Divide the masses, regroup, divide the numbers, and use the quotient rule:

$$\frac{1.9 \times 10^{27}}{6 \times 10^{24}} = \left(\frac{1.9}{6}\right)\left(\frac{10^{27}}{10^{24}}\right) = 0.317 \times 10^{27-24} =$$
$$0.317 \times 10^3$$

Convert 0.317 to scientific notation, regroup, and use the product rule:
$$3.17 \times \left(10^{-1} \times 10^3\right) = 3.17 \times 10^{-1+3} = 3.17 \times 10^2$$