37. Since the rest energy E_0 and the mass m of the quasar are related by $E_0 = mc^2$, the rate P of energy radiation and the rate of mass loss are related by $P = dE_0/dt = (dm/dt)c^2$. Thus,

$$\frac{dm}{dt} = \frac{P}{c^2} = \frac{1 \times 10^{41}\,\mathrm{W}}{(2.998 \times 10^8\,\mathrm{m/s})^2} = 1.11 \times 10^{24}\ \mathrm{kg/s}\ .$$

Since a solar mass is $2.0 \times 10^{30}\,\mathrm{kg}$ and a year is $3.156 \times 10^7\,\mathrm{s}$,

$$\frac{dm}{dt} = (1.11 \times 10^{24}\,\mathrm{kg/s})\left(\frac{3.156 \times 10^7\,\mathrm{s/y}}{2.0 \times 10^{30}\,\mathrm{kg/smu}}\right) \approx 18\ \mathrm{smu/y}\ .$$