Physics 122
Formative Assessment – U1 S1 – Force Problems: Type I, II and III

Name - _____   Date - _____

Solve #1-3 on your paper.

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1. A bulldozer drags a 51.0 kg log along a level surface at a constant velocity. The cable attached to the log makes an angle of 30.0^o with the ground. The coefficient of friction between the log and the ground is 0.357. What is the tension in the cable? (12)

2. A picture hangs on a wall suspended by two wires as shown. What are the magnitudes of the tensions in the two wires if the mass of the picture is 5.2 kg? (10)

65°   32°
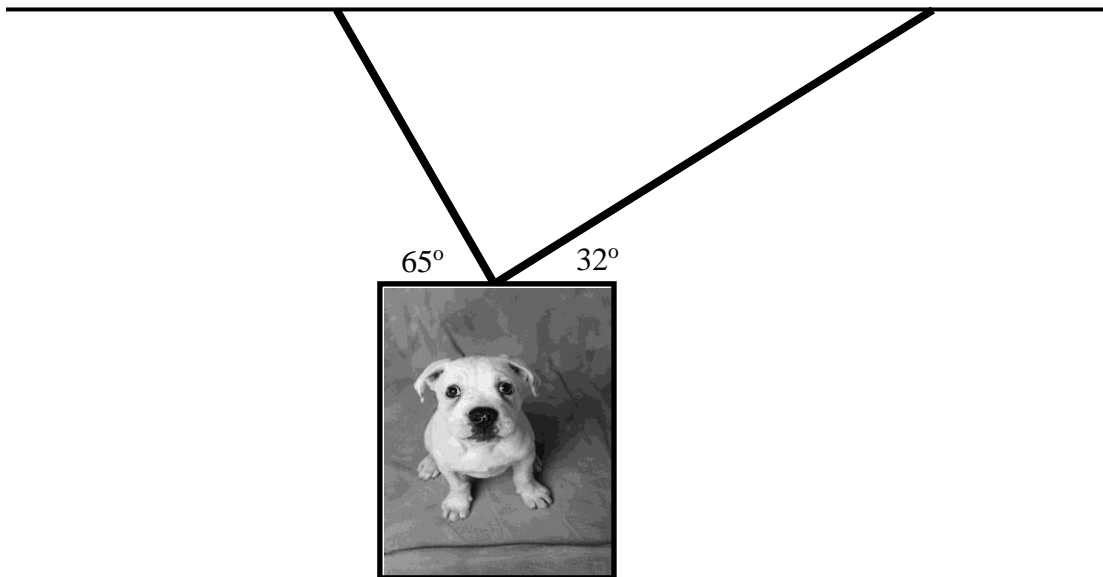
3. A box slides down a 30.0^o incline. The magnitude of the acceleration of the box is 2.57 m/s^2. What is the coefficient of friction between the box and the surface of the incline? (10)

Name - _____   Date - _____

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Solve #1 and #2 on this paper.

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1. An 850.0 N painter stands 1.20 m from one end of a 3.00 m scaffold supported at each end by a stepladder. If the scaffold has a mass of 26 kg and the upward force applied to the left end of the scaffold is as indicated in the diagram, what is the mass of the box of paint cans located 0.50 m from the right end of the scaffold? Assume a state of static equilibrium. (10)

1.20 m

0.50 m

642 N
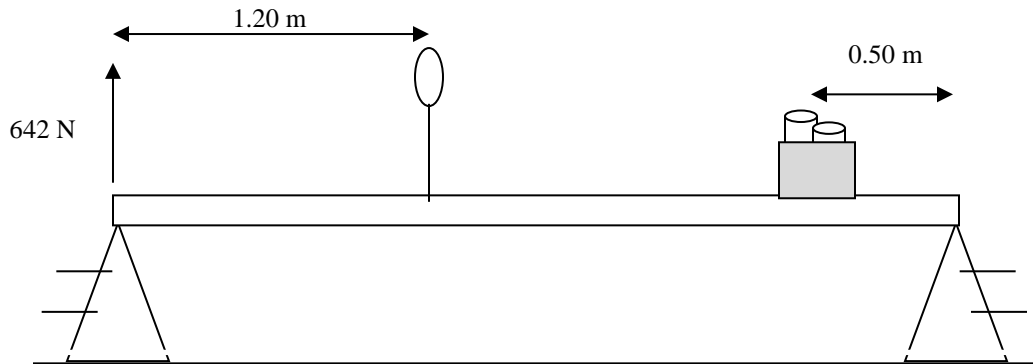
2. A uniform beam 6.0 m long with a mass of 75 kg is hinged at Point A.

a) If the magnitude of the tension in the cable is 2.4 x 10^3 N, what is the mass of the load? Assume a state of static equilibrium. The diagram is not to scale. (7)

b) What is the magnitude of the horizontal component of the force acting at the hinge? (3)

A→

37°

2.0 m

2.5 m