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HW 5.2 Friction Per _____ Name_____

YOU MUST DRAW **FREE BODY DIAGRAMS!!!! And WRITE NET FORCE EQUATIONS And SHOW YOUR**

1. A 60 kg gazelle slides with a **CONSTANT SPEED** of 0.8 m / s under the action of the force as shown in the picture. What is the normal force? What is the force of friction? What is the coefficient of kinetic friction between the gazelle and the floor?

FBD:

ΣF_x:

ΣF_y:

2. A crate of gazelles which has a **weight** of 400 N is resting on the floor. (a) What is the maximum force that static friction can provide if the coefficient of static friction (μ_s) is 0.5? (b) If you push with a horizontal force 100 N greater than the answer for (a), what will be the acceleration of the crate? ($\mu_k = 0.35$)

FBD:

ΣF_x:

ΣF_y:

3. A female CEO of a Fortune 500 company has had a bad day and she realizes that she left the 20 kg baby gazelle in its car seat on top of her car. Thinking quickly, she notices that the car's speed is 27.7 m/s. She remembers waxing the car as her husband cooked dinner the day before. Since the car has a nice wax job, the coefficient of static friction is 0.15. As she applies the brakes, she calculates the minimum stopping distance. What answer does she get?

FBD:

ΣF_x:

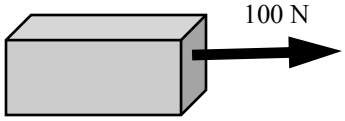
ΣF_y:

4. When you go to college you need to move a box of books (about gazelles) into your dorm room. To do so, you attach a rope to the box and pull on it with a force of 100 N. The box of books has a mass of 20 kg, and the coefficient of kinetic friction between the bottom of the box and the hallway surface is 0.5. What is the normal force? What is the frictional force? What is the net force in the X direction? What is the acceleration of the box?

FBD:

ΣF_x:

ΣF_y:



5. A 60 kg gazelle slides under the action of the force as shown. What is the normal force? What is the force of friction if μ_k is 0.2? What is the acceleration of the gazelle?

FBD:

ΣF_x:

ΣF_y: