Question 1

```
## Question 01
## Population mean and population standard deviation
popmean <- mean(Weight.kg.)
popstd  <- sd(Weight.kg.)

popmean
popstd
```

```
> ## ==============================
> ## Question 01
> ## Population mean and population standard deviation
> popmean <- mean(Weight.kg.)
> popstd  <- sd(Weight.kg.)
>
> popmean
[1] 2.468
> popstd
[1] 0.2561069
```

Question 2

```
## Question 02
## Get 25 random samples of size 6, with replacement
s.means <- c()
s.stds  <- c()

for(i in 1:25){
  s <- sample(Weight.kg., 6, replace=TRUE)
  s.means[i] <- mean(s)
  s.stds[i]  <- sd(s)
}

## Create a table of results
samples_table <- data.frame(
  Sample = 1:25,
  Mean   = s.means,
  StdDev = s.stds
)
samples_table
```

```
> ## Question 02
> ## Get 25 random samples of size 6, with replacement
> s.means <- c()
> s.stds  <- c()
>
> for(i in 1:25){
+   s <- sample(Weight.kg., 6, replace=TRUE)
+   s.means[i] <- mean(s)
+   s.stds[i]  <- sd(s)
+ }
>
> ## Create a table of results
> samples_table <- data.frame(
+   Sample = 1:25,
+   Mean   = s.means,
+   StdDev = s.stds
+ )
> samples_table
   Sample      Mean      StdDev
1       1 2.625000 0.1767201
2       2 2.401667 0.2817386
3       3 2.555000 0.2913246
4       4 2.521667 0.2143284
5       5 2.553333 0.1727040
6       6 2.648333 0.1530251
7       7 2.526667 0.2371216
8       8 2.395000 0.3247615
9       9 2.450000 0.1357940
10     10 2.473333 0.2123833
11     11 2.381667 0.4091658
12     12 2.563333 0.2578113
13     13 2.438333 0.3797587
14     14 2.490000 0.1255388
15     15 2.436667 0.2502532
16     16 2.511667 0.2318980
17     17 2.266667 0.3045434
18     18 2.523333 0.2672577
19     19 2.518333 0.2066317
20     20 2.230000 0.3666606
21     21 2.251667 0.1906218
22     22 2.438333 0.2434269
23     23 2.235000 0.3074248
24     24 2.443333 0.2755842
25     25 2.500000 0.2032732
> |
```

Question 3

```r
## Question 03
## Mean and standard deviation of the Sample Means
samplemean  <- mean(s.means)
samplestd   <- sd(s.means)

samplemean
samplestd

## Compare with population mean and theoretical SD
popmean
popstd/sqrt(6)
```

```r
> ## Question 03
> ## Mean and standard deviation of the Sample Means
> samplemean  <- mean(s.means)
> samplestd   <- sd(s.means)
>
> samplemean
[1] 2.455133
> samplestd
[1] 0.1139179
>
> ## Compare with population mean and theoretical SD
> popmean
[1] 2.468
> popstd/sqrt(6)
[1] 0.1045552
```