Part 9.2 Answers

1. A triangular distribution would be best as the data is continuous and there is a very clear minimum and maximum, and the data is skewed to the right. The parameters would be minimum (a) is 4, maximum (b) is 34 and the modal value (c) would be 9.

2. A normal distribution would be best as the data is continuous and there is a very clear bell shape. The mean would be 22 and the standard deviation would be approximately 3 (20/6).

3. A rectangular distribution would be best as the data is continuous and the data has a very clear minimum and maximum, and is fairly flat in-between. The parameters would be minimum (a) is 3, maximum (b) is 6.

4. A Poisson distribution is best. This is because:
   - The occurrence of people turning up to the shop is **R**andom
   - The occurrence of one person turning up to the shop is **I**ndependent from the other people turning up to the shop
   - The number of people turning up to the shop is **P**roportional to the amount of time
   - Two people cannot turn up to the shop at exactly the same time (cannot occur **S**imultaneously).

   The mean for this distribution would be approximately 3.2 (2sf) based off a probability no one turns up of 0.04

5. A Poisson distribution is best. This is because:
   - The occurrence of fish is **R**andom
   - The occurrence of one fish is **I**ndependent from the other fish
   - The number of fish is **P**roportional to the amount of water
   - Two fish cannot be in the same place (cannot occur **S**imultaneously).

   The mean for this distribution would be approximately 3.0 (2sf) based off a probability no fish of 0.05

6. A binomial distribution is best. This is because we are told there is a fixed number of trials of 6. So number of trials (n) = 6, mean is 0.25 x 0 + 0.35 x 1 + 0.2 x 2 + 0.1 x 3 + 0.05 x 4 + 0.05 x 5 = 1.5
   Therefore the probability for each event (π) is 1.5/6 = 0.25

7. A Poisson distribution is best. This is because:
   - The occurrence of worms is **R**andom
   - The occurrence of one worm is **I**ndependent from the other worms
   - The number of worms is **P**roportional to the amount of garden
   - Two worms cannot be in the same place (cannot occur **S**imultaneously).

   The mean for this distribution would be approximately 2.3 (2sf) based off a probability no worms of 0.1

Note: for excellence we would expect to see some calculations based on these parameters to back up how well the model fits the distribution.