50. We apply Eq. 4-33 to solve for speed v and Eq. 4-32 to find centripetal acceleration a.

(a) $v = 2\pi r/T = 2\pi(20\,\text{km})/1.0\,\text{s} = 1.3 \times 10^5\,\text{km/s}$.

(b)

$$a = \frac{v^2}{r} = \frac{(126\,\text{km/s})^2}{20\,\text{km}} = 7.9 \times 10^5\,\text{m/s}^2 \ .$$

(c) Clearly, both v and a will increase if T is reduced.