Dynamics Practice: Now with Numbers!

1. Find the acceleration of the following objects.

32N 51o

4.0kg

4.0kg

51o 32N

μ=0.66 μ=0.66

54N

33o

1.20kg

4.0kg

μ=0.48 14N μ=0.75

1.20kg

24N μ=0.75

μ=0.40

550g

22o

16N

2. Find the force of friction acting on the following objects. State whether the force is static or kinetic friction.

250kg

A. The truck accelerates forward at 0.919m/s2. The box does not slip.

250kg

B. The truck is driving to the right and slows to a stop. The acceleration has a magnitude of 2.30m/s2. The box does not slip.

8.0kg

12kg

120N

μ=0.50

3. The 8.0kg object does not slip. Find the following: a. The force of friction acting on the 12kg mass from the ground.

b. The force of friction acting on the 8.0kg mass from the 12kg mass.

4. The following masses are suspended in equilibrium. Find the tension in each string.

A.

36.0o

222g

F

B.

79kg

string

C.

79kg

string

152o

D.

68o

152o

string 1

string 2

79kg

5. Find the acceleration of each hanging mass, and the tension in each string. Pulleys are massless and frictionless.

A. B.

1.2kg

250g

8.0kg

μ=0.44

850g