14.4 (a) The repeat unit molecular weight of polypropylene is called for in this portion of the problem. For polypropylene, from Table 14.3, each repeat unit has three carbons and six hydrogens. Thus,

$$m = 3(A_C) + 6(A_H)$$

$$= (3)(12.01 \text{ g/mol}) + (6)(1.008 \text{ g/mol}) = 42.08 \text{ g/mol}$$

(b) We are now asked to compute the number-average molecular weight. Since the degree of polymerization is 15,000, using Equation 14.6

$$\overline{M}_n = (DP)m = (15,000)(42.08 \text{ g/mol}) = 631,000 \text{ g/mol}$$