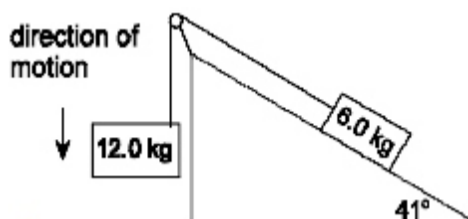


Physics 3204
Unit1- Section 2: Newton's Laws
 Worksheet 4: Stings and Pulley's on an Incline



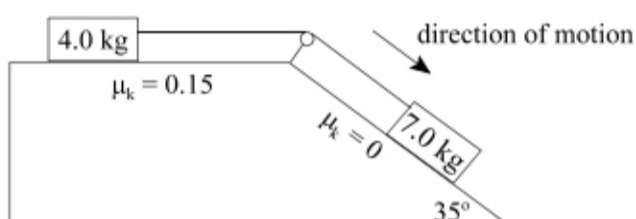
1. What is the acceleration of the system of masses shown on the frictionless incline below?

- (A) 3.3 m/s^2
- (B) 4.4 m/s^2
- (C) 6.7 m/s^2
- (D) 9.8 m/s^2



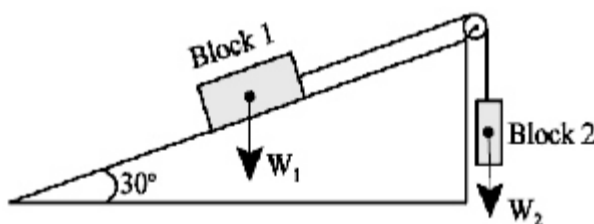
2. The diagram below shows two blocks connected by a massless string over a frictionless pulley. If the blocks accelerate at 3.0 m/s^2 in the direction shown, what is the tension in the connecting string?

- (A) 6 N
- (B) 12 N
- (C) 18 N
- (D) 49 N



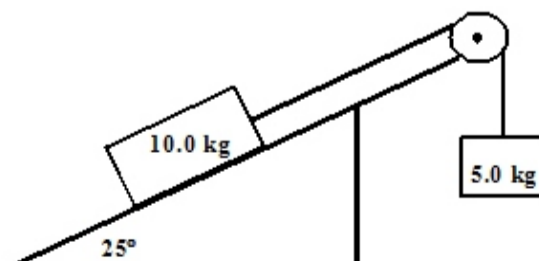
3. In the diagram below, the two blocks are at rest. W_1 represents the weight of block 1. If block 2 is hanging from a cord that passes over a frictionless pulley, what is the weight of block 2? (Assume the inclined plane is frictionless.)

- (A) $\frac{W_1}{\cos 30^\circ}$
- (B) $W_1 \cos 30^\circ$
- (C) $\frac{W_1}{\sin 30^\circ}$
- (D) $W_1 \sin 30^\circ$

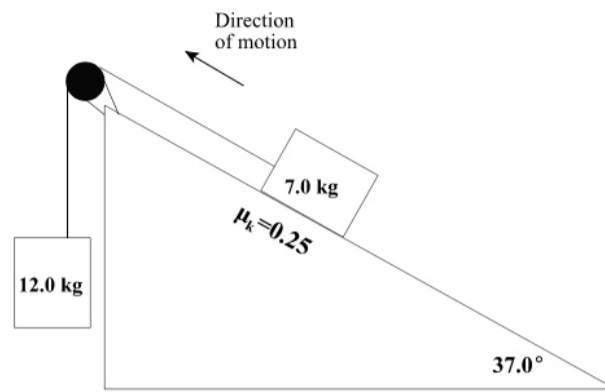


4. What is the magnitude of the acceleration of the system below if the incline is frictionless?

- (A) 0.51 m/s^2
- (B) 1.5 m/s^2
- (C) 2.7 m/s^2
- (D) 3.3 m/s^2



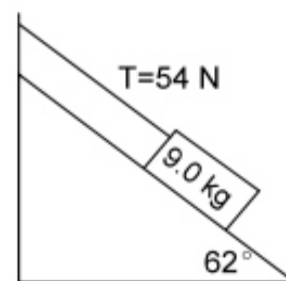
1. Two objects of masses 12.0 kg and 7.0 kg are connected by a massless string that passes over a frictionless pulley as shown. **JUNE 2007**



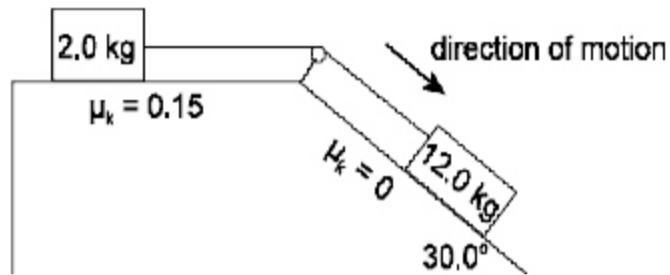
(i) Calculate the magnitude of the acceleration of the blocks. [3]

(ii) Calculate the magnitude of the tension in the string. [3]

2. A 9.0 kg mass is at rest on a 62° incline and is attached to a wall by a string having a tension of 54 N. Calculate the coefficient of static friction between the mass and the incline. **AUGUST 2008** [4]



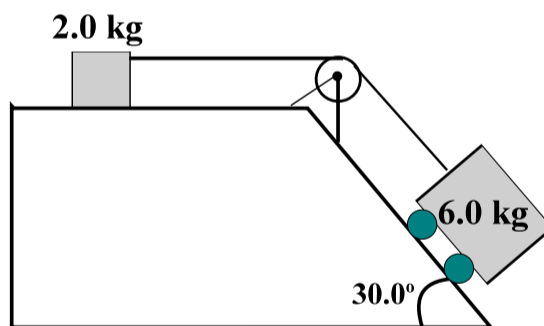
3. In the diagram provided, the coefficient of friction between the 2.0 kg mass and the horizontal surface is 0.15, while the incline is frictionless. **AUGUST 2009**



i) Calculate the magnitude of the acceleration of the system. [3]

ii) Calculate the magnitude of the tension in the connecting string. [3]

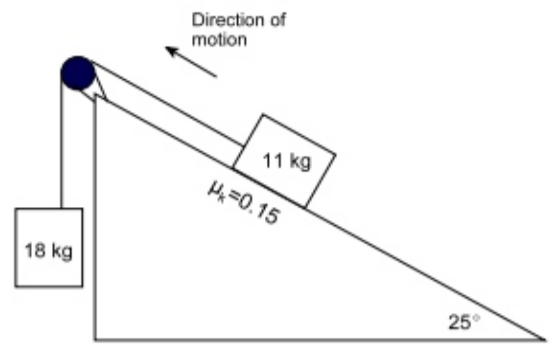
4. When a 6.0 kg frictionless cart is attached to the 2.0 kg box shown below, it slides forward. The coefficient of kinetic friction between the horizontal surface and the box is 0.10.



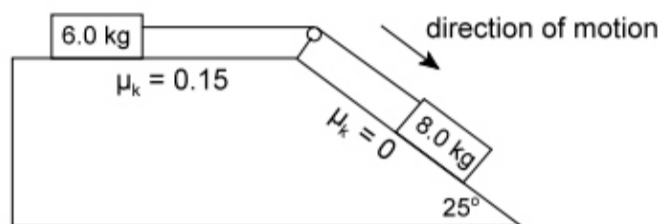
(i) What is the acceleration of the system? [3]

(ii) What is the magnitude of the tension in the rope? [2]

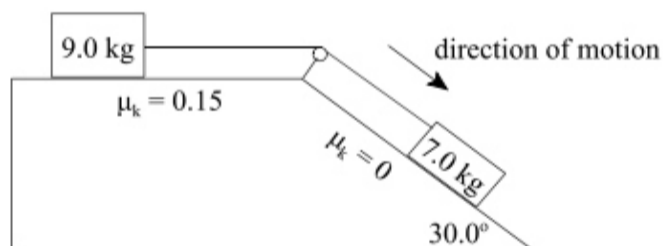
5. Two objects of masses 11 kg and 18 kg are connected by a light string that passes over a frictionless pulley as shown. Calculate the magnitude of the acceleration of the 18 kg box. **AUGUST 2008**



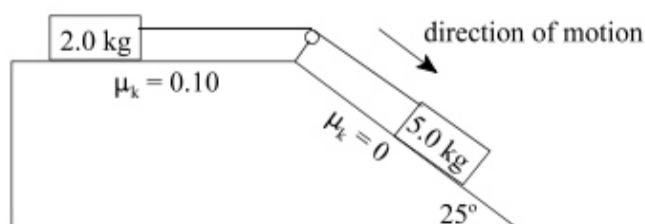
6. The diagram below shows two blocks connected by a massless string over a frictionless pulley. Calculate the acceleration of the system of blocks. **JUNE 2008**



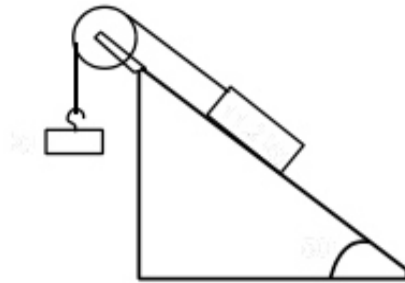
7. In the diagram shown, the coefficient of friction between the 9.0 kg block and the horizontal surface is 0.15, while the incline is frictionless. Calculate the magnitude of the tension in the rope. **AUGUST 2007**



8. The diagram below shows two blocks connected by a massless string over a frictionless pulley. What is the acceleration of the system of blocks? Show workings.



9. The diagram below shows two masses connected by a string over a frictionless pulley. Given the 11.2 kg mass is sliding down the incline, **AUGUST 2005**



- (i) draw a free body diagram for the 11.2 kg mass, and
(ii) determine the tension in the string.
10. In the diagram below a 10.0 kg mass is on a frictionless 32° incline and attached to a 8.0 kg mass with a string. What is the magnitude of the acceleration for the system?
JUNE 2005

