

$$\mathbf{23.} \quad d = 10 + 2 \cdot \frac{3}{4} \cdot 10 + 2 \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot 10 + 2 \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot 10 + \dots$$

$$= 10 + 20 \left(\frac{3}{4}\right) + 20 \left(\frac{3}{4}\right)^2 + 20 \left(\frac{3}{4}\right)^3 + \dots = 10 + \frac{20(3/4)}{1 - 3/4} = 10 + 60 = 70 \text{ meters}$$

$$\mathbf{24.} \quad \text{volume} = 1^3 + \left(\frac{1}{2}\right)^3 + \left(\frac{1}{4}\right)^3 + \dots + \left(\frac{1}{2^n}\right)^3 + \dots = 1 + \frac{1}{8} + \left(\frac{1}{8}\right)^2 + \dots + \left(\frac{1}{8}\right)^n + \dots$$

$$= \frac{1}{1 - (1/8)} = 8/7$$