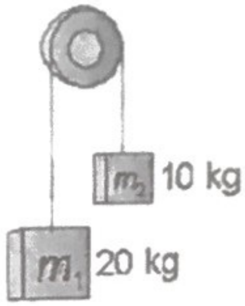
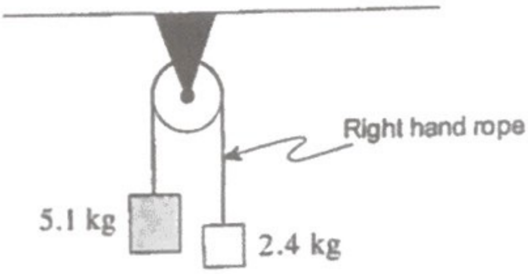
1. What is the acceleration of the system in the picture at the right?

   (a) 3.3 m/s²
   (b) 9.8 m/s²
   (c) 4.9 m/s²
   (d) 6.6 m/s²



2. A frictionless pulley is set up with two hanging masses as shown at the right. What is the tension in the right-hand rope while the masses move freely?

   (a) 15 N
   (b) 24 N
   (c) 26 N
   (d) 32 N



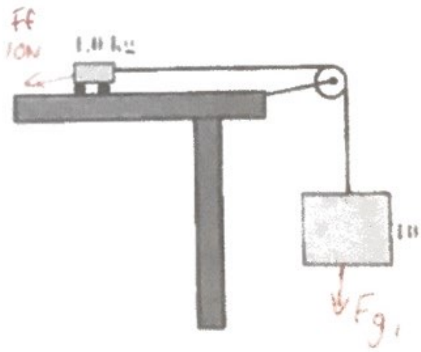
3. The diagram below shows a 1.0 kg object connected to a 10.0 kg mass. Assuming the force of fraction is 10.0 N, what is the acceleration of the system?

   (a) 8.0 m/s²
   (b) 8.8 m/s²
   (c) 8.9 m/s²
   (d) 9.8 m/s²

$\Sigma F_{net} = F_{g1} + F_s$

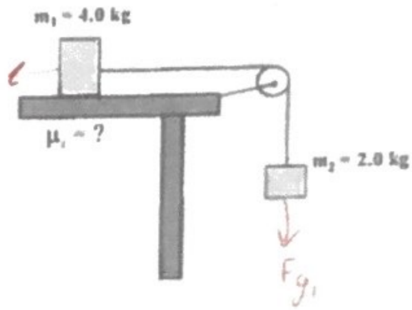
$(10+1\ kg)\,a = 98\,N - 10N = 88N$

$a \cong 8\ \frac{m}{s^2}$



4. In the diagram below, two masses are connected by a light string over a frictionless, massless pulley. What coefficient of static friction is required to keep m_1 from slipping?

(a) 0.33
(b) 0.50
(c) 0.67
(d) 2.0



$\Sigma F_{net} = 0$

$F_f = F_{g_1}$

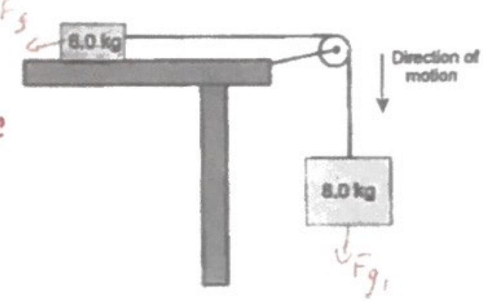
$\mu F_{N_1} = F_{g_1}$

$\mu (4.0\,kg)(9.8\,\frac{m}{s^2}) = (2.0\,kg)(9.8\,\frac{m}{s^2})$

$\mu = 0.5$

5. In the diagram shown, the acceleration of the system is 4.6 m/s^2. What is the force of friction acting on the 6 kg box?

(a) 14 N
(b) 42 N
(c) 64 N
(d) 78 N



$\Sigma F_{net} = F_{g_1} - F_f$

$(8\,kg + 6\,kg)(4.6\,\frac{m}{s^2}) = (8\,kg)(9.8\,\frac{m}{s^2}) - F_f$

$F_f = 78.4\,N - 64.4\,N = 14\,N$