

$$\begin{aligned}
 \#1 \quad & 2 \begin{bmatrix} 1 & -2 & 4 \\ 3 & 1 & 0 \end{bmatrix} + 3 \begin{bmatrix} -2 & 2 & 4 \\ 0 & 1 & 1 \end{bmatrix} - 4 \begin{bmatrix} 7 & -3 & 9 \\ -2 & 4 & 6 \end{bmatrix} \\
 & = \begin{bmatrix} 2 & -4 & 8 \\ 6 & 2 & 0 \end{bmatrix} + \begin{bmatrix} -6 & 6 & 12 \\ 0 & 3 & 3 \end{bmatrix} + \begin{bmatrix} -28 & 12 & -36 \\ 8 & -16 & -24 \end{bmatrix} \\
 & = \begin{bmatrix} -32 & 14 & -13 \\ 14 & -11 & -21 \end{bmatrix}
 \end{aligned}$$

$$\#2 \quad \begin{bmatrix} 3 & 2 & 1 \\ -1 & 2 & 3 \\ 3 & 1 & 4 \end{bmatrix} \begin{bmatrix} 1 & 3 & 4 \\ 2 & 4 & 1 \\ -1 & 2 & 3 \end{bmatrix} = \begin{bmatrix} 6 & 19 & 17 \\ 0 & 11 & 7 \\ 1 & 21 & 25 \end{bmatrix}$$

$$\#3 \quad \begin{bmatrix} 3 & 0 & 1 \\ 2 & 1 & 2 \end{bmatrix} \begin{bmatrix} 3 & -1 \\ 2 & 4 \\ 1 & 0 \end{bmatrix} = \begin{bmatrix} 10 & -3 \\ 10 & 2 \end{bmatrix}$$

#4

$$\begin{array}{l} 2R_2 - 3R_1 \\ R_3 - R_1 \end{array} \left[ \begin{array}{ccc|ccc} 2 & 3 & 1 & 0 & 0 & 0 \\ 0 & 2 & -1 & 0 & 0 & -1 \\ 0 & -1 & 2 & 0 & 0 & 0 \end{array} \right]$$

$$R_1 - R_2 \left[ \begin{array}{ccc|ccc} 2 & 1 & 1 & 1 & 0 & 0 \\ 0 & 1 & -1 & -3 & 2 & 0 \\ 0 & 0 & 1 & -1 & 0 & -1 \end{array} \right]$$

$$\begin{array}{l} R_1 - 2R_3 \\ R_2 + R_3 \end{array} \left[ \begin{array}{ccc|ccc} 2 & 1 & -1 & 3 & -2 & 1 \\ 0 & 1 & 0 & -2 & 2 & 0 \\ 0 & 0 & 1 & -1 & 0 & -1 \end{array} \right]$$

$$\frac{1}{2} * R_1 \left[ \begin{array}{ccc|ccc} 1 & 0.5 & -0.5 & 1.5 & -1 & 0.5 \\ 0 & 1 & 0 & -2 & 2 & 0 \\ 0 & 0 & 1 & -1 & 0 & -1 \end{array} \right]$$

$$\left[ \begin{array}{ccc|ccc} 1 & 0 & 0 & 3 & -2 & 1 \\ 0 & 1 & 0 & -2 & 2 & 0 \\ 0 & 0 & 1 & -1 & 0 & -1 \end{array} \right] \begin{array}{l} \\ \\ A^{-1} \end{array}$$

#5

$$\begin{bmatrix} 2 & 1 \\ 3 & -2 \\ 2 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3 & -1 \\ -1 & 0 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ -1 \end{bmatrix}$$

$$= \begin{bmatrix} 2 \\ -1 \\ -2 \end{bmatrix}$$

$$\begin{aligned} \#6 \quad n(A \cup B) &= n(A) + n(B) - n(A \cap B) \\ &= 70 + 8 - 50 \\ &= 28 \end{aligned}$$

$$\#7a \quad A^c = \{2, 4, 6, 8, 10\}$$

$$n(A^c) = 5$$

$$\#7b \quad B \cup C = \{1, 2, 3, 4, 5, 6, 8, 9, 10\}$$

$$n(B \cup C) = 9$$

$$\#7c \quad B \cap C = \{4, 8\}$$

$$A \cup (B \cap C) = \{1, 3, 4, 5, 7, 8, 9\}$$

$$n(A \cup (B \cap C)) = 7$$

$$\begin{aligned} \#7d \quad n(A \times B) &= n(A) * n(B) \\ &= 5 * 5 = 25 \end{aligned}$$

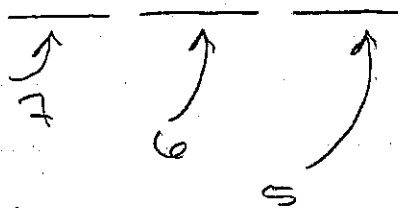
#8

$$C(5,2) * C(3,2) = 10 * 3 = 30$$

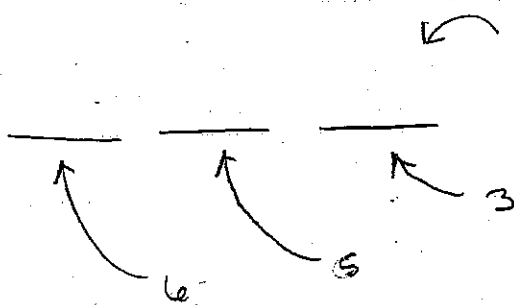
#9

$$P(6,3) = 120$$

#10



$$P(7,3) = 7 * 6 * 5 = 210$$



← 1, 3, or 7

$$6 * 5 * 3 = 90$$

#11

3 men or 4 men or 5 men

$$C(5,3)C(6,2) + C(5,4)C(6,1) + C(5,5)C(6,0) = 181$$

#12

2 questions 1 sophomores

$$\frac{C(12,2) C(9,1)}{C(21,3)} \approx 0.447$$

#13

$$\begin{aligned} P(M \cup C) &= P(M) + P(C) - P(M \cap C) \\ &= 0.24 + 0.75 - 0.18 \\ &= 0.81 \end{aligned}$$

#14

$$\begin{aligned} &P(\text{structured} | \text{quizzes}) \\ &= \frac{P(\text{structured} \cap \text{quizzes})}{P(\text{quizzes})} \\ &= \frac{0.02}{0.09} \\ &\approx 0.22 \end{aligned}$$

#15

$$\begin{aligned} P(A) P(550) &\stackrel{?}{=} P(A \cap 550) \\ \frac{15}{100} * \frac{20}{100} &\stackrel{?}{=} \frac{10}{100} \end{aligned}$$

$$\frac{3}{100} \neq \frac{10}{100}$$

NOT independent events