

Tutorial Sept. 11

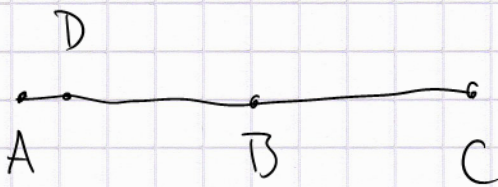
1.6

$$\text{given (mass)}_{\text{bucket+rocks}} = 4.55 \text{ kg}$$

$$\text{add } m_{\text{rock}} = 0.224 \text{ kg}$$

$$\text{total mass} = \underline{4.77 \text{ kg}}$$

1.8



$$\overline{BD} = 3.15 \text{ km}$$

$$\overline{AB} = 3.45 \text{ km}$$

$$\text{CD } \overline{AD} = 0.30 \text{ km}$$

1.14

a) Assume 1 heart beat / second *

$$1 \text{ yr} = 60 \cdot 60 \cdot 24 \cdot 365 \text{ s}$$

$$= 31,536,000 \text{ s}$$

$$\Rightarrow 3.2 \times 10^7 \text{ heart beats / yr}$$

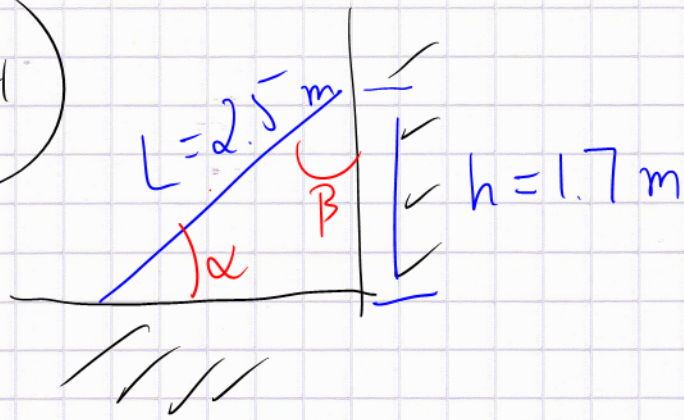
b) Average life expectancy 77.9 yrs

$$0.88 \frac{\text{beats}}{\text{s}} \times X \text{ yrs} = 1 \frac{\text{beat}}{\text{s}} \times 77.9 \text{ yrs}$$

* actually 80 beats/min would be more realistic

$$X = \frac{77.9 \text{ yrs}}{0.88} = 88 \text{ yrs}$$

1.44



$$\sin \alpha = \frac{1.7}{2.5} = 0.68$$

$$\alpha = \sin^{-1}(0.68) = 43^\circ$$

$$\beta = 90^\circ - 43^\circ = 47^\circ$$