**Working with tilde**

Remember that tilde (~) is often used to work on a statistical model, where the thing on the left of the ~ is the response and the things on the right of the ~ are the explanatory variables. So in English you'd say something like "Species depends on Sepal Length, Sepal Width, Petal Length and Petal Width". For something like this

myFormula <- Species ~ Sepal.Length + Sepal.Width + Petal.Length + Petal.Width

Tilda being an operator can also be seen as a **shortcut to a function** (with two arguments):

lhs ~ rhs

1. Look at the data set *diamonds* to see if there’s a linear relationship between weight and cost of diamonds using tilde operator when graphing
2. Use the animals (see below)dataset to put the data on a log scale and find that it looks much better. As you know the [*I* or *AsIs* function](http://stat.ethz.ch/R-manual/R-devel/library/base/html/AsIs.html) does something like the opposite of the tilde operator. It tells the interpreter to go ahead and evaluate the enclosed expression. The general gist is to transform our data to log scale then apply linear modeling. As you remember in the tutorial we have y ~ x + I(x^2), where the operator I(x^2) evaluates x^2 before using it in a formula.

**Prices of 50,000 round cut diamonds**

Source: [R/data.R](https://github.com/tidyverse/ggplot2/blob/master/R/data.R)

A dataset containing the prices and other attributes of almost 54,000 diamonds. The variables are as follows:

diamonds

**Format**

A data frame with 53940 rows and 10 variables:

**price :** price in US dollars (\$326--\$18,823)

**carat:** weight of the diamond (0.2--5.01)

**cut:** quality of the cut (Fair, Good, Very Good, Premium, Ideal)

**color:** diamond colour, from D (best) to J (worst)

**clarity:** a measurement of how clear the diamond is (I1 (worst), SI2, SI1, VS2, VS1, VVS2, VVS1, IF (best))

**x:** length in mm (0--10.74)

**y:** width in mm (0--58.9)

**z:** depth in mm (0--31.8)

**depth:** total depth percentage = z / mean(x, y) = 2 \* z / (x + y) (43--79)

**table:** width of top of diamond relative to widest point (43--95)

## Brain and Body Weights for 28 Species (use library(MASS))

### **Description:** Average brain and body weights for 28 species of land animals.

### Usage: Animals

### Format

**body:** body weight in kg.

**brain:** brain weight in g.