4.36)

Women's national track records table 1.9

```
# This is from the national track records for women data set, table 1.9
## read the table
track = read.table("T1-9.dat", sep="\t")
## set the column names
colnames(track) = c("Country", "s100m", "s200m", "s400m", "min800m", "min1500m", "min3000m", "minMarath
# getting the converted values
track$mps100 = 100/track$s100m
track$mps200 = 200/track$s200m
track$mps400 = 400/track$s400m
track$mps800 = 800/(track$min800m * 60)
track$mps1500 = 1500/(track$min1500m * 60)
track$mps3000 = 3000/(track$min3000m * 60)
track$mpsmarathon = 42195/(track$minMarathon * 60)

head(track)
```

```
##   Country s100m s200m s400m min800m min1500m min3000m minMarathon   mps100
## 1     ARG 11.57 22.94 52.50    2.05     4.25     9.19      150.32 8.643042
## 2     AUS 11.12 22.23 48.63    1.98     4.02     8.63      143.51 8.992806
## 3     AUT 11.15 22.70 50.62    1.94     4.05     8.78      154.35 8.968610
## 4     BEL 11.14 22.48 51.45    1.97     4.08     8.82      143.05 8.976661
## 5     BER 11.46 23.05 53.30    2.07     4.29     9.81      174.18 8.726003
## 6     BRA 11.17 22.60 50.62    1.97     4.17     9.04      147.41 8.952551
##     mps200   mps400   mps800  mps1500  mps3000 mpsmarathon
## 1 8.718396 7.619048 6.504065 5.882353 5.440696    4.678353
## 2 8.996851 8.225375 6.734007 6.218905 5.793743    4.900355
## 3 8.810573 7.902015 6.872852 6.172840 5.694761    4.556203
## 4 8.896797 7.774538 6.768190 6.127451 5.668934    4.916113
## 5 8.676790 7.504690 6.441224 5.827506 5.096840    4.037490
## 6 8.849558 7.902015 6.768190 5.995204 5.530973    4.770708
```

```
track2 = data.frame(track$s100m, track$s200m, track$s400m, track$min800m, track$min1500m, track$min3000
track2 = as.matrix(track2)

skew = data.frame(skewness(track2))

kurt = data.frame(kurtosis(track2))
```

Solution: From the skew table, we can see that there is an increasing right skew in the variables. In addition, we can see the increasing left skew when we convert the values to speeds rather than time measurements

From the kurtosis table, we see that the 3000, distribution is the most peaked both when converted to speed and in the time measurement. In addition, we can see all of the kurtosis values are above 3, so they are more peaked distributions than flat distributions.