Work Problems

Hecht, Giancolli, et al

1. Fapp = F*f* = 230 N W = 230)(4m) = 920 J

Vertically W = mgh = 1300N)(4.0) = 5200 J

1. F = F*f* = μmg = = (784 N)(10.3 m) = W = 8075 J
2. W = ΔKE = ½ mv 2 = ½ (5)(14m/s)2 = 490 J (vf = vo + at) = 14 m/s
3. Fmp = mgsinΘ – μmgcosΘ = 1518N – 1142N = 376 N

Wg = mgsinΘ (x) = 330)(9.8(sin28)(3.6 m) = 5466 J

W*f* = μmgcosΘ (x) = (.4)(330)(9.8)(3.6 m) = – 4112 J

Wm = 376N (3.6 m) = –1354 J

Wnet = 5466 – 1354 – 4112 = 0 J

1. Work will either be W = mgsinΘ (x) where x = 810 m or

Work = mgh for the vertical height of the ramp (810sin 9) =126.7 m

Wg = (950)(9.8)(sin 9) (810 m) = = 1180 kJ (length of ramp)

Wg = 950(9.8) 126.7 m = 1180 kJ

W*f* = μgcosΘ(810m) = 1862 kJ

1. WFapp = 100 N cos 37))(40 m) = 3196 J

WF*f* = 50 N)(40 m) = – 2000 J

Wnet = + 1196 J This would be noticed as an increase in velocity of the crate

1. 400 kN)(500 m) = 200,000 kJ

– 100 kN)(1000 m) = – 100,000 kJ

1. Fapp = 1000 N(cos30)(10,000 m) = 8660 kJ