

$$\text{Work} = fd$$

$$\text{Work done} = 4687 \text{ lbf} \cdot \text{ft}$$

$$\text{force} = 11 \times 81 = 891 \text{ lbf}$$

$$d = \frac{\text{Work}}{\text{force}} = \frac{4687}{891}$$

$$= 5.26 \text{ ft}$$

2.

$$W = Fd$$

$$238.5 \times 9.8 \text{ N} \times 8.5$$

$$19,867.05 \text{ Nm}$$

4

$$\text{torque } T = r \times f$$

$$f = \frac{T}{r} \quad \text{but } r = 10 \text{ cm} = 0.1 \text{ m}$$

$$T = 42 \text{ Nm}$$

$$= \frac{42}{0.1}$$

$$420 \text{ N}$$

5

$$F = \frac{T}{r}$$

$$T = 203.01 \text{ lbf} \cdot \text{ft}$$

$$r = 1.0 \text{ ft}$$

$$\frac{203}{1.0}$$

$$= 203 \text{ lb}$$

f

$$F = \frac{T}{r}$$

$$r = 0.1 \text{ m}$$

$$T = 27.0 \text{ Nm}$$

$$= \frac{27.0}{0.1}$$

$$270 \text{ N}$$

3.

$$W = Fd \cos \theta$$

$$\theta = 37.5^\circ$$

$$F = 30.5 \text{ lb}$$

$$d = 4 \times 5280 \text{ ft} = 21120 \text{ ft}$$

$$W = 21120 \times 30.5 \times \cos 37.5$$

$$511046.49 \text{ lbf} \cdot \text{ft}$$

$$511046$$