1. χ^2 test.
   Observed: 10:25:18:6
   expected: 14.75 : 14.75 : 14.75 : 14.75
   H0: observed = expected
   $\chi^2(3)$ = 14.56, P = 0.0022 < 0.05
   Conclusion: observed $\neq$ expected

2. χ^2 test.
   H0: gender and hair color are independent
   $\chi^2(3)$ = 8.987, P = 0.0294 < 0.05
   Conclusion: gender and hair color are dependent

3. t – test independent samples (or ANOVA)
   H01: σ^2 (boys) / σ^2 (girls) = 1
   F(1, 29) = 0.000528, P = 0,981
   Conclusion: σ^2 (boys) = σ^2 (girls) $\Rightarrow$ classical t-test

   H02: μ(boys) = μ (girls)
   t(29) = -2.57, P = 0.0155 < 0.05
   Conclusion: μ(boys) $\neq$ μ (girls)

   H13: μ(boys) < μ (girls)
   H03: μ(boys) $\geq$ μ (girls)
   t(29) = -2.57, P = 0.0155/2 < 0.05
   Conclusion: μ(boys) < μ (girls)

4. t – test dependent samples
   H0: μ(math.) = μ (eng.)
   t(10) = 0, P = 1
   Conclusion: we are not able to reject μ(math.) = μ (eng.)

5. ANOVA
   H01: μ(fer.1) = μ (fer.2)
   F(1, 27) = 11.032, P = 0,002577
   Post Hoc test (Tukey):
   μ(fer.1) < μ (fer.2), P = 0.002642

   H02: μ(sp.1) = μ (sp.2) = μ(sp.3)
   F(2, 27) = 48.058, P = 0
   Post Hoc test (Tukey):
   μ(sp.1) < μ (sp.2), P = 0,000344
   μ(sp.1) < μ (sp.3), P = 0,000127
   μ(sp.2) < μ (sp.3), P = 0,000179
   H03: nonsignificant interactions
   F(2,27) = 0.488, P = 0,619 > 0.05
   Conclusion: nonsignificant interactions $\Rightarrow$ **design of Anova is OK**

6. t – test independent samples (or ANOVA)
   H01: σ^2 (sp.1) / σ^2 (sp.2) = 1
   F(1, 10) = 0.162539, P = 0,0686 > 0.05
   Conclusion: σ^2 (sp.1) = σ^2 (sp.2) $\Rightarrow$ classical t-test

   H02: μ(sp.1) = μ (sp.2)
   t(10) = 3.584, P = 0.00498 < 0.05
   Conclusion: μ(sp.1) $\neq$ μ (sp.2)

   H13: μ(sp.1) > μ (sp.2)
   H03: μ(sp.1) $\leq$ μ (sp.2)
   t(10) = 3.584, P = 0.00498/2 < 0.05
   Conclusion: μ (sp.1) > μ (sp.2)

7. R = 0,9749
   H0: R = 0, F(1, 10) = 191.7433, P = 0
   Conclusion: there is a linear relation between variables
   hours = a0 + a1*population
   mean of a0 = 180.6575, mean of a1 = 9.4929
   H0: slope of line = 0
   t(10)=1.4072, P = 0 $\Rightarrow$ slope $\neq$ 0, it is positive.