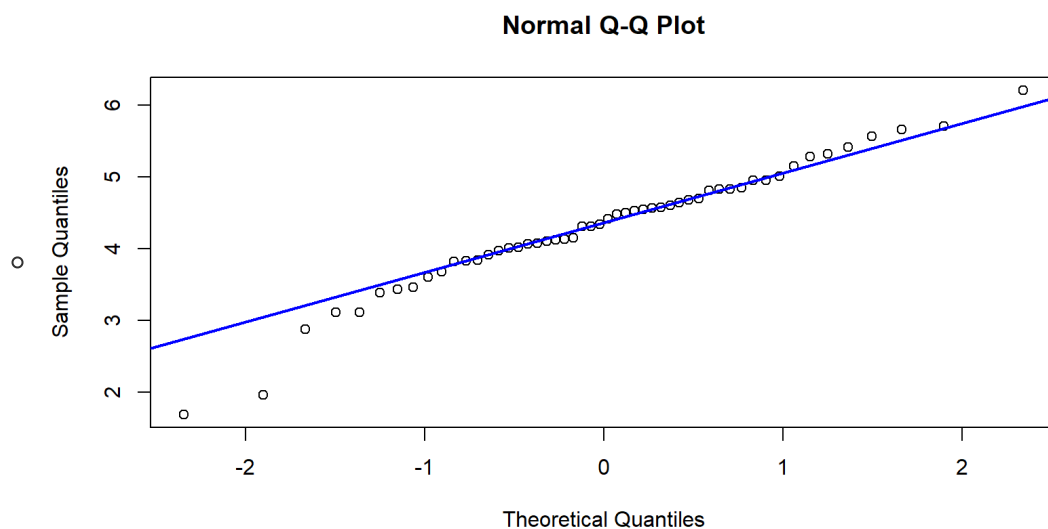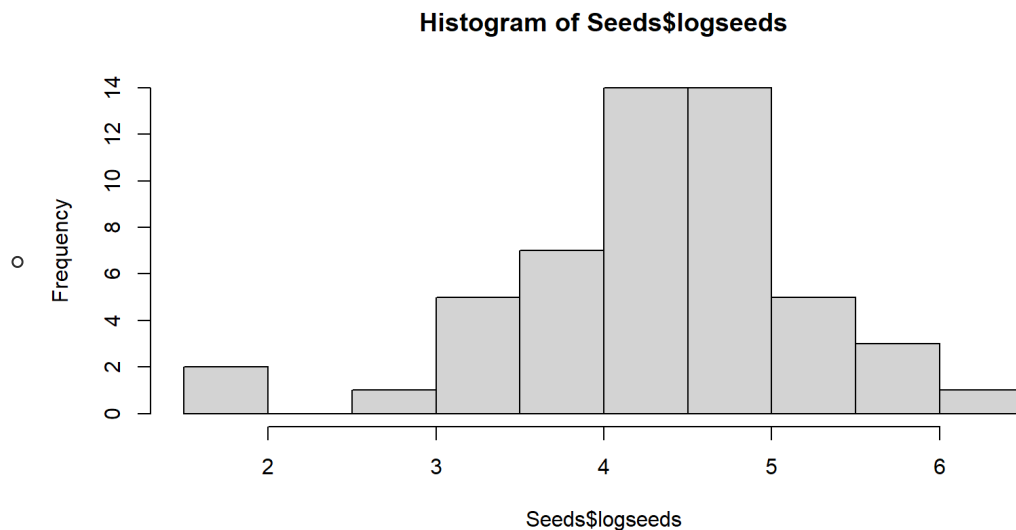# Dataset 1

- Hypothesis

  - Null hypothesis (H0): The mean number of seeds are equal between all sites
  - Alternative hypothesis (H1): At least one site significantly varies in mean number of seeds
- Normality? Yes

Histogram of Seeds$logseeds

Normal Q-Q Plot
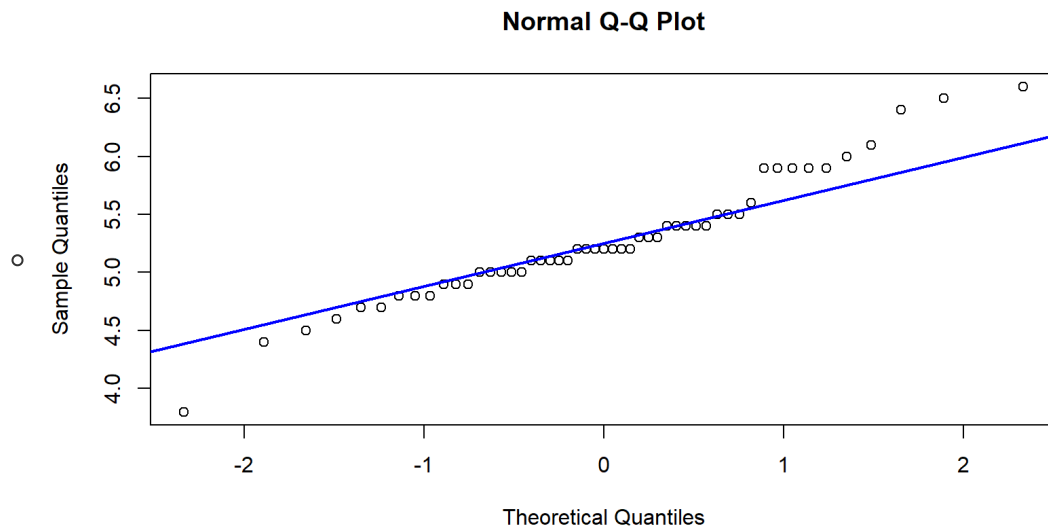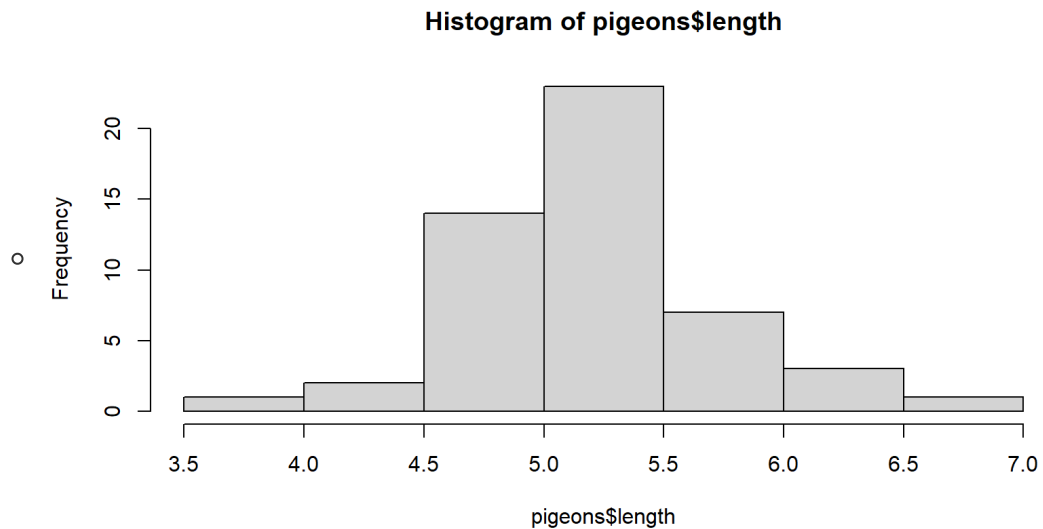

- Summary Stats

  - Min. 1st Qu. Median   Mean 3rd Qu.   Max.
    1.690   3.894   4.378   4.311   4.829   6.211
- ANOVA

  - Df Sum Sq Mean Sq F value Pr(>F)
    site   5 6.686 1.3373   1.958 0.103
    Residuals   46 31.411 0.6828
  - H0 accepted

Dataset 2

- Hypothesis

- Null hypothesis (H0): The mean beak lengths are equal between all groups)
- Alternative hypothesis (H1): At least one group significantly differs in mean beak lengths.
- Normality? Yes

Histogram of pigeons$length

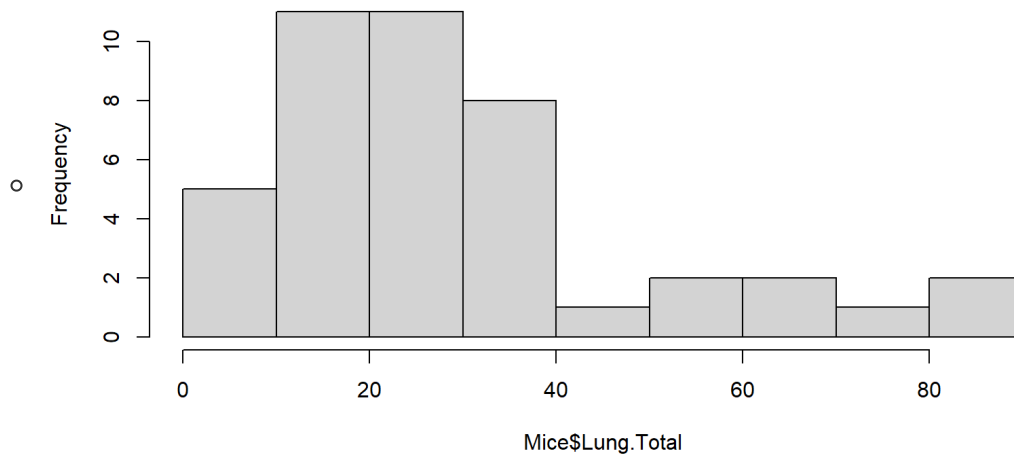**Normal Q-Q Plot**

- Summary Stats
  - Min. 1st Qu. Median Mean 3rd Qu. Max.
    3.800 5.000 5.200 5.271 5.500 6.600
- ANOVA
  - Df Sum Sq Mean Sq F value Pr(>F)
    Group   4 0.847 0.2119 0.722 0.581
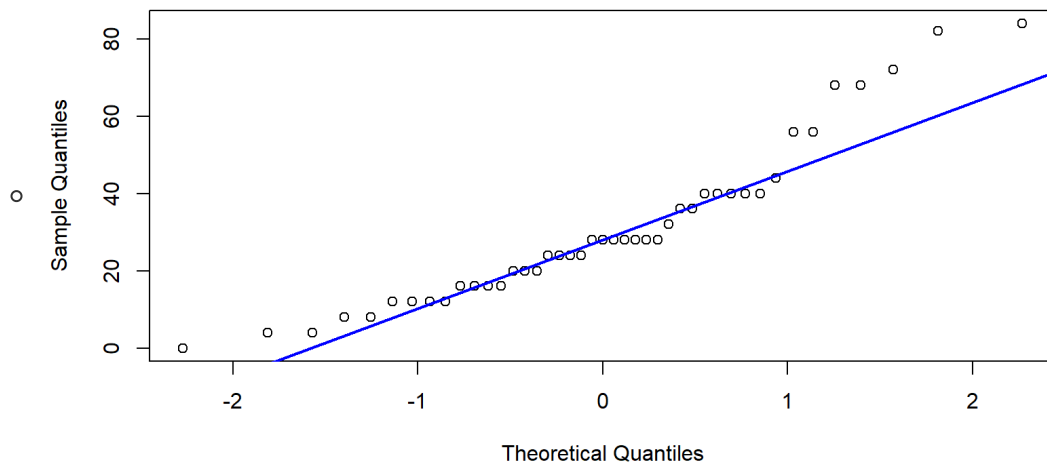   Residuals 46 13.498 0.2934
  - H0 accepted

Dataset 3

- Hypothesis
  - Null hypothesis (H0): The mean number of tota lung parasites are equal between all mouse strains
  - Alternative hypothesis (H1): At least one mouse strain significantly differs in mean number of lung parasites
- Normality? Yes

Histogram of Mice$Lung.Total

Normal Q-Q Plot

- Summary Stats

  - Min. 1st Qu. Median   Mean 3rd Qu.   Max.
    0.00 16.00 28.00 30.74 40.00 84.00
- ANOVA

  - Df Sum Sq Mean Sq F value   Pr(>F)
    Strain   8 11143 1392.9   6.765 2.73e-05 ***
    Residuals   34 7001   205.9

  - H0 rejected

    - Tukey multiple comparisons of means
      (highlight = significant difference, cutoff = 95% family-wise confidence level)
                      diff   lwr   upr   p adj
      BALB/c-A/J   9.6 -20.429745 39.629745 0.9764691
      C3H/HeN-A/J   -0.8 -30.829745 29.229745 1.0000000
      C57Bl/6-A/J   45.2 15.170255 75.229745 0.0005545
      CBA/Ca-A/J   -0.8 -30.829745 29.229745 1.0000000
      DBA/2-A/J   -8.8 -38.829745 21.229745 0.9862607
      NIH-A/J   22.4 -7.629745 52.429745 0.2823402
      SJL-A/J   21.2 -10.651354 53.051354 0.4267620
      SWR-A/J   2.2 -29.651354 34.051354 0.9999997
      C3H/HeN-BALB/c -10.4 -40.429745 19.629745 0.9622623
      C57Bl/6-BALB/c   35.6   5.570255 65.629745 0.0106561

```
CBA/Ca-BALB/c    -10.4 -40.429745  19.629745 0.9622623
DBA/2-BALB/c     -18.4 -48.429745  11.629745 0.5360744
NIH-BALB/c        12.8 -17.229745  42.829745 0.8860350
SJL-BALB/c        11.6 -20.251354  43.451354 0.9498384
SWR-BALB/c        -7.4 -39.251354  24.451354 0.9970498
C57Bl/6-C3H/HeN  46.0  15.970255  76.029745 0.0004294
CBA/Ca-C3H/HeN    0.0 -30.029745  30.029745 1.0000000
DBA/2-C3H/HeN    -8.0 -38.029745  22.029745 0.9925732
NIH-C3H/HeN      23.2  -6.829745  53.229745 0.2422041
SJL-C3H/HeN      22.0  -9.851354  53.851354 0.3781838
SWR-C3H/HeN       3.0 -28.851354  34.851354 0.9999965
CBA/Ca-C57Bl/6   -46.0 -76.029745 -15.970255 0.0004294
DBA/2-C57Bl/6    -54.0 -84.029745 -23.970255 0.0000324
NIH-C57Bl/6      -22.8 -52.829745   7.229745 0.2617553
SJL-C57Bl/6      -24.0 -55.851354   7.851354 0.2705107
SWR-C57Bl/6      -43.0 -74.851354 -11.148646 0.0024020
DBA/2-CBA/Ca     -8.0 -38.029745  22.029745 0.9925732
NIH-CBA/Ca       23.2  -6.829745  53.229745 0.2422041
SJL-CBA/Ca       22.0  -9.851354  53.851354 0.3781838
SWR-CBA/Ca        3.0 -28.851354  34.851354 0.9999965
NIH-DBA/2        31.2   1.170255  61.229745 0.0366938
SJL-DBA/2        30.0  -1.851354  61.851354 0.0778676
SWR-DBA/2        11.0 -20.851354  42.851354 0.9628665
SJL-NIH          -1.2 -33.051354  30.651354 1.0000000
SWR-NIH         -20.2 -52.051354  11.651354 0.4908115
SWR-SJL         -19.0 -52.574276  14.574276 0.6359198
```