PAL Problem Set 20 for Phys 5A
(Gravitational Potential Energy)

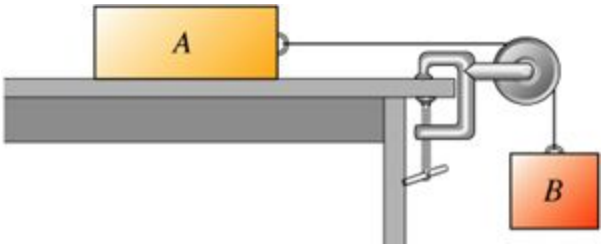
Always explain your answers and show your work.

Problem 1 - Linus and Becca go down water slides (where we can assume there is no friction). Linus, whose mass is 60 kg goes down a very steep slide that makes an angle of 45 degrees with the horizontal. Becca, whose mass is 50 kg goes down a slide that makes an angle of 30 degrees with the horizontal. Both slides start at the same height of 3 meters above the ground.

A. Use kinematics to find the speed of each one just before they hit the water.

B. Use the principle of conservation of energy to check your result from part A.

Problem 2 - Consider the system shown in the figure. Block A has mass 800 g and block B has mass of 500 g**.** The surface is frictionless, the string is massless, and the pulley is both massless and frictionless. The system is released from rest.



A. Use Newton's Laws and kinematics to find the speed of the blocks after the block B descends 30 cm.

B. Use the principle of conservation of energy to check your result from part A. Clearly explain what energy transformation(s) is(are) taking place.