



4. A 2.5 kg ball hangs from the ceiling by a string that is 75 cm long. The height of the room is 3.0 m. What is the potential energy of the ball (a) relative to the floor? (b) Relative to the top of an 88 cm tall tabletop? (c) Relative to the ceiling?

5. A block **A** of mass  $m_1$  rests on a very smooth table and is attached to block **B** of mass  $m_2$  that hangs over the table as shown. Block **A** is distance  $3d$  from the end of the table. Block **B** is distance  $2d$  from the deck and distance  $d$  from the tabletop. (a) What is the potential energy of block **B** relative to the deck? (b) What is the acceleration of the system when block **A** is released? (c) What is the kinetic energy of block **B** just before it hits the deck? (d) What is the kinetic energy of block **A** at the moment it reaches the edge of the table (e) What is the potential energy of block **A** at the same point? (f) What is the kinetic energy of block **A** just before it hits the deck?

