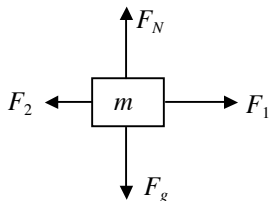


AP Physics 1
Force Practice Problem for Test 4 Answers

1.) a.)



b.) $F_1 - F_2 = ma$
 $F_N - F_g = 0$

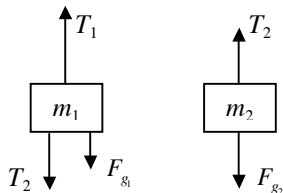
c.) $a = 2.0 \frac{\text{m}}{\text{s}^2}$, east

2.) a.) $F_g = 63.7 \text{ N}$

b.) $F_g = 24.7 \text{ N}$

3.) $F_g = 121.5 \text{ N}$

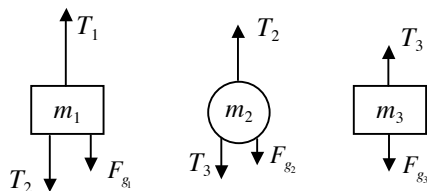
4.) a.)



b.) $T_1 - T_2 - F_{g1} = 0$
 $T_2 - F_{g2} = 0$

c.) $T_1 = 127.4 \text{ N}$ and $T_2 = 78.4 \text{ N}$

5.) a.)

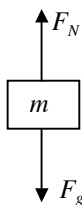


b.) $T_1 - T_2 - F_{g1} = 0$
 $T_2 - T_3 - F_{g2} = 0$
 $T_3 - F_{g3} = 0$

c.) $T_2 = 245 \text{ N}$, $T_3 = 147 \text{ N}$, and $m_2 = 10.0 \text{ kg}$

6.) a.) $m = 5.51 \text{ kg}$

b.)



c.) $F_N - F_g = ma$

d.) $a = 1.09 \frac{\text{m}}{\text{s}^2}$ upward

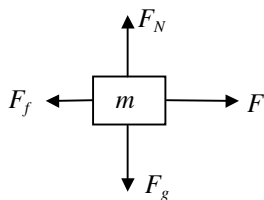
e.) $a = 2.00 \frac{\text{m}}{\text{s}^2}$ downward

f.) $F_N = 70.5 \text{ N}$

g.) $F_N = 40.2 \text{ N}$

h.) $F_N = 0$

7.) a.)



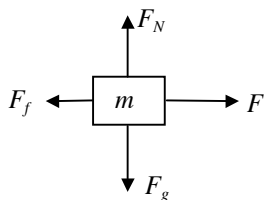
b.) $F_N - F_g = 0$
 $F - F_f = ma$

c.) $F = 147 \text{ N}$

d.) $F = 49 \text{ N}$

e.) $F = 199 \text{ N}$

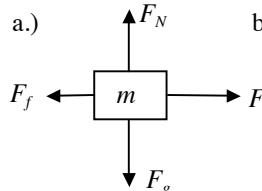
8.) a.)

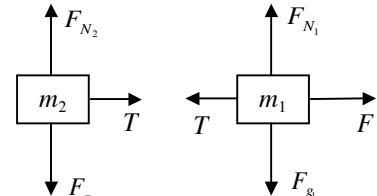


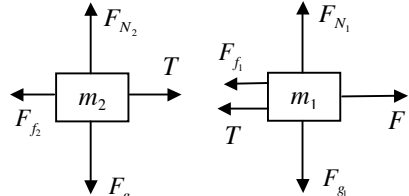
b.) $F_N - F_g = 0$
 $F - F_f = ma$

c.) $F_f = 10 \text{ N}$

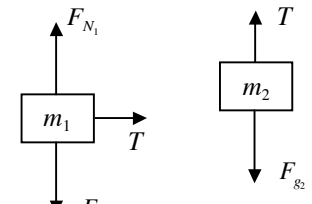
d.) $\mu_k = 0.204$

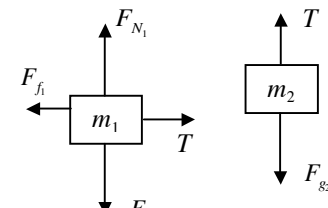
9.) a.)  b.) $F_N - F_g = 0$ c.) $F_f = 30 \text{ N}$ d.) $a = 1.5 \frac{\text{m}}{\text{s}^2}$
 $F - F_f = ma$

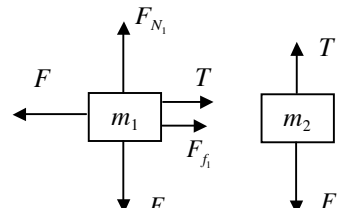
10.) a.)  b.) $F_{N_2} - F_{g_2} = 0$ c.) $a = 4.0 \frac{\text{m}}{\text{s}^2}$ and $T = 16 \text{ N}$
 $F_{N_1} - F_{g_1} = 0$
 $T = m_2 a$
 $F - T = m_1 a$

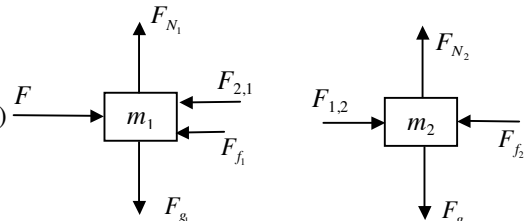
11.) a.)  b.) $F_{N_2} - F_{g_2} = 0$ c.) $a = 1.55 \frac{\text{m}}{\text{s}^2}$ and $T = 16 \text{ N}$
 $F_{N_1} - F_{g_1} = 0$
 $T - F_{f_2} = m_2 a$
 $F - F_{f_1} - T = m_1 a$

12.) $F = 41.2 \text{ N}$

13.) a.)  b.) $F_{N_1} - F_{g_1} = 0$ c.) $a = 3.92 \frac{\text{m}}{\text{s}^2}$ and $T = 58.8 \text{ N}$
 $F_{g_2} - T = m_2 a$
 $T = m_1 a$

14.) a.)  b.) $F_{N_1} - F_{g_1} = 0$ c.) $a = 2.65 \frac{\text{m}}{\text{s}^2}$ and $T = 179 \text{ N}$
 $F_{g_2} - T = m_2 a$
 $T - F_{f_1} = m_1 a$

15.) a.)  b.) $F_{N_1} - F_{g_1} = 0$ c.) $a = 5.06 \frac{\text{m}}{\text{s}^2}$ and $T = 371 \text{ N}$
 $T - F_{g_2} = m_2 a$
 $F - T - F_{f_1} = m_1 a$

16.) a.)  b.) $F_{N_1} - F_{g_1} = 0$
 $F_{N_2} - F_{g_2} = 0$
 $F - F_{2,1} - F_{f_1} = m_1 a$
 $F_{1,2} - F_{f_2} = m_2 a$

c.) $a = 4.19 \frac{\text{m}}{\text{s}^2}$ and $F_{1,2} = 49.2 \text{ N}$