

1. Use `filter()` to remove all NA values from the `weight` column. Use `head()` to print the first few rows of your new object.

```
##   record_id month day year plot_id species_id sex hindfoot_length weight
## 1         63     8  19 1977      3         DM  M             35      40
## 2         64     8  19 1977      7         DM  M             37      48
## 3         65     8  19 1977      4         DM  F             34      29
## 4         66     8  19 1977      4         DM  F             35      46
## 5         67     8  19 1977      7         DM  M             35      36
## 6         68     8  19 1977      8         DO  F             32      52
```

2. Use `unite()` to make a new column called `date_plot` which combines the `year`, `month`, `day`, and `plot_id` columns. Use `head()` to print out the first few rows of this object.

```
##   record_id  date_plot species_id sex hindfoot_length weight
## 1         63 1977_8_19_3         DM  M             35      40
## 2         64 1977_8_19_7         DM  M             37      48
## 3         65 1977_8_19_4         DM  F             34      29
## 4         66 1977_8_19_4         DM  F             35      46
## 5         67 1977_8_19_7         DM  M             35      36
## 6         68 1977_8_19_8         DO  F             32      52
```

3. Group your data by `date_plot` and `species_id` and summarize the mean `weight` for each group. Use `head()` to print out the first few rows of this object.

```
## 'summarise()' has grouped output by 'date_plot'. You can override using
## the '.groups' argument.
```

```
## # A tibble: 6 x 3
## # Groups:   date_plot [5]
##   date_plot    species_id mean_weight
##   <chr>        <chr>        <dbl>
## 1 1977_10_16_1  DM             43.7
## 2 1977_10_16_13 DM             44.3
## 3 1977_10_16_18 DM             44.3
## 4 1977_10_16_2  DM             46.2
## 5 1977_10_16_2  OL              21
## 6 1977_10_16_20 DM              41
```

4. Use `pivot_wider` to make a new data object with `species_id` in the columns and `weight` in the cells. Use `head()` to print out the first few rows of this object.

```
## 'summarise()' has grouped output by 'date_plot'. You can override using
## the '.groups' argument.
```

```
## # A tibble: 6 x 26
## # Groups:   date_plot [6]
##   date_plot    DM    OL    PE    OT    DO    RM    PF    DS    OX    PP
##   <chr>        <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 1977_10_16_1  43.7   NA    NA    NA    NA    NA    NA    NA    NA    NA
## 2 1977_10_16_13 44.3   NA    NA    NA    NA    NA    NA    NA    NA    NA
## 3 1977_10_16_18 44.3   NA    NA    NA    NA    NA    NA    NA    NA    NA
```

```
## 4 1977_10_16_2 46.2 21 NA NA NA NA NA NA NA NA
## 5 1977_10_16_20 41 NA 20 NA NA NA NA NA NA NA NA
## 6 1977_10_16_22 39 NA NA 21 NA NA NA NA NA NA NA
## # i 15 more variables: SH <dbl>, NL <dbl>, PM <dbl>, SS <dbl>, RF <dbl>,
## # PH <dbl>, SF <dbl>, BA <dbl>, SO <dbl>, RO <dbl>, PI <dbl>, PB <dbl>,
## # PL <dbl>, RX <dbl>, PX <dbl>
```

5. Begin a new data pipeline using the original `surveys` data object. Use `filter()` to remove all NA values from weight, keep only the DM species, and remove all empty values (i.e., "") of `sex`. Use `head()` to print out the first few rows of this object.

```
## record_id month day year plot_id species_id sex hindfoot_length weight
## 1 63 8 19 1977 3 DM M 35 40
## 2 64 8 19 1977 7 DM M 37 48
## 3 65 8 19 1977 4 DM F 34 29
## 4 66 8 19 1977 4 DM F 35 46
## 5 67 8 19 1977 7 DM M 35 36
## 6 71 8 19 1977 7 DM F 36 35
```

6. `unite()` the `species_id` and `sex` column into a new `sp_sex` column. Use `head()` to print out the first few rows of this object.

```
## record_id month day year plot_id sp_sex hindfoot_length weight
## 1 63 8 19 1977 3 DM_M 35 40
## 2 64 8 19 1977 7 DM_M 37 48
## 3 65 8 19 1977 4 DM_F 34 29
## 4 66 8 19 1977 4 DM_F 35 46
## 5 67 8 19 1977 7 DM_M 35 36
## 6 71 8 19 1977 7 DM_F 36 35
```

7. Group the data by `year` and `sp_sex` to calculate the mean weight. Use `head()` to print out the first few rows of this object.

```
## 'summarise()' has grouped output by 'year'. You can override using the
## '.groups' argument.
```

```
## # A tibble: 6 x 3
## # Groups:   year [3]
## year sp_sex mean_weight
## <int> <chr> <dbl>
## 1 1977 DM_F 40.2
## 2 1977 DM_M 41.8
## 3 1978 DM_F 39.8
## 4 1978 DM_M 41.8
## 5 1979 DM_F 42.6
## 6 1979 DM_M 44.3
```

8. Starting with your summarized data, `separate()` `sp_sex` into a `species` and `sex` column and then use `ggplot()` to make a scatter graph of mean weight by year, and color the points ac-

cording to `sex`. Also add linear regression lines to your plot, one for males and one for females.

