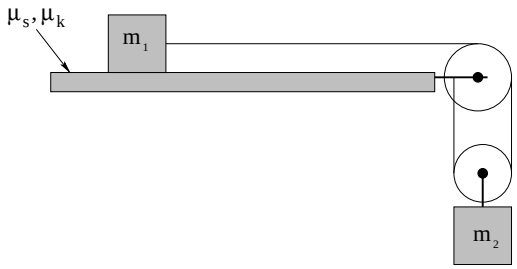
Concept Assignment 3

Physics 141
Spring, 2013

Use the "Got the Concept" questions for self-instruction, but prepare answers for the other concept/short questions to discuss in recitation.

University Physics: Read Mathbox 6-1: ***Dot Product***. Got the Concept 6-1, 6-2, 6-3, 6-4. Conceptual Question 2, 5, 7, 15. Multiple Choice 21, 26, 28

Question 1.



A block of mass m_1 sits on a rough table. The coefficient of static and kinetic friction between the mass and the table are μ_s and μ_k, respectively. Another mass m_2 is suspended as indicated in the figure above (where the pulleys are massless and the string is massless and unstretchable). What is the maximum mass m_2 for which the blocks remain at rest?

a) $m_2 = 2m_1\mu_k$

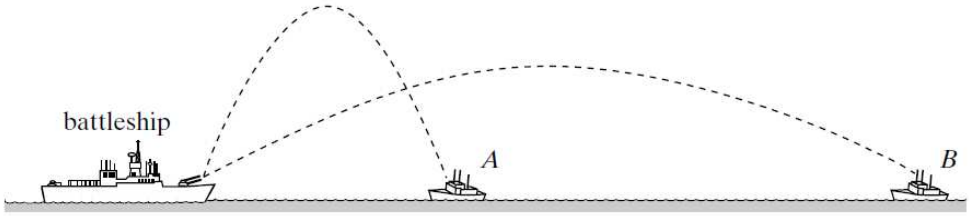
b) $m_2 = m_1\mu_k/2$

c) $m_2 = m_1/\mu_s$

d) $m_2 = 2m_1\mu_s$

e) $m_2 = m_1\mu_s/2$

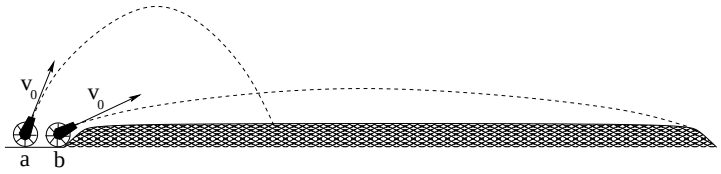
Question 2.



A battleship ***simultaneously*** fires two shells at enemy ships along the trajectories shown. One ship (A) is close by; the other ship (B) is far away. Which ship gets hit first?

A B

Question 3.



Two cannons fire cannonballs *at the same initial speed* v_0 into the air along the trajectories shown. Neglect the drag force of the air. Which cannonball strikes the ground faster?

a) Cannonball A hits going faster.

b) Cannonball B hits going faster.

c) Cannonball A and B hit at the same speed

d) We cannot tell which hits the ground going faster without more information than is given in the problem and picture.