Consider predicting variable `y` using predictors `x1` and `x2`. The first predictor `x1` is a three-level categorical variable. In this example we compare two models. One in which `x1` is categorical but included as continuous (numerical) variable. The other in which `x1` is properly included as categorical variable.

x_1	x_2	y
S	-0.10	19.19
S	2.53	22.74
S	4.86	23.91
M	0.26	7.07
M	2.55	7.93
M	4.87	8.93
L	0.08	20.63
L	2.62	23.46
L	5.09	25.75

1. Substitute the levels of x_1 with $0, 1, 2$.

2. Fit a linear regression model. What is the R^2 of this model?

3. Substitute the three levels of the original variable x_1 with binary (dummy) variables $0, 1$.
   Use function `as.factor( )`

4. Fit a linear regression model. What is the R^2 of this model?

5. Substitute the three levels of the original variable x_1 with binary (dummy) variables $0, 1$.
   Do not use the `as.factor` function. Verify that the last two models agree.