**CONSERVATION OF ENERGY – PRACTICE**

1. At the moment when a shot-putter releases a 7.26 kg shot, the shot is 2.0 m above the ground and travelling 15 m/s. It reaches a maximum height of 8.0 m above the ground and then falls to the ground. Find “everything”.
2. As the water in a river approaches a 5.7 m vertical drop, its average speed is 5.1 m/s. For one kilogram of water in the river, determine:
   1. Its kinetic energy at the top of the waterfall
   2. The gravitational potential energy at the top of the waterfall
   3. The total mechanical energy at the top of the waterfall
   4. The speed of the water at the bottom of the waterfall
3. A 91 kg kangaroo exerts enough force to acquire 2.7 kJ of kinetic energy in jumping straight upward.
   1. How fast is the kangaroo going when it leaves the ground?
   2. What maximum height will the kangaroo reach?
4. An archer nocks a 0.20 kg arrow on a bowstring. This gives the arrow 33 J of elastic potential energy.
   1. What speed is the arrow travelling when it leaves the bow?
   2. If the arrow is shot vertically upwards, how high will it rise from the release point?