

Probability Practice #1 (Halfsheet)

1) With Replacement

a. $\frac{12}{31} \cdot \frac{12}{31} \cdot \frac{12}{31} = \left(\frac{12}{31}\right)^3 = 0.0580$

Without Replacement

a. 0.0489

b. $p(\text{at least one defect}) = 1 - p(\text{no defects})$

$1 - \frac{19}{31} \cdot \frac{19}{31} \cdot \frac{19}{31} = 1 - \left(\frac{19}{31}\right)^3 = 0.770$ b. 0.784

2) $p(\text{green}) = 0.4$

a. $0.4 \cdot 0.4 = 0.16$

b. $p(\text{at least 1 green}) = 1 - p(\text{not green}) = 1 - 0.6^2 = 0.64$

3) $p(1) = 0.17$ $p(2) = 0.07$ $p(3 \text{ or more}) = 0.04$

a. $1 - (p(1) + p(2) + p(3+)) = 1 - 0.17 - 0.07 - 0.04 = 0.72$

b. $p(\text{no more than 1 repair}) = p(0) \text{ or } p(1)$
 $= 0.72 + 0.17 = 0.89$

c. $p(\text{some repairs}) = p(1) + p(2) + p(3+) = 0.28$

4) a. 1) 0.3 2) 0.3 3) 0.9 4) 0

*Treat as independent since 3 would be < 5% of total

b. 1) $0.3^3 = 0.027$ 2) 0.2 3) $0.8^3 = 0.512$ 4) $1 - 0.9^3 = 0.271$

5) a. $\left(\frac{3}{10}\right)^3 = 0.027$ b. $\left(\frac{1}{2}\right)^3 = \frac{1}{8} = 0.125$ c. $\left(\frac{1}{10}\right)^3 = 0.001$ d. $\left(\frac{9}{10}\right)^3 = 0.729$

e. $1 - \left(\frac{6}{10}\right)^3 = 0.784$