**EVOLUTION AT PRESENT TIME**

**QUESTION 1**

1. Failure to complete the full course of antibiotics/ over using antibiotics

2. Natural selection

3. Within the bacteria population there existed variation. Some bacteria had a low resistance to the antibiotic and other bacteria had a high resistance to the antibiotic. The bacteria that had a low resistance to the antibiotic died. The bacteria that had a high resistance to the antibiotic survived and reproduced. This resulted in more bacteria being resistant to the antibiotic. Because bacteria have an exponential reproductive rate, this resulted in the bacterial population being resistant to the antibiotic in a shorter period of time/faster rate.

**QUESTION 2**

1. There was a decrease in the cockroach population.

2. Not all of the cockroaches were exposed to the pesticide/or There was a mutation in the exoskeleton of the cockroaches that prevent the pesticide from entering their blood system.

3. The second application of the pesticide had no effect on the cockroach population; those that survived the first application of the pesticide reproduced and pass this resistant allele onto their offspring, resulting in more individuals within the population being resistant to the pesticide.