Problems discussed in the video series:

Videos (5) – (6)
A radioactive sample undergoes three different types of radioactive decay and emits three different types of particles. As shown in the figure [on board in video], these particles are emitted into a region of space with a uniform magnetic field directed out of the plane of the figure. The particles follow the paths indicated, and none of them bends either into or out of the plane of the figure. In the following questions ignore the neutrinos and antineutrinos emitted in beta decays.
What type of radioactive decay would produce a decay particle that would move along path A? path B? path C?
Choices: α decay; β^+ decay; β^- decay; γ (gamma) decay; cannot be determined

Video (9)
Measurements of a certain isotope tell you that the decay rate decreases from 8322 decays/minute to 3082 decays/minute over a period of 4 days. What is the half-life $T_{1/2}$ of this isotope?

Video (10)
Jack was exposed to fast neutrons; he received a radiation dose of 140 rem on part of his hand, affecting 27.0 grams of tissue. The relative biological effectiveness (RBE) of these neutrons is 11.
(A) How much radiation did Jack receive? Express your answer in rads.
(B) What was the total energy of the radiation Jack received? Express your answer in joules.
(C) Suppose Jill received the same rad dosage, but from beta rays with an RBE of 1.5 instead of from neutrons. What is the value of the equivalent dose she received?