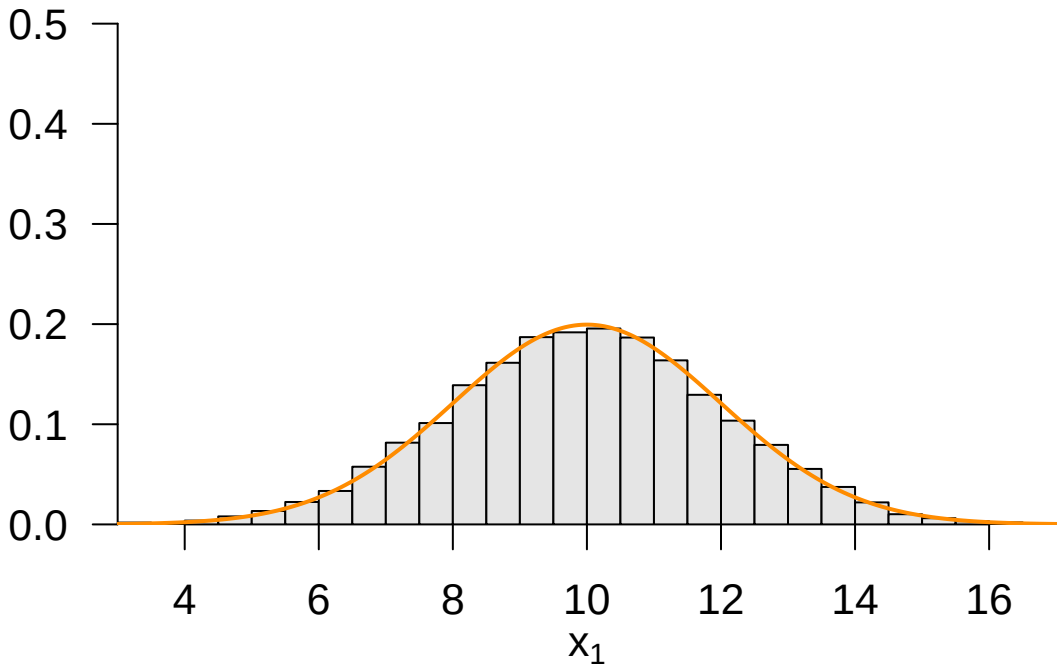
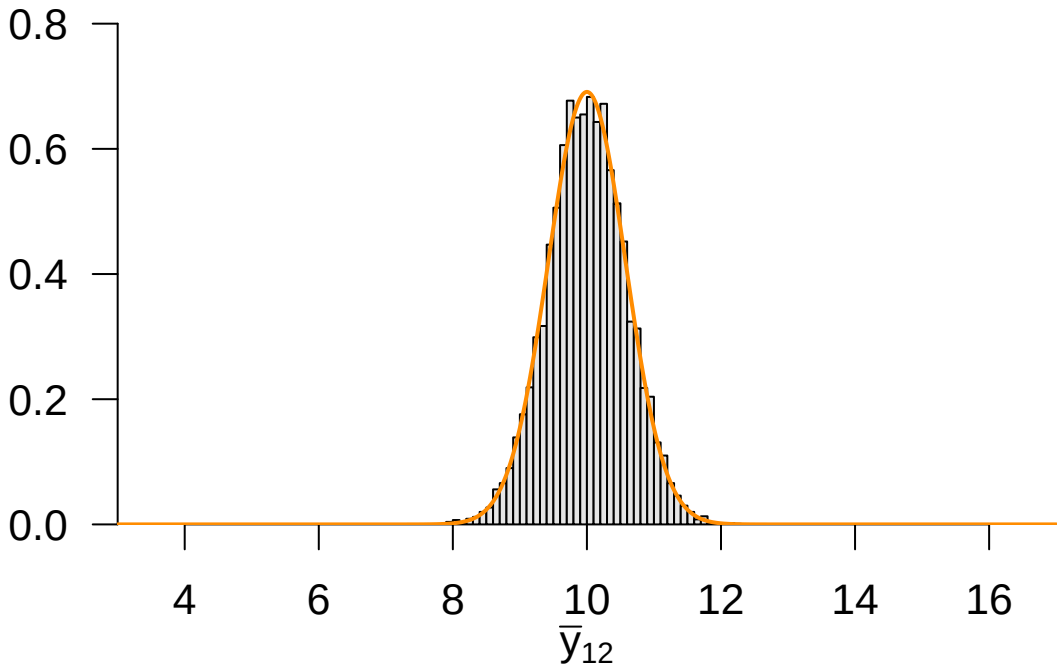
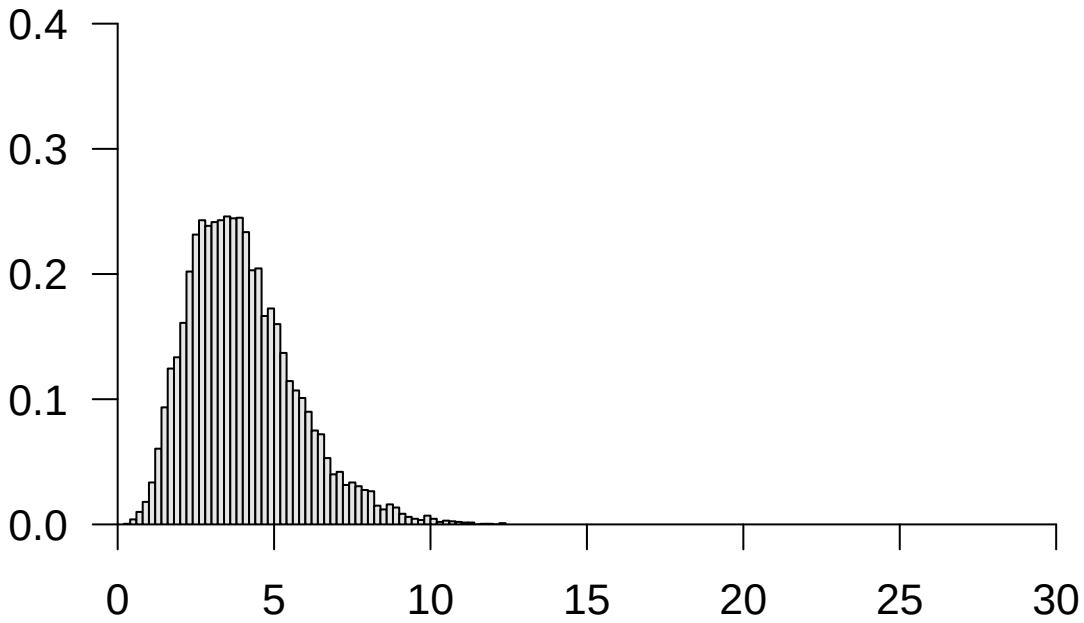
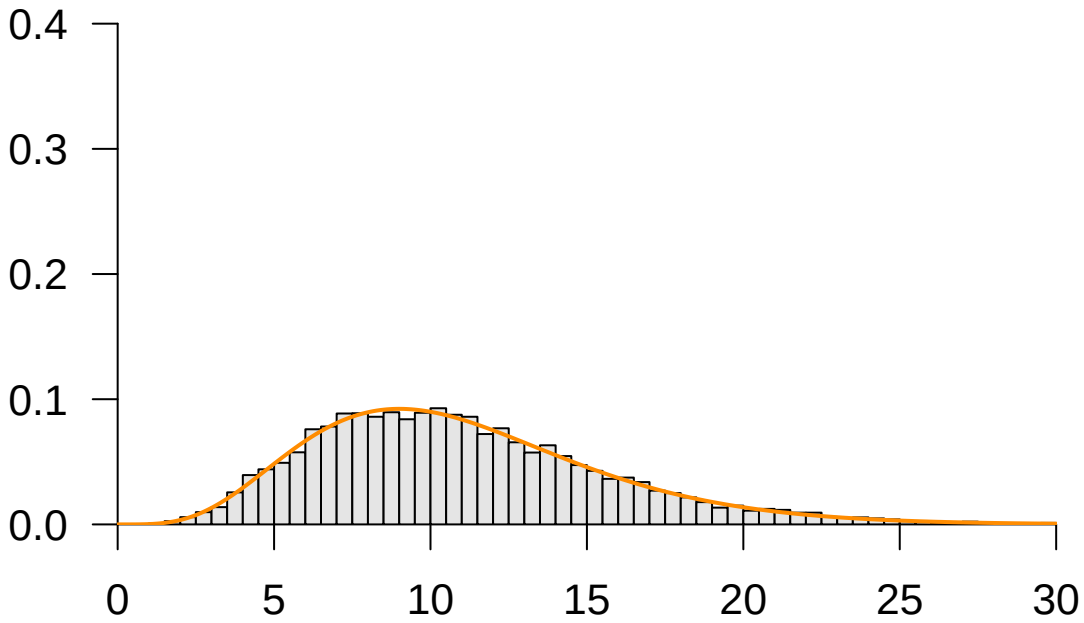
$\upsilon_i \sim N(10, 4),\ i = 1, \cdots, 12$



$\overline{\upsilon}_{12} \sim N(10, 1/3)$



S^2



$U \sim \frac{11}{4} S^2$