Table 6.5: Statistical models in R. Lower case letters denote continuous numeric variables and uppercase letters denote factors. Note that the error term is always implicit.

Effects model	R Model formular	Description
$y_i = \beta_0 + \beta_1 x_i$	`y ~ 1 + x` `y ~ x`	Simple linear regression model of `y` on `x` with intercept term included

$y_i = \beta_1 x_i$	`y ~ 0 + x`
	`y ~ -1 + x`
	`y ~ x - 1`
		Simple linear regression model of `y` on `x` with intercept term excluded

$y_i = \beta_0$	`y ~ 1` `y ~ 1 - x`	Simple linear regression model of `y` against the intercept term
$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i2}$	`y ~ x1 + x2`	Multiple linear regression model of `y` on `x1` and `x2` with the intercept term included implicitly
$y_i = \beta_0 + \beta_1 x_{i1} + \beta_2 x_{i1}^2$	`y ~ 1 + x + I(x^2)`	Second order polynomial regression of `y` on `x`
	`y ~ poly(x, 2)`	As above, but using orthogonal polynomials
$y_{ij} = \mu + \alpha_i$	`y ~ A`	Analysis of variance of `y` against a single factor `A`
$y_{ijk} = \mu + \alpha_i + \beta_j + \alpha\beta_{ij}$	`y ~ A + B + A:B` `y ~ A*B`	Fully factorial analysis of variance of `y` against `A` and `B`
$y_{ijk} = \mu + \alpha_i + \beta_j$	`y ~ A*B - A:B`	Fully factorial analysis of variance of `y` against `A` and `B` without the interaction term (equivalent to `A + B`)
$y_{ijk} = \mu + \alpha_i + \beta_{j(i)}$	`y ~ B %in% A` `y ~ A/B`	Nested analysis of variance of `y` against `A` and `B` nested within `A`
$y_{ij} = \mu + \alpha_i + \beta(x_{ij} - \bar{x})$	`y ~ A*x` `y ~ A/x`	Analysis of covariance of `y` on `x` at each level of `A`
$y_{ijkl} = \mu + \alpha_i + \beta_{j(i)} + \gamma_k + \alpha\gamma_{ik} + \beta\gamma_{j(i)k}$	`y ~ A + Error(B) + C + A:C + B:C`	Partly nested ANOVA of `y` against a single between block factor (`A`), a single within block factor (`C`) and a single random blocking factor (`B`).