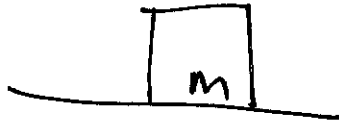


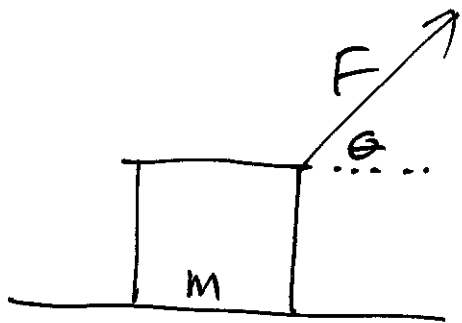
①



A block of mass m is at rest on a table.

- Draw a free-body diagram for the block in terms of m and g .

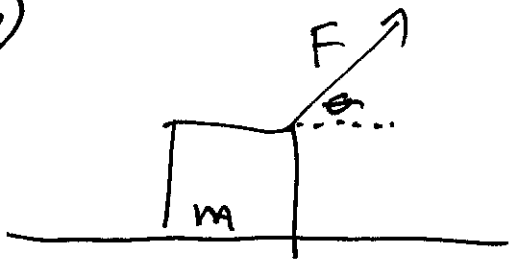
②



A block of mass m on a frictionless table is pulled ~~at an~~ by a force of magnitude F at an angle θ to the horizontal.

- a) Draw a free-body diagram for the block in terms of m , g , F , and θ .
- b) - Determine the net force acting on the block in terms of m , g , F , and θ .
- c) Determine the acceleration of the block in terms of m , g , F , and θ .

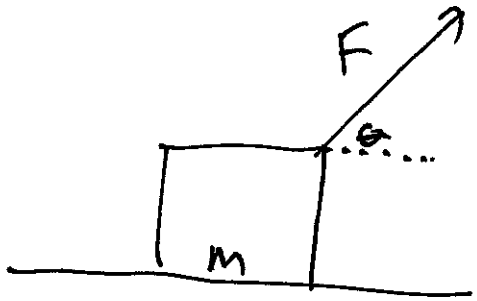
③



A block of mass m is being pulled by a force of magnitude F at an angle θ to the horizontal. The surface of the box and table have a coefficient of kinetic friction of μ_k .

- (a) Draw a free-body diagram for the block in terms of m , g , F , θ , and μ_k .
- (b) - Determine the net force acting on the block in terms of m , g , F , θ , and μ_k .
- (c) - Determine the acceleration of the block in terms of m , g , F , θ , and μ_k .

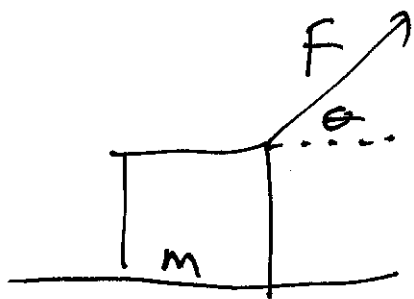
④



A block of mass m is being pulled by a force F at an angle θ to the horizontal at a ~~low~~ constant velocity.

- ① What is the net force acting on the block?
How do you know?
- ② Draw a free-body diagram of the block in terms of F , g , m , and θ .
- ③ Determine the coefficient of kinetic friction between the block and the table μ_k .
Determine it in terms of F , g , m , and θ .

⑤



A block of mass m is being pulled by a force F at an angle θ to the horizontal.

The coefficient of kinetic friction between the block and the table is μ_k .
The coefficient of static friction is μ_s .
 $\mu_s > \mu_k$.

(a) Determine a condition that tells if the box moves.

The condition should be in terms of

m , g , F , θ , and μ_s .

(b) Determine two free-body diagrams, one for the condition in which the box moves, and one for the condition in which the box does ~~not~~ move.

Determine them in terms of m , g , F , θ , and μ_k .

Relate them using an if-else statement.

© Determine an expression for the net force acting on the block if it moves in terms of m , g , F , θ , and μ_k .

① Determine an expression for the block's acceleration if it moves in terms of m , g , F , θ , and μ_k .

② Summarize your findings with an if-else function that returns acceleration. ~~ion~~ 1

The function should be in terms of m , g , F , θ , μ_s , and μ_k .