

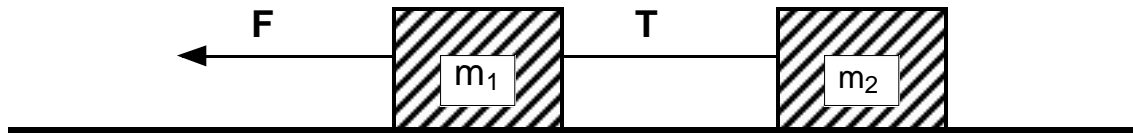
NAME _____

PERIOD _____

PHYSICS HOMEWORK QUIZ #7 D

NEWTON'S SECOND LAW

A mass of $m_1 = 6.0$ kg is sitting on a horizontal surface which has a coefficient of sliding friction of $\mu_k = 0.663$. A force $F = 89$ Newtons is applied to this mass so as to accelerate the mass to the left at a constant rate. This mass is in turn attached to a second mass $m_2 = 4.0$ kg by a string which has a tension T .



1. On the diagram to the right indicate all of the forces acting on mass m_1 as it accelerates to the left at a constant rate. [3 pts]



2. What will be the magnitude of the frictional force acting on m_2 as it accelerates to the left ? [3 pts]

3. What will be the magnitude of the tension T in the string between m_1 and m_2 as this system is accelerated to the left at a constant rate? [3 pts]

4. What is the resulting acceleration of this system? [3 pts]

5. What will be the total displacement of this system during the first 10 seconds that this force is applied? [3 pts]