

P112 PAge 182 # 20 Arctic Explorer problem

m_B m_A $F = 165\text{ N}$ $a = 0.61\text{ m/s}^2$
 55 kg 95 kg

\leftarrow System \rightarrow $F = 165\text{ N}$
 F F

a) $F_n = F - F_f$
 $91.5 = 165 - F_f$
 $F_f = 165 - 91.5 = 73.5\text{ N}$

$F_f = \mu N$
 $= (150)(0.61)$
 $= 91.5\text{ N}$

b) Find $\mu = \frac{F_f}{N} = \frac{73.5}{(150)(0.81)} = 0.05$

$f_b \leftarrow$ \rightarrow T \leftarrow ON B ONLY
 $F_n = T - f_k$
 $T = F_n + f_k$
 $= m_B a + 26.98$
 $= 55(0.61) + 26.98$
 $= 33.55 + 26.98$
 $= 60.5\text{ N}$

$f_k = (0.05)(33.55) = 26.98$
 $F_g = 55(9.81) = 539.95$

Apr 11-9:55 AM