Molar Mass Problems - incomplete key

1. 110.986 g/mol
2. 132.03 g
3. 1.99 mol
4. 4240 g
5. Calculate moles in 168.0 g of HgS
6. Calculate moles in 510.0 g of Al_2S_3
7. How many moles are in 27.00 g of H_2O
8. Determine mass in grams of Avogadro number of $C_{12}H_{22}O_{11}$
9. Find mass in grams of 9.03 moles of H_2S
10. Determine grams in 1.204 mole of NH_3

Consider the molecule $CuNH_4Cl_3$ as you answer 11 - 19.

11. Name the elements present.
12. How many atoms form the molecule?
13. How many of each atom in the molecule?
14. How many hydrogen atoms in one mole of molecules?
15. How many chlorine atoms in six moles of molecules?
16. What is the molar mass of this molecule?
17. Name this molecule.
18. What is the mass in grams of one molecule?
19. How many moles would be in 6.84 g of this substance?

20. You need 0.0100 mole of lead (II) chromate. How much should you weigh on the scale?
21. Given 6.40 g of HBr. How many moles is this?
22. Write the correct formula for calcium acetate and then answer 23 - 25 based on it.
23. What is the mass of exactly one mole of calcium acetate?
24. How many moles are contained in 1.58 g of the substance in #23?
25. How much does 0.400 mole of #23 weigh?
26. Write the formula for oxygen gas.
27. How many atoms (and moles) are represented by the formula in #26?
28. What is the mass of Avogadro number of oxygen molecules?
29. Calculate the mass of one mole of each of these substances. (Optional: try naming each.)

a. 133.34	n. 255.26	aa. 7.95	an. 560.988	ba. 266.69	bn. 36.461
b. 203.59	o. 110.26	ab. 28.01	ao. 472.09	bb. 141.944	bo. 174.25
c. 239.26	p. 53.49	ac. 626.31	ap. 344.1666	bc. 80.04	bp. 58.443
d. 143.09	q. 136.08	ad. 56.106	aq. 383.788	bd. 171.34	bq. 133.846
e. 234.77	r. 122.97	ae. 94.20	ar. 154.99	be. 303.26	br. 417.179
f. 44.01	s. 304.23	af. 98.07	as. 226.09	bf. 601.93	bs. 20.006
g. 273.20	t. 106.87	ag. 629.78	at. 119.977	bg. 82.03	bt. 162.206
h. 472.09	u. 68.14	ah. 104.08	au. 149.087	bh. 171.34	bu. 120.055
i. 441.89	v. 129.84	ai. 35.046	av. 258.195	bi. 84.007	bv. 231.74
j. 238.59	w. 158.03	aj. 108.01	aw. 497.24	bj. 78.00	bw. 342.10
k. 74.55	x. 136.14	ak. 234.68	ax. 342.136	bk. 136.97	bx. 115.928
l. 58.10	y. 62.02	al. 101.96	ay. 150.82	bl. 159.69	by. 204.12
m. 81.38	z. 44.01	am. 123.555	az. 158.169	bm. 100.09	bz. 484.173

30. Determine the mass of one mole for the following two substances.
a. 292.246
b. 164.248

31 Determine the mass of one molecule

a.	H2	2.01594	3.34762537363e-24
b.	NO	30.0061	4.98274659582e-23
c.	NH3	17.03061	2.82806542677e-23
d.	U235F6	349.03432	5.79598671538e-22
e.	U238F6	352.04118	5.84591796745e-22

32 Determine the mass of the stated number of moles.

a.	2.55 mole Cu2CrO4	243.0856	2.55	619.86828
b.	10.0 mole NaCl	58.34277	10	583.4277
c.	3.00 mole H2	2.01594	3	6.04782
d.	1.55 mole KrF2	121.7968	1.55	188.78504
e.	0.100 mole H2O	18.01534	0.1	1.801534
f.	1.500 mole K2SO4	174.2542	1.5	261.3813
g.	4.50 mole Na2O	61.77894	4.5	278.00523
h.	1.95 mole HNO3	63.01287	1.95	122.8750965
i.	2.20 mole SnCl2	189.596	2.2	417.1112
j.	3.27 mole O2	31.9988	3.27	104.636076
k.	0.100 mole NH3	17.03061	0.1	1.703061
l.	0.500 mole CaCO3	100.08935	0.5	50.044675
m.	0.0010 mole H2SO4	98.07354	0.001	0.09807354
n.	0.30 mole HCl	36.36097	0.3	10.908291
o.	2.00 mole HC2H3O2	60.05298	2	120.10596
p.	5.00 mole Ag2O	231.7354	5	1158.677
q.	0.000300 mole AuCl3	303.3255	0.0003	0.09099765
r.	0.00550 mole CH4	16.04303	0.0055	0.088236665
s.	0.300 mole H3PO4	97.99527	0.3	29.398581
t.	5.0 mole NH4OH	35.04595	5	175.22975
u.	0.00200 mole Na2SO4	141.83714	0.002	0.28367428

33 Determine the number of moles in the stated mass.

a.	26.0 gram Ca(ClO4)2	0.109
b.	32.0 gram O2	1.00
c.	34.2 gram NH3	2.01
d.	9.00 gram H2SO4	0.0918
e.	59.3 gram SnF2	0.378
f.	0.00500 gram XeO3	0.0000279
g.	10.0 gram SO3	0.125
h.	1.00 gram CO2	0.0227
i.	5.00 gram CaCO3	0.0500
j.	1.00 gram NaCl	0.0171
k.	98.9 gram NaI	0.660
l.	14.0 gram N2	0.500
m.	15.0 gram PbO	0.0672
n	50.00 gram KBr	0.420
o.	5.08 gram XeF4	0.0245
p.	10.0 gram V2O5	0.0550
q.	2.50 gram K2Cr2O7	0.00850
r.	10.00 gram Na2CO3	0.0945
s.	3.091 gram K2SO4	0.0177
t.	20.00 gram KOH	0.356
u.	0.0089 gram IF7	0.0000342
v.	2.00 x 10-3 gram NH4NO3	0.0000250
w.	1.00 gram Ba(OH)2	0.00584
x.	0.0010 gram Al(MnO4)3	0.0000026
y.	32.58 gram CuS	0.3408
z.	2.001 gram Al2O3	0.01962
aa.	1.00 x 102 gram KCl	1.34
ab.	12.25 gram Sr(HCO3)2	0.05843
ac.	10.0 gram KAl(SO4)2	0.0387

ad.	2.50 gram $CoSO_4 \cdot 6H_2O$	0.00950
ae.	24.0 gram CO	0.857
af.	3.45 gram $ZnCl_2$	0.0253
ag.	36.0 gram H_2O	2.00

34. Which of the following pure iron samples contains the largest number of atoms?
a. 6.70 g b. 0.110 mole c. 7.83×10^{22} atoms

35. Arrange the following in order of increasing weight.
a. 10.4 g of sulfur b. 0.179 moles of iron c. 6.33×10^{25} atoms of hydrogen d. 0.77 moles of N_2

36. How many atoms of copper are there in a piece of copper that weighs the same as a piece of aluminum that contains 4.86×10^{21} atoms of aluminum?

37. Can you swim in a billion billion (1×10^{18}) molecules of water? What mass does this represent?

38. How many molecules of oxygen (O_2) would be required to produce one drop (0.010 g) of water?