Week 3: Answer Key

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```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

Exercise 1

```
## Rows: 15 Columns: 5
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## dbl (5): site, experiment, length, width, height
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

## [1] "1a"

## # A tibble: 15 x 1
##    length
##     <dbl>
##  1    2.2
##  2    2.1
##  3    2.7
##  4    3
##  5    3.1
##  6    2.5
##  7    1.9
##  8    1.1
##  9    3.5
## 10    2.9
## 11    4.5
## 12    1.2
## 13    2.6
## 14    1.8
## 15    3.1
```

```
## [1] "1b"
```

```
## # A tibble: 15 x 2
##     site experiment
##    <dbl>      <dbl>
##  1     1          1
##  2     1          2
##  3     1          3
##  4     2          1
##  5     2          2
##  6     2          3
##  7     3          1
##  8     3          2
##  9     3          3
## 10     4          1
## 11     4          2
## 12     4          3
## 13     5          1
## 14     5          2
## 15     5          3
```

```
## [1] "1c"
```

```
## # A tibble: 15 x 6
##     site experiment length width height  area
##    <dbl>      <dbl>  <dbl> <dbl>  <dbl> <dbl>
##  1     1          1    2.2   1.3    9.6  2.86
##  2     1          2    2.1   2.2    7.6  4.62
##  3     1          3    2.7   1.5    2.2  4.05
##  4     2          1    3     4.5    1.5 13.5
##  5     2          2    3.1   3.1    4    9.61
##  6     2          3    2.5   2.8    3    7
##  7     3          1    1.9   1.8    4.5  3.42
##  8     3          2    1.1   0.5    2.3  0.55
##  9     3          3    3.5   2      7.5  7
## 10     4          1    2.9   2.7    3.2  7.83
## 11     4          2    4.5   4.8    6.5 21.6
## 12     4          3    1.2   1.8    2.7  2.16
## 13     5          1    2.6   0.8   NA    2.08
## 14     5          2    1.8  NA      5.2 NA
## 15     5          3    3.1   2.2   NA    6.82
```

```
## [1] "1d"
```

```
## # A tibble: 15 x 5
##     site experiment length width height
##    <dbl>      <dbl>  <dbl> <dbl>  <dbl>
##  1     3          2    1.1   0.5    2.3
##  2     4          3    1.2   1.8    2.7
##  3     5          2    1.8  NA      5.2
##  4     3          1    1.9   1.8    4.5
##  5     1          2    2.1   2.2    7.6
##  6     1          1    2.2   1.3    9.6
```

```
##  7     2          3    2.5   2.8    3
##  8     5          1    2.6   0.8   NA
##  9     1          3    2.7   1.5    2.2
## 10     4          1    2.9   2.7    3.2
## 11     2          1    3     4.5    1.5
## 12     2          2    3.1   3.1    4
## 13     5          3    3.1   2.2   NA
## 14     3          3    3.5   2      7.5
## 15     4          2    4.5   4.8    6.5
```

```
## [1] "1e"
```

```
## # A tibble: 5 x 5
##    site experiment length width height
##   <dbl>      <dbl>  <dbl> <dbl>  <dbl>
## 1     1          1    2.2   1.3    9.6
## 2     1          2    2.1   2.2    7.6
## 3     3          3    3.5   2      7.5
## 4     4          2    4.5   4.8    6.5
## 5     5          2    1.8  NA      5.2
```

```
## [1] "1f"
```

```
## # A tibble: 2 x 5
##    site experiment length width height
##   <dbl>      <dbl>  <dbl> <dbl>  <dbl>
## 1     1          2    2.1   2.2    7.6
## 2     4          2    4.5   4.8    6.5
```

```
## [1] "1g"
```

```
## # A tibble: 10 x 5
##     site experiment length width height
##    <dbl>      <dbl>  <dbl> <dbl>  <dbl>
##  1     1          1    2.2   1.3    9.6
##  2     1          3    2.7   1.5    2.2
##  3     2          1    3     4.5    1.5
##  4     2          3    2.5   2.8    3
##  5     3          1    1.9   1.8    4.5
##  6     3          3    3.5   2      7.5
##  7     4          1    2.9   2.7    3.2
##  8     4          3    1.2   1.8    2.7
##  9     5          1    2.6   0.8   NA
## 10     5          3    3.1   2.2   NA
```

```
## [1] "1h"
```

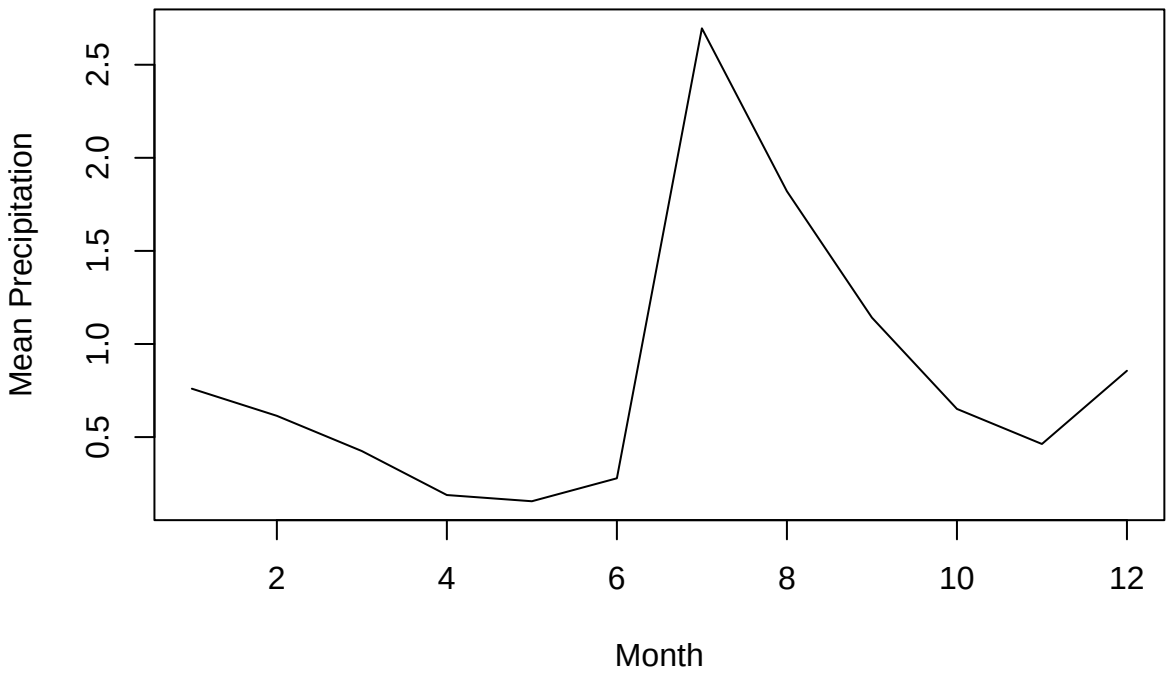
```
## # A tibble: 13 x 5
##     site experiment length width height
##    <dbl>      <dbl>  <dbl> <dbl>  <dbl>
##  1     1          1    2.2   1.3    9.6
##  2     1          2    2.1   2.2    7.6
```

```
##  3     1          3    2.7   1.5    2.2
##  4     2          1    3     4.5    1.5
##  5     2          2    3.1   3.1    4
##  6     2          3    2.5   2.8    3
##  7     3          1    1.9   1.8    4.5
##  8     3          2    1.1   0.5    2.3
##  9     3          3    3.5   2      7.5
## 10     4          1    2.9   2.7    3.2
## 11     4          2    4.5   4.8    6.5
## 12     4          3    1.2   1.8    2.7
## 13     5          2    1.8  NA      5.2
```

```
## [1] "1i"
```

```
## # A tibble: 15 x 6
##     site experiment length width height volume
##    <dbl>      <dbl>  <dbl> <dbl>  <dbl>  <dbl>
##  1     1          1    2.2   1.3    9.6  27.5
##  2     1          2    2.1   2.2    7.6  35.1
##  3     1          3    2.7   1.5    2.2   8.91
##  4     2          1    3     4.5    1.5  20.2
##  5     2          2    3.1   3.1    4    38.4
##  6     2          3    2.5   2.8    3    21
##  7     3          1    1.9   1.8    4.5  15.4
##  8     3          2    1.1   0.5    2.3   1.26
##  9     3          3    3.5   2      7.5  52.5
## 10     4          1    2.9   2.7    3.2  25.1
## 11     4          2    4.5   4.8    6.5 140.
## 12     4          3    1.2   1.8    2.7   5.83
## 13     5          1    2.6   0.8   NA    NA
## 14     5          2    1.8  NA      5.2  NA
## 15     5          3    3.1   2.2   NA    NA
```

Exercise 2



Exercise 3

```
## Rows: 35549 Columns: 9
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (2): species_id, sex
## dbl (7): record_id, month, day, year, plot_id, hindfoot_length, weight
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

## [1] "3a"

## # A tibble: 35,549 x 4
##     year month   day species_id
##    <dbl> <dbl> <dbl> <chr>
##  1  1977     7    16 NL
##  2  1977     7    16 NL
##  3  1977     7    16 DM
##  4  1977     7    16 DM
##  5  1977     7    16 DM
##  6  1977     7    16 PF
##  7  1977     7    16 PE
##  8  1977     7    16 DM
##  9  1977     7    16 DM
## 10  1977     7    16 PF
```

```
## # i 35,539 more rows
```

```
## [1] "3b"
```

```
## # A tibble: 32,283 x 4
##     year species_id weight weight_kg
##    <dbl> <chr>       <dbl>     <dbl>
##  1  1977 DM             40     0.04
##  2  1977 DM             48     0.048
##  3  1977 DM             29     0.029
##  4  1977 DM             46     0.046
##  5  1977 DM             36     0.036
##  6  1977 DO             52     0.052
##  7  1977 PF              8     0.008
##  8  1977 OX             22     0.022
##  9  1977 DM             35     0.035
## 10  1977 PF              7     0.007
## # i 32,273 more rows
```

```
## [1] "3c"
```

```
## # A tibble: 141 x 4
##     year species_id weight weight_kg
##    <dbl> <chr>       <dbl>     <dbl>
##  1  1978 SH             89     0.089
##  2  1982 SH            106     0.106
##  3  1982 SH             52     0.052
##  4  1986 SH             55     0.055
##  5  1987 SH             77     0.077
##  6  1987 SH             78     0.078
##  7  1987 SH            104     0.104
##  8  1987 SH             58     0.058
##  9  1987 SH             52     0.052
## 10  1988 SH             60     0.06
## # i 131 more rows
```

Exercise 4

```
## [1] "4a"
```

```
## # A tibble: 32,283 x 4
##     year species_id weight weight_kg
##    <dbl> <chr>       <dbl>     <dbl>
##  1  1977 DM             40     0.04
##  2  1977 DM             48     0.048
##  3  1977 DM             29     0.029
##  4  1977 DM             46     0.046
##  5  1977 DM             36     0.036
##  6  1977 DO             52     0.052
##  7  1977 PF              8     0.008
##  8  1977 OX             22     0.022
##  9  1977 DM             35     0.035
## 10  1977 PF              7     0.007
## # i 32,273 more rows
```

```
## [1] "4b"
```

```
## # A tibble: 147 x 4
##     year month   day species_id
##    <dbl> <dbl> <dbl> <chr>
##  1  1977     7    17 SH
##  2  1978    11     4 SH
##  3  1982     5    21 SH
##  4  1982     6    29 SH
##  5  1983     3    14 SH
##  6  1983     4    16 SH
##  7  1986    10     4 SH
##  8  1987     7    26 SH
##  9  1987     8    26 SH
## 10  1987    10    24 SH
## # i 137 more rows
```

Exercise 5

```
## # A tibble: 14,558 x 6
##    month   day  year species_id weight hindfoot_length
##    <dbl> <dbl> <dbl> <chr>       <dbl>           <dbl>
##  1     4    29  1979 dm             65              37
##  2     8     7  1991 dm             65              37
##  3     5    16  2002 dm             64              35
##  4     5    13  1984 dm             63              35
##  5    12     3  1995 dm             63              38
##  6    10    12  1980 dm             62              35
##  7    10    28  1995 dm             62              37
##  8     1    28  1996 dm             62              38
##  9     1    28  1996 dm             62              38
## 10    11     7  1999 dm             62              36
## # i 14,548 more rows
```