 mol | 10. 1.51×10^{24} | 18. 87.7 g | 26. 36.6 g |
| 3. 4.94 mol | 11. 0.942 mol | 19. 85.3 g | 27. 335 g |
| 4. 0.423 mol | 12. 1.34 mol | 20. 148.57 g | 28. 4.03×10^{24} |
| 5. 1040 g | 13. 1.00 mol | 21. 1.52×10^{24} | 29. 30.3 g |
| 6. 272 g | 14. 0.573 mol | 22. 1.28×10^{23} | 30. 24.2 g |
| 7. 373 g | 15. 1.99 mol | 23. 1.13×10^{23} | 31. 0.0118 mol |
| 8. 222 g | 16. 14.8 mol | 24. 2.13×10^{23} | 32. 10 mol |

