

33. (a) In atomic mass units, the mass of one molecule is $16 + 1 + 1 = 18$ u. Using Eq. 1-9, we find

$$(18 \text{ u}) \left(\frac{1.6605402 \times 10^{-27} \text{ kg}}{1 \text{ u}} \right) = 3.0 \times 10^{-26} \text{ kg} .$$

- (b) We divide the total mass by the mass of each molecule and obtain the (approximate) number of water molecules:

$$\frac{1.4 \times 10^{21}}{3.0 \times 10^{-26}} \approx 5 \times 10^{46} .$$