1. c (total energy is conserved and has to be converted to another type of energy; gravitational energy doesn't change, or goes down slightly, during the time when the textbook is in contact with the ground, and no light is produced)

2. a (since the velocities must be the same, the difference in energy must only be due to the difference in mass; the kinetic energy is proportional to the mass)

3. b (motion has to be vertical for gravity to do work on the object)

4. b (initial velocity is 1.5 times what it was before; Since the kinetic energy is defined as $\frac{1}{2}mv^2$ that means the kinetic energy is proportional to the square of the speed. If the speed increases by a factor of 1.5, the energy increases by a factor of $(1.5)^2$. Consequently, the work done to stop the truck must be 1.5^2 times greater also.)

5. e (by doubling the speed, we quadruple the kinetic energy; the force of friction would be the same but with four times as much kinetic energy one would need to slide four times as far to produce four times as much work)

6. c (Since they have the same shape, as they roll down the incline, both have the same fraction of their kinetic energy involved in rotational kinetic energy vs. translation kinetic energy)

7. This problem is a good candidate for the work-kinetic energy formulation of Newton's second law (or conservation of energy). This is because there are two forces acting on the gymnast, only one of which does any work on it. One is due to the high bar and the other is due to the Earth (gravitational). The first is toward the bar and, as such, is perpendicular to the motion and thus only acts to change the direction, not speed it up. The only force "doing work" on the gymnast is the gravitational force mg.

   When applying conservation of energy, just compare the two positions of interest. In this case, it is when the gymnast is at the top (momentarily at rest) and when the gymnast is at the bottom (where we are trying to determine the speed).

Since the gravitational force is vertical, I only need the vertical displacement between those two positions. In this case, that distance is 1.8 m. Multply these together to get the work done by gravity: m(9.8 N/kg)(1.8 m).

This work must equal the change in kinetic energy: $\frac{1}{2}mv^2$. Set these equal to each other and divide by m to get (9.8 N/kg)×(1.8 m) $= \frac{1}{2}v^2$. Solve for v to get a velocity of 5.9 m/s.

You could also do this using the gravitational energy terminology instead of the work terminology. The answer would be the same.