

**HOMEWORK (SIGN TEST)**  
**BIostatISTICS (STAT:3510; BOGNAR)**

1. The cholesterol levels in (10 year old) children has a distribution that is skewed to the right with population median  $Q_2$ . A random sample of 12 children yielded the following cholesterol levels.

154 139 194 145 133 172 135 149 142 150 186 155

- (a) Test  $H_0 : Q_2 = 180$  versus  $H_a : Q_2 < 180$  at the  $\alpha = 0.05$  significance level using the sign test. *You must find the test statistic and  $p$ -value, and state your decision and final conclusion.*
- (b) Test  $H_0 : Q_2 = 140$  versus  $H_a : Q_2 > 140$  at the  $\alpha = 0.05$  significance level using the sign test. *You must find the test statistic and  $p$ -value, and state your decision and final conclusion.*
- (c) Test  $H_0 : Q_2 = 160$  versus  $H_a : Q_2 \neq 160$  at the  $\alpha = 0.05$  significance level using the sign test. *You must find the test statistic and  $p$ -value, and state your decision and final conclusion.*