A student is pushing a large crate across a rough floor. The student pushes so hard that the crate starts to accelerate across the floor. Which of the following is true:

1) Because of friction, the crate pushes harder on the student than the student pushes on the crate.

2) To overcome friction, the student pushes harder on the crate than the crate pushes on the student.

3) The crate pushes on the student with the same magnitude of force that the student pushes on the crate.

4) The answer depends on the acceleration and the friction.

What forces do you need to know to decide if a process can be understood with Work & Energy?

1) All forces that act on all of the objects in the problem.

2) All forces except the so-called 'internal' forces which act between objects.

3) All forces in the problem that have components along the motion of the objects they act on.

4) All forces in the problem that have components along the motion of the objects they act on except the so-called 'internal' forces which act between objects.

5) None of the above is true.

What forces do you need to know to decide if a process can be understood with Momentum?

1) All forces that act on all of the objects in the problem.

2) All forces except the so-called 'internal' forces which act between objects.

3) All forces in the problem that have components along the motion of the objects they act on.

4) All forces in the problem that have components along the motion of the objects they act on except the so-called 'internal' forces which act between objects.

5) None of the above is fully correct.

Two objects (labeled A & B) collide. Newton's 3rd law tells us that the force A exerts on B must be equal and opposite to the force B exerts on A. Which of the following is true:

1) The change in momentum of A due to the force between the objects must be equal and opposite of the change in momentum of B.

2) The work done on A by the force between the objects must be equal and opposite of the work done on B.

3) The change in kinetic energy of A due to the force between the objects must be equal and opposite of the change in kinetic energy of B.

4) (1) and (2) are true.

5) (2) and (3) are true.

6) (1) and (3) are true.

7) None of the above are true.

8) All of the above are true.