Molar Mass Problems

1) $40.08 + 2(35.453) = 110.986\ g/mol$ (more or less)

2) $44.011\ g/mol \times 3.0000\ mol = 132.03\ g$

3) $32.0\ g / 16.0\ g/mol = 2.00\ mol$

4) $105.99\ g/mol \times 40.0\ mol = 4240\ g$

5) $168.0\ g / 232.66\ g/mol = 0.722\ mol$

6) $510.0\ g / 150.16\ g/mol = 3.396\ mol$

7) $27.0\ g / 18.0\ g/mol = 1.50\ mol$

8) $(12.011 \times 12) + (1.008 \times 11) + (15.9994 \times 11) = 342.3\ g/mol$

9) $9.03\ mol \times 34.08\ g/mol = 308\ g$

10) $1.204\ mol \times 17.03\ g/mol = 20.50\ g$

11) copper, nitrogen, hydrogen, chlorine

12) Nine 13) Cu-one N-one H-four Cl-three

14) $4\ mol\ of\ H\ atoms \times 6.022 \times 10^{23} = 2.41 \times 10^{24}\ atoms$

15) $3 \times 6 \text{ moles} \times (6.022 \times 10^{23} \text{ atoms/mole}) = 1.084 \times 10^{25} \text{ atoms}$

16) 187.94 g/mol

17) copper(II) ammonium chloride (or cupric amm. chl.)

18) $187.94 \text{ g/mol} \;/\; 6.022 \times 10^{23} \text{ molecules/mol} = 3.121 \times 10^{-22} \text{ g}$

19) $6.84 \text{ g} \;/\; 187.94 \text{ g/mol} = 0.0364 \text{ mol}$

20) lead(II) chromate = $PbCrO_4$ = 323.19 g/mol
$323.19 \text{ g/mol} \times 0.0100 \text{ mol} = 3.23 \text{ g}$

21) $6.40 \text{ g} \;/\; 80.91 \text{ g/mol} = 0.0791 \text{ mol}$

22) $Ca(C_2H_3O_2)_2$ or $Ca(CH_3COO)_2$

23) 158.17 g/mol

24) $1.58 \text{ g} \;/\; 158.17 \text{ g/mol} = 0.00999 \text{ mol}$
(0.0100 mol is acceptable)

25) $0.400 \text{ mol} \times 158.17 \text{ g/mol} = 63.27 \text{ g}$
(OK 63.3g to 3 sig figs. Happy now?)

26) O_2

27) two atoms. one mole of molecules (two moles of atoms)

28) 31.9988 g/mol (molecules means O_2)