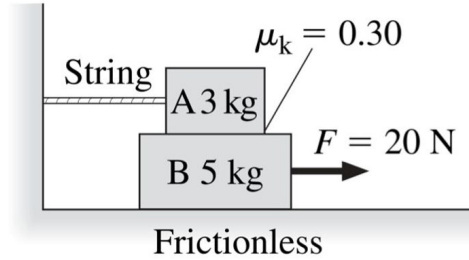## PAL Problem Set M2 for Phys 5A
(Newton's Laws Practice Problems)

Always explain your answers and show your work.

Problem 1 - Consider the system of two boxes shown in the figure. Box A is being pulled from underneath box A.

$\mu_k = 0.30$

String

A 3 kg

F = 20 N

B 5 kg

Frictionless

A. Draw the free body diagrams for blocks A and B.
B. Which of these forces are action/reaction pairs?
C. What is the acceleration of block B?
D. What is the tension on the string?

Problem 2 - A 20-cm-long spring is attached to a wall. When pulled horizontally with a force of 100 N, the spring stretches to a length of 22 cm.

A. What is the value of the spring constant?
B. The same spring is now suspended from a hook and a 15 kg block is attached to the bottom end. How much is the spring stretched?

Problem 3 - A 64 kg woman stands on a very light, rigid board that rests on a bathroom scale at each end.

A. What is the reading on each scale?
B. What would the reading on each scale be if the board she is standing on has a mass of 10 kg?

1.5 m

2.0 m