STAT 630, HW 7
Due: Thursday, October 28

Reading: *OpenIntro*, Sections 7.2 and 7.3
Suggested practice problems from *OpenIntro* (not to be collected):
7.17, 7.18, 7.19, and 7.30

Exercise 1. For this exercise use the `ncbirths` data set from the `openintro` package, which was discussed in lab 8.

(a) Conduct a hypothesis test evaluating whether the average birth weight of babies born full-term is significantly different than the average birth weight babies born premature. State the null and alternative hypothesis and your conclusion using an $\alpha = 0.01$ significance level. Also, comment on whether the conditions for the test are adequately satisfied.

(b) Report and interpret a 99% confidence interval for the difference between the average birth weight of babies born full term and babies born premature.

Exercise 2. For this exercise use the `Groceries` data set from the `resampledata` package:

```
library(resampledata)
head(Groceries)
```

```
##                               Product    Size Target Walmart Units UnitType
## 1            Kellogg NutriGrain Bars  8 bars   2.50    2.78     8     bars
## 2 Quaker Oats Life Cereal  Original     18oz   3.19    6.01    18       oz
## 3         General Mills Lucky Charms 11.50oz   3.19    2.98    11       oz
## 4          Quaker Oats Old Fashioned    18oz   2.82    2.68    18       oz
## 5               Nabisco Oreo Cookies  14.3oz   2.99    2.98    14       oz
## 6                 Nabisco Chips Ahoy    13oz   2.64    1.98    13       oz
```

The data set contain a sample of grocery items from Target and Walmart and their prices, advertised on their respective web sites, on one specific day.

(a) Make a histogram and compute summary statistics for the price differences (Target price - Walmart price). What is unusual about Quaker Oats Life Cereal?

(b) Using all the data, perform a paired t-test to determine whether the cost of groceries purchased at Target is significantly different than Walmart.

(c) Remove the entry for Quaker Oats Life Cereal, and redo the paired t-test. Do you reach the same conclusion?