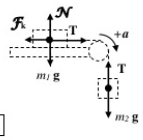
Solucionario Fisica Tippens 7 25

*7-27. (Cont.) $a = \dfrac{58.8\text{ N} - 7.84\text{ N}}{10\text{ kg}}$ or $\boxed{a = 5.10\text{ m/s}^2}$



To find T, consider only m_2 and make down positive:

$\Sigma F_y = m_2 a$; $m_2 g - T = m_2 a$; $T = m_2 g - m_2 a$

$T = (6\text{ kg})(9.8\text{ m/s}^2) - (6\text{ kg})(5.10\text{ m/s}^2)$; $\boxed{T = 28.2\text{ N}}$

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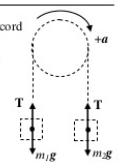
*7-28. Assume that the masses $m_1 = 2$ kg and $m_2 = 8$ kg are connected by a cord that passes over a light frictionless pulley as in Fig. 7-14. What is the acceleration of the system and the tension in the cord?



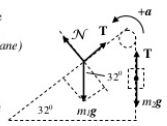
Resultant force = total mass of system x acceleration

$m_2 g - m_1 g = (m_1 + m_2)a$ $\qquad a = \dfrac{m_2 g - m_1 g}{m_1 + m_2}$

$a = \dfrac{(8\text{ kg})(9.8\text{ m/s}^2) - (2\text{ kg})(9.8\text{ m/s}^2)}{2\text{ kg} + 8\text{ kg}}$ $\boxed{a = 5.88\text{ m/s}^2}$ *Now look at m_1 alone:*

$T - m_1 g = m_1 a$; $T = m_1(g + a) = (2\text{ kg})(9.8\text{ m/s}^2 - 5.88\text{ m/s}^2)$; $\boxed{T = 31.4\text{ N}}$

7-29. The system described in Fig. 7-15 starts from rest. What is the acceleration assuming zero friction? (assume motion down plane)



$\Sigma F_x = m_T a$; $m_1 g \sin 32^0 - m_2 g = (m_1 + m_2)\, a$

$(10\text{ kg})(9.8\text{ m/s}^2)\sin 32^0 - (2\text{ kg})(9.8\text{ m/s}^2) = (10\text{ kg} + 2\text{ kg})a$

$a = \dfrac{51.9\text{ N} - 19.6\text{ N}}{12\text{ kg}}$ $\boxed{a = 2.69\text{ m/s}^2}$

7-30. What is the acceleration in Fig. 7-15 as the 10-kg block moves down the plane against friction ($\mu_k = 0.2$). Add friction force $\mathcal{F}$ up plane in figure for previous problem.

$m_1 g \sin 32^0 - m_2 g - \mathcal{F} = (m_1 + m_2)\, a$; $\Sigma F_y = 0$; $\mathcal{N} = m_1 g \cos 32^0$

: I.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N)I 2/2 0.01 m.. Dst = -0.05 m.(8 N)I 2/2 0.01 m.. Work = 0.05 m.(8 N) 82157476af