Chapter 06, Concept Question 05

The following questions are in regard to the situation where you press an apple crate against a wall so hard that the crate cannot slide down the wall.

What is the direction of the static frictional force Fs on the crate from the wall?
upward

What is the direction of the normal force FN on the crate from the wall?
Horizontal, towards you

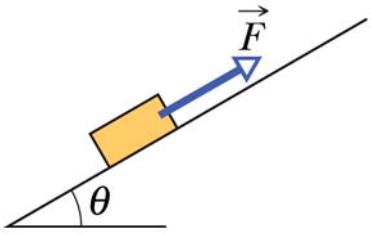
If you increase your push, what happens to f_s?
No change

If you increase your push, what happens to F_N?
Increase

If you increase your push, what happens to $f_{s,\,max}$?
Increase

Chapter 06, Concept Question 06

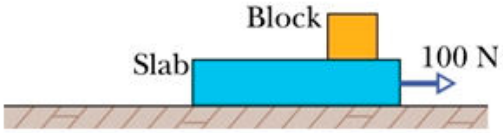
In the figure, a block of mass *m* is held stationary on a ramp by the frictional force on it from the ramp. A force vector F, directed up the ramp, is then applied to the block and gradually increased in magnitude from zero. During the increase, what happens to the direction and magnitude of the frictional force on the block?



$\vec{f}_s$ begins directed up the slope and decreases from a value of $mg\sin(\theta)$ to 0. Then $\vec{f}_s$ is directed down the slope and increases from 0 to a magnitude of $f_{s,\max}$. After this, there is kinetic friction force directed down the slope with a magnitude of f_k (which is less than $f_{s,\max}$).

Chapter 06, Concept Question 08

In the figure, a horizontal force of 100 N is to be applied to a 10 kg slab that is initially stationary on a frictionless floor, to accelerate the slab.



A 10 kg block lies on top of the slab; the coefficient of friction μ between the block and the slab is not known, and the block might slip.

Considering that possibility, what is the possible range of values for the magnitude of the slab's acceleration a_{slab}? (Hint: You don't need written calculations; just consider extreme values for μ .)

Number 5 Units m/s^2 to Number 10 Units m/s^2

What is the possible range for the magnitude a_{block} of the block's acceleration?

Number 0 Units m/s^2 to Number 5 Units m/s^2

Chapter 06, Concept Question 11

A person riding a Ferris wheel moves through positions at the top, the bottom, and midheight.

In the following questions, you will be ranking these points on the path. If multiple points rank equally, use the same rank for each, then exclude the intermediate ranking (i.e. if objects A, B, and C must be ranked, and A and B must both be ranked first, the ranking would be A:1, B:1, C:3). If all points rank equally, rank each as '1'.

If the wheel rotates at a constant rate, rank these three positions according to the magnitude of the person's centripetal acceleration, greatest first.

Top 1

Bottom 1

Midheight 1

1. Greatest
2. Second greatest
3. Third greatest

If the wheel rotates at a constant rate, rank these three positions according to the magnitude of the net centripetal force on the person, greatest first.

Top 1

Bottom 1

Midheight 1

1. Greatest
2. Second greatest
3. Third greatest

If the wheel rotates at a constant rate, rank these three positions according to the magnitude of the normal force on the person, greatest first.
ANSWER MISSING FOR THIS ONE

Chapter 06, Concept Question 13

A box is on a ramp that is at angle θ to the horizontal. As θ is increased from zero, and before the box slips, do the following increase, decrease, or remain the same: **(a)** the component of the gravitational force on the box, along the ramp, **(b)** the magnitude of the static frictional force on the box from the ramp, **(c)** the component of the gravitational force on the box, perpendicular to the ramp, **(d)** the magnitude of the normal force on the box from the ramp, and **(e)** the maximum value $f_{s,\max}$ of the static frictional force?

(a) increases ▼

(b) increases ▼

(c) decreases ▼

(d) decreases ▼

(e) decreases ▼