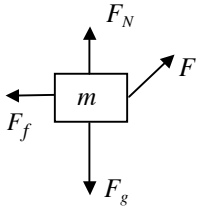
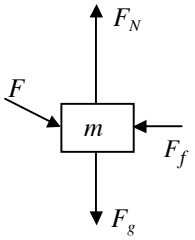
AP Physics 1
Force Practice Problem 2 Answers

1.) a.) 

b.) $F_N + F_y - F_g = 0$ $\quad F_x - F_f = ma$

c.) $F_f = 39.75$ N

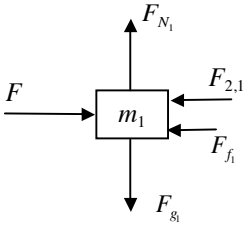
d.) $a = 2.05 \ \frac{\text{m}}{\text{s}^2}$

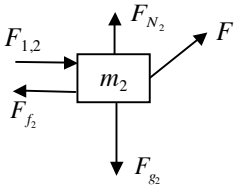
2.) a.) 

b.) $F_N - F_y - F_g = 0$ $\quad F_x - F_f = ma$

c.) $F_f = 35.3$ N

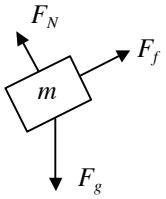
d.) $a = 4.35 \ \frac{\text{m}}{\text{s}^2}$

3.) a.) 



b.) $F - F_{2,1} - F_{f_1} = m_1 a$ $\quad F_{N_1} - F_{g_1} = 0$ $\quad F_x + F_{1,2} - F_{f_2} = m_2 a$ $\quad F_{N_2} + F_y - F_{g_2} = 0$

c.) $a = 3.91 \ \frac{\text{m}}{\text{s}^2}$ and $F_{2,1} = 4.13$ N

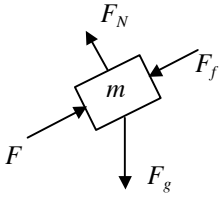
4.) a.) 

b.) $F_{//} - F_f = ma$ $\quad F_N - F_\perp = 0$

c.) $F_{//} = 14.7$ N

d.) $F_\perp = 19.6$ N

e.) $a = 3.92 \ \frac{\text{m}}{\text{s}^2}$

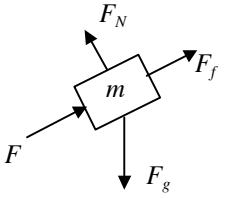
f.) 

g.) $F - F_{//} - F_f = ma$ $\quad F_N - F_\perp = 0$

h.) $a = 2.16 \ \frac{\text{m}}{\text{s}^2}$

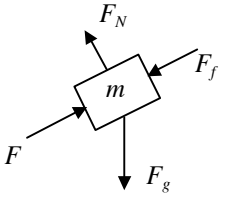
5.) a.) $F_{//} = 274.4$ N

b.) $F_\perp = 205.8$ N

c.) 

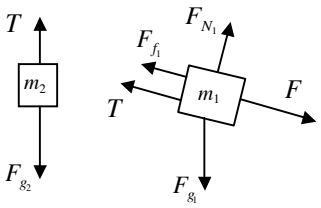
d.) $F_{//} - F - F_f = 0$ $\quad F_N - F_\perp = 0$

e.) $F = 233.2$ N

f.) 

g.) $F - F_{//} - F_f = ma$ $\quad F_N - F_\perp = 0$

h.) $F = 385.6$ N

6.) a.) 

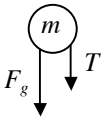
b.) $F + F_{//_1} - F_{f_1} - T = m_1 a$
$F_{N_1} - F_{\perp_1} = 0$
$T - F_{g_2} = m_2 a$

c.) $F_{//_1} = 88.2$ N
$F_{\perp_1} = 117.6$ N

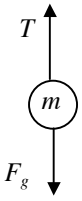
d.) $a = 1.22 \ \frac{\text{m}}{\text{s}^2}$ and $T = 275.5$ N

7.) a.) $v = 7.54 \ \frac{\text{m}}{\text{s}}$

b.) $T = 14.2$ N

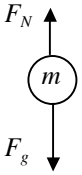
8.) a.) 

b.) $v = 3.28 \ \frac{\text{m}}{\text{s}}$

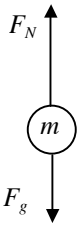
c.) 

d.) $T = 7.35$ N

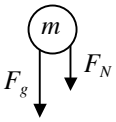
9.) $T = 89$ N > 80 N, so Bebop will not reach the other side

10.) a.) 

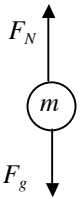
b.) $v = 8.57 \ \frac{\text{m}}{\text{s}}$

c.) 

d.) $F_N = 1176$ N

11.) a.) 

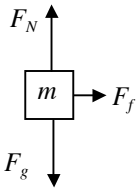
b.) $F_N = 492$ N

c.) 

d.) $F_N = 1570$ N

12.) a.) $r = 20$ m

b.) $F_N = 663$ N

13.) a.) 

b.) $v = 11.7 \ \frac{\text{m}}{\text{s}}$

14.) a.) $F_f = 1550$ N

b.) $\mu = 0.115$