IB Physics
FA 4.4 - Inclined Planes

Name_____

Show your work, round to the correct significant figures, circle your answers, and label them with units. Label your forces either "Up the plane" or "Down the plane" explicitly. In addition, label every acceleration as "accel" = "acceleration" (speeding up) or "decel" = "deceleration" (slowing down)

When you have finished this, go to the website and check your answers. If you got a problem wrong, cross it off on the front, and do it correctly on the back.

A 5.20 kg block of wood is on a 30.0^{o} inclined plane where the static coefficient of friction is 0.650, and the kinetic is 0.120.

$F_{parallel}$ = 25.506 N
$F_{kinetic}$ = 5.301 N
F_{static} = 28.715 N

1. Will the block stay on the plane if it is initially at rest? Back up your answer with numbers. What is the acceleration of the block if it is sliding freely down the plane?

2. If the block is sliding up the plane, and there is a force of 14.0 N down the plane, what is the acceleration of the block?

3. If the block is sliding down the plane, and there is a force of 7.50 N up the plane, what is the acceleration of the block?

4. If the block is sliding up the plane, but decelerating at 5.34 m/s/s, what outside force must be acting on the block?

5. If the block is sliding down the plane, and accelerating at 2.28 m/s/s down the plane, what force is acting on the block?