Ch9 # 58

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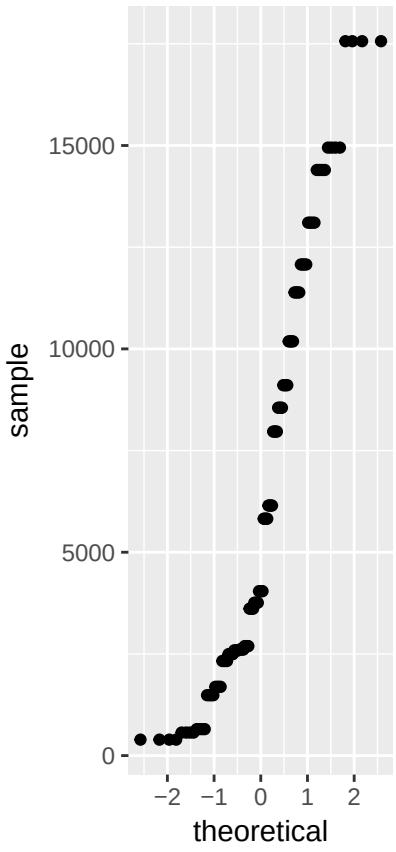
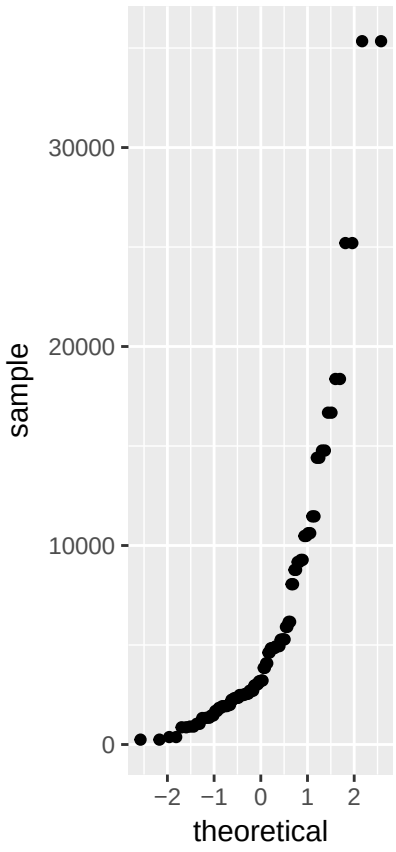
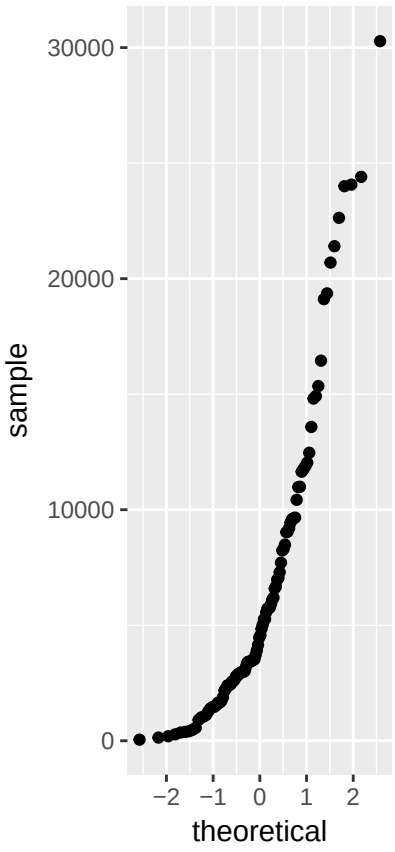
```
library(ggplot2)
library(grid)
library(gridExtra)

#Get middle values
table <- data.frame(c(30, 90, 150.5, 212, 274.5, 337.5, 400.5, 464.5, 529.5, 595, 663,
                      909.5, 1422, 1919.5, 2346, 2805.5, 3303, 3846, 4444, 5109, 5857.5,
                      6714.5, 7717, 8925, 10447, 12511.5,14033, 14698, 15447, 16304,
                      17306, 18514, 20036, 22101, 25374, 27439),
                    c(115, 104, 99, 106, 113, 104, 101, 106, 104, 96, 512, 524, 468, 531, 461,
                      526, 506, 509, 520, 540, 542, 499, 494, 500, 550, 465, 104, 97, 101,
                      104, 92, 102, 103, 110, 112, 100) )

colnames(table) <- c("Time Middle", "Obs Freq")

onet <- (table$`Time Middle`) * (table$`Obs Freq`)
summing <- sum(onet)
x_bar <- summing / sum(table$`Obs Freq`)

mle1 <- 1/x_bar

generator <- data.frame(first = rexp(25, rate = mle1),
                        second = rexp(50, rate = mle1),
                        third = rexp(100, rate = mle1))

# stat_qq and geom_qq build up sample and theoretical quantiles.
graph1 <- ggplot (generator) + stat_qq(aes(sample = first))
graph2 <- ggplot (generator) + stat_qq(aes(sample = second))
graph3 <- ggplot (generator) + stat_qq(aes(sample = third))

grid.arrange(graph1, graph2, graph3, ncol = 3) # multiplot works as well
```


sample
15000
10000
5000
0
−2
−1
0
1
2
theoretical


sample
30000
20000
10000
0
−2
−1
0
1
2
theoretical


sample
30000
20000
10000
0
−2
−1
0
1
2
theoretical