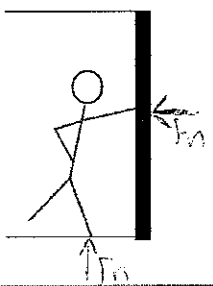
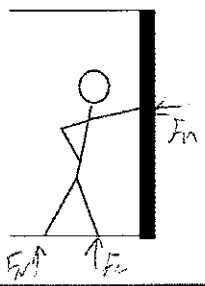


1. Let's meet Jim, he's very slim. Draw and label all of the normal forces acting on Slim Jim.

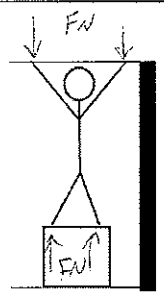
A. Jim leaning against the wall with one foot up.



B. Jim leaning against the wall with both feet on the ground.



C. Jim standing on a table and pushing on the ceiling.



2. If a surface has to support more, it has to provide more normal force (F_N). Does the following increase or decrease F_N ?

I Pushing down on the object.

D Pulling up on the object.

F Setting another object on top of it.

I Increasing the weight of the object.

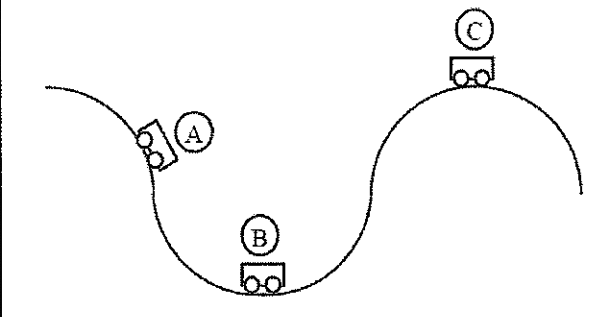
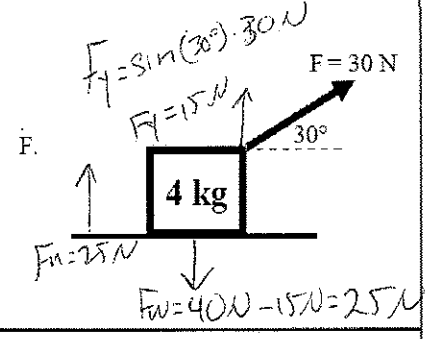
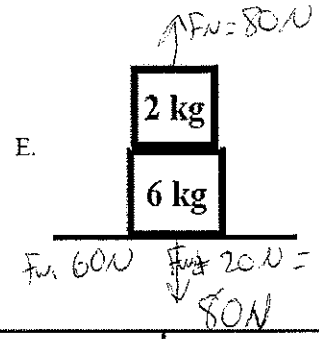
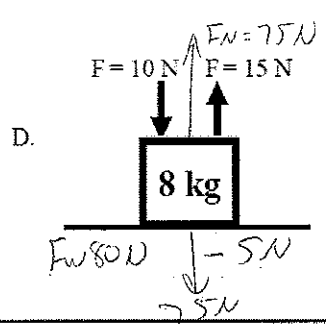
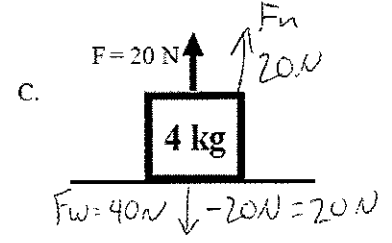
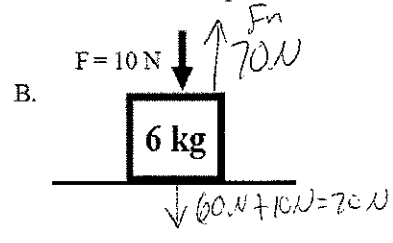
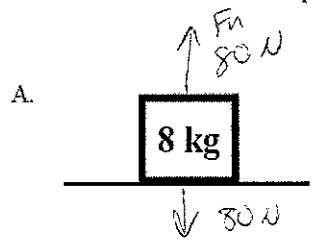
No effect Friction.

NA Pushing sideways on an object.

D Decrease the weight of the object

I Pushing down at an angle.

3. Calculate the normal force pushing up from the table in each example.



4. The diagram above shows a cart on a roller coaster.
 A. At which position do you feel heavier? B
 B. At which position do you feel lighter? A
 C. At which position does the track have to push harder on the cart? B
 D. Where is the greatest normal force acting on the object? B (you feel heavier when F_N is greatest)

5. A 50 kg woman is on an elevator. The elevator is accelerating downward at 3 m/s^2 .

A. Since the elevator is accelerating downward, is this + or -?

- 3 m/s^2

B. What is F_w for the woman?

$F_w = 50 \text{ kg} \cdot 10 \text{ m/s}^2 = 500 \text{ N}$

C. Use $F = ma$ to find F_N acting on the woman.

$\Sigma F = mg$
 $F_N - 500 = 50 \text{ kg} (3 \text{ m/s}^2)$
 $F_N - 500 = 150$
 $F_N = 350 \text{ N}$

D. Does the woman feel heavier or lighter than normal?

