

19. (a) The acceleration is

$$a = \frac{F}{m} = \frac{20 \text{ N}}{900 \text{ kg}} = 0.022 \text{ m/s}^2 .$$

(b) The distance traveled in 1 day (= 86400 s) is

$$s = \frac{1}{2}at^2 = \frac{1}{2} (0.0222 \text{ m/s}^2) (86400 \text{ s})^2 = 8.3 \times 10^7 \text{ m} .$$

(c) The speed it will be traveling is given by

$$v = at = (0.0222 \text{ m/s}^2)(86400 \text{ s}) = 1.9 \times 10^3 \text{ m/s} .$$