3. A 10.0 N lightsaber is accelerated from rest at a rate of 2.5 m/s^2. What is the kinetic energy of the lightsaber after it has accelerated over a distance of 15.0 m.

$\Delta E_k = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$

$= \frac{1}{2}(1.02)(8.66)^2 - 0$

$= 38\text{J}$

$V^2 = V_0^2 + 2ad$

$V = \sqrt{2(2.5)(15.0)}$

$= 8.66$

$F_g = mg$

$m = \frac{10.0}{9.80} = 1.02\text{kg}$

4. A 1200.0 N Wookie jumps off a cliff on Earth. What is its kinetic energy after it falls for 4.50 s?

$E_k = \frac{1}{2}mv^2$ $m = \frac{F_g}{g} = \frac{1200.0}{9.80}$

$= \frac{1}{2}(122.44)(44.1)^2$ $= 122\text{kg}$

$V = V_0 + at$

$= (9.50)(4.50)$

$= 44.1\text{m/s}$

$= 119000\text{J}$

5. An 8.0 kg bantha poodoo is dropped from a height of 7.0 m. What is the kinetic energy of the poodoo just before it hits the ground?

$E_k = \frac{1}{2}mv^2$ $V^2 = V_0^2 + 2ad$

$= \frac{1}{2}(8.0)(11.7)^2$ $V = \sqrt{2(9.80)(-7.0)}$

$= 11.7$

$= 550\text{J}$

6. A 9.00 kg object falls off of a 1.2 m high table. If all of the objects potential energy is converted into kinetic energy just before it hits the floor, how fast is it moving? (Solve without using kinematics)

$E_p = E_k$

$mgh = \frac{1}{2}mv^2$

$v = \sqrt{2gh}$

$= \sqrt{2(9.8)(-1.2)}$

$= 4.8\text{m/s}$

7. Solve #6 using kinematics this time. Is there any difference? Nope!

$V^2 = V_0^2 + 2ad$

$V = \sqrt{2(9.8)(-1.2)}$

$= 4.8\text{m/s}$

8. A golfer wishes to improve his driving distance. Which would have more effect:
(a) *doubling the mass* of his golf club or
(b) *doubling the speed* with which the clubhead strikes the ball?
Explain your answer.

doubling speed because of the exponent v^2

1) 84 J 2) 22.1 m/s 3) 38 J 4) 119 000 J 5) 550 J 6) 4.8 m/s 7) 4.8 m/s (down) 8) b