

2.66

$$(a) 2\% + 30\% = 32\% \#$$

$$(b) 32\% + 25\% + 30\% = 87\% \#$$

$$(c) 5\% + 6\% + 2\% = 13\% \#$$

$$(d) 6\% + 25\% + 2\% + 30\% = 63\% \#$$

2.82

$$P(A) = 0.2, P(B) = 0.28, P(A \cap B) = 0.15$$

$$(a) P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.33 \#$$

$$(b) P(B|A) = P(A \cap B) / P(A) = \frac{0.15}{0.2} = 0.75 \#$$

$$(c) P(A|B') = P(A \cap B') / P(B') = \frac{0.05}{0.72} = \frac{5}{72} \#$$

2.90

$$(a) = P(A) \times P(B|A) \times P(C|A \cap B) = 0.3 \times 0.75 \times 0.2 = 0.045$$

$$(b) = P(A \cap B' \cap C) + P(A' \cap B' \cap C)$$

#2.82

$$P(A) = 0.2, P(B) = 0.28, P(A \cap B) = 0.15$$

$$(a) P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.33 \#$$

$$(b) P(B|A) = P(A \cap B) / P(A) = \frac{0.15}{0.2} = 0.75 \#$$

$$(c) P(A|B') = P(A \cap B') / P(B') = \frac{0.05}{0.72} = \frac{5}{72} \#$$

#2.90

$$(a) = P(A) \times P(B|A) \times P(C|A \cap B) = 0.3 \times 0.75 \times 0.2 = 0.045 \#$$

$$(b) = P(A \cap B' \cap C) + P(A' \cap B' \cap C)$$

$$= P(C|A \cap B') P(B'|A) P(A) + P(C|A' \cap B') P(B'|A') P(A')$$

$$= 0.8 \cdot (1 - 0.75) \cdot 0.3 + 0.9 \cdot (1 - 0.2) \cdot (1 - 0.3)$$

$$= 0.564 \#$$

(c) 根據(a)(b)

$$P(C) = P(A \cap B \cap C) + P(A \cap B' \cap C) + P(A' \cap B \cap C) + P(A' \cap B' \cap C)$$

$$= 0.045 + 0.06 + 0.021 + 0.504$$

$$= 0.63 \#$$

$$(d) P(A|B' \cap C) = P(A \cap B' \cap C) / P(B' \cap C)$$

$$= 0.06 \times 0.564$$

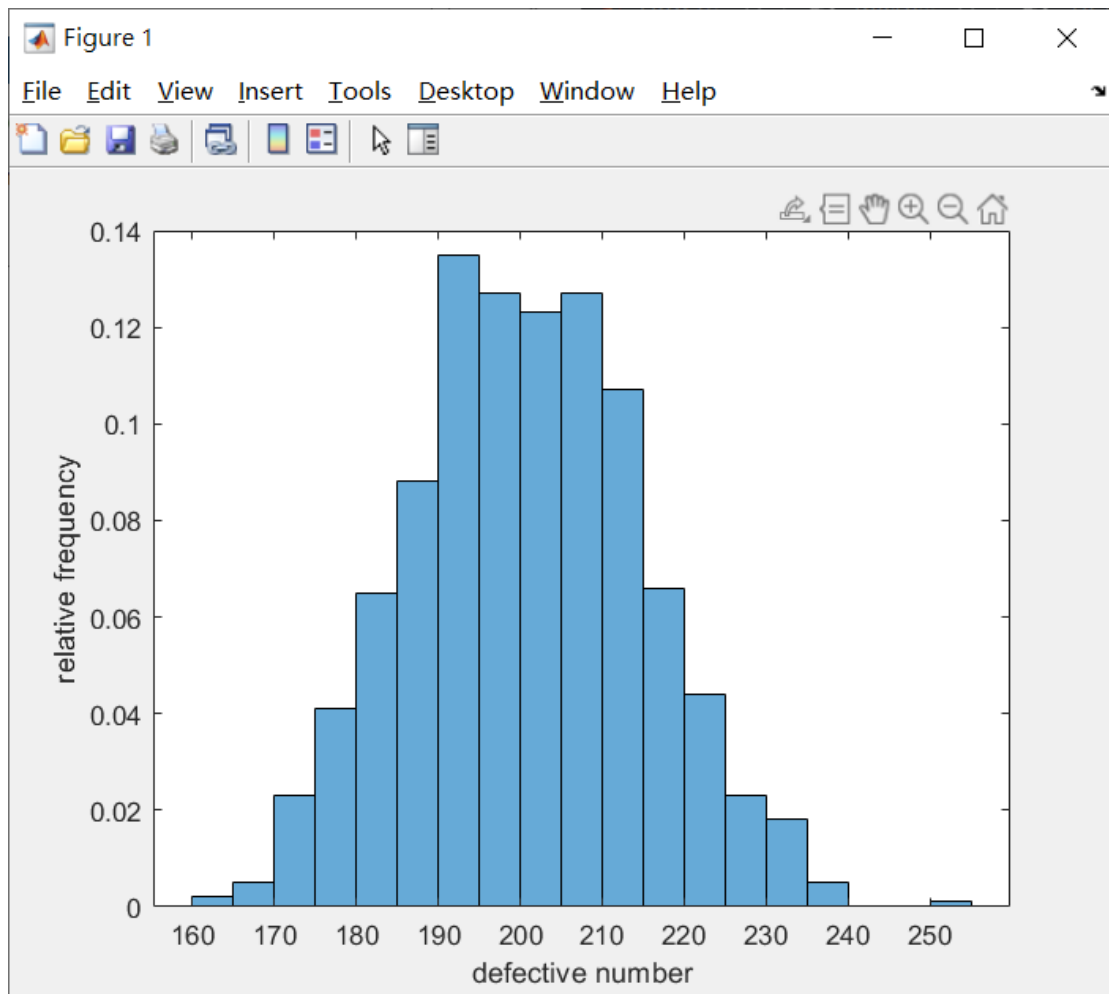
$$= 0.1064 \#$$

2.100 E: human error

$$P(C|E) = \frac{5}{7+7+5} = \frac{5}{19} \#$$

2.126 (a) $\frac{13}{13+10} = \frac{13}{23} \#$

(b) $\frac{2}{40+13+4+2} = \frac{2}{59} \#$



HW2_1b Relative frequency histogram

HW2_1c:

$$25*2 / (30*2 + 45*3 + 25*2)$$

$$= 50 / (60+135+50)$$

$$= 50 / 245$$

$$= 0.20408163265$$

10 次模擬的結果:

0.1993 0.2011 0.1910 0.1952

0.1993 0.1933 0.2120 0.2114

0.2098 0.1859

Min: 0.1859, Max: 0.2120

與理論值 $10/49$ 接近