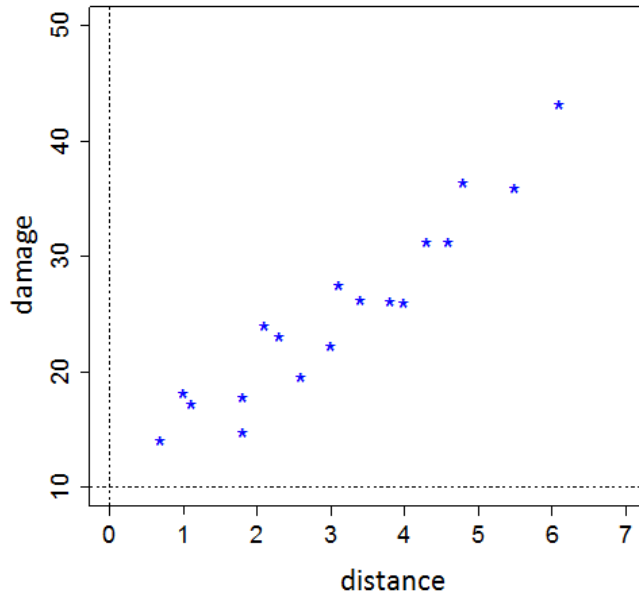


In-class-exercise week 8
Topic: Simple Regression

Problem 1

The damage of cells due to inflammation depend on the distance to the source (data made up).



We have used R to modeled the data with a linear regression::

Call:

```
lm(formula = damage ~ dist, data = fire)
```

Residuals:

Min	1Q	Median	3Q	Max
-4.1689	-2.1322	-0.1006	2.1287	3.5850

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	10.292	1.408	7.312	1.75e-06 ***
dist	4.820	0.406	11.874	2.40e-09 ***

Residual standard error: 2.637 on 16 degrees of freedom

a)

- What is the estimate for the intercept, what is the estimate for the slope?
- Write down the estimated linear relationship describing how the damage depend on the distance.
- Draw the corresponding line in the scatterplot.

- What damage does your model predict for the distance 5? Mark the prediction in the plot.

b) Why do we have 16 degree of freedoms?

c) Use the R output above to construct an 95% confidence interval for the slope.

d) How much does the damage change if the distance change from 1 to 2 or from 4 to 5?