Prodigious Practice Problems Solutions - Work Section

Wednesday, January 31, 2018 1:43 PM

(1). $W = F \cdot d = 47\,N \times 0.26\,m = \boxed{12\,J}$

(2). $W = F \cdot d = 47\,N \times 0.26\,m = \boxed{11.8\,J}$

(3) $W = F \cdot d = 2.4\,N(0.75\,m) = \boxed{1.8\,J}$

(4) NO MAX WORK GIVEN. ∴ TO ∞ AND BEYOND.

(5) $W = mg \cdot d = 20.0\,kg \times 9.80\,\frac{N}{kg} \times 6.50\,m = \boxed{1.27 \times 10^3\,J}$

(6) $F = \frac{W}{d} = \frac{520\,J}{260\,m} = \boxed{2.00\,N}$

(7) a) WORK DONE ON SLED: $(300\,N - 200\,N)(750\,m) = \boxed{7.5 \times 10^4\,J}$

b) $W = (300 - 300)750 = \boxed{0\,J}$

(8) $W = F \cdot d = F \cdot 0 = 0\,J$ [THE WALL DOESN'T MOVE!]

(9) $W = F \cdot d = 40.0\,N\left(0.800\,\frac{m}{s} \times 1800\,s\right) = \boxed{5.76 \times 10^4\,J}$

(10) Assume you are lifting the object:

$W = 25\,N \times 5.0\,m = 125\,J = \boxed{1.30 \times 10^2\,J}$

(11) $W = F \cdot d = 20.0\,N \times 6.00\,m = \boxed{120\,J}$

(12) NO MOVEMENT ∴ $\boxed{W = 0}$

(13) $d = \frac{W}{F} = 35\,J = \boxed{5.0\,m}$

(14) a) $F = kx$, $k = \frac{F}{x} = \frac{F_g}{x} = \frac{50.0\,kg \times 9.80\,N/kg}{12.0\,m} = \boxed{40.8\,\frac{N}{kg}}$

b) $W = F \cdot d$ {BUT, F must be constant. The spring force is not constant...}

∴ $W = F_{avg} \cdot d$ $\quad F_{avg} = \frac{490\,N}{2} = 245\,N$

$W = 245\,N \cdot 12\,m = \boxed{2.94 \times 10^3\,J}$