

$$\begin{array}{l}
 5.) \quad \begin{array}{l} x-2y+3z=7 \\ 2x+y+z=4 \\ -3x+2y-2z=-10 \end{array} \xrightarrow{(1+2)} \begin{array}{l} x-2y+3z=7 \\ 4x+2y+2z=8 \\ \hline 5x+5z=15 \end{array} \xrightarrow{5(2)+5z=15} \begin{array}{l} 10+5z=15 \\ 5z=5 \\ \boxed{z=1} \end{array} \\
 \xrightarrow{(1+3)} \begin{array}{l} x-2y+3z=7 \\ -3x+2y-2z=-10 \\ \hline -2x+z=-3 \end{array} \xrightarrow{-5} \begin{array}{l} 5x+5z=15 \\ 10x-5z=15 \\ \hline 15x=30 \\ \boxed{x=2} \end{array} \\
 \begin{array}{l} 2(2)+y+1=4 \\ 4+y+1=4 \\ y+5=4 \\ \boxed{y=-1} \end{array}
 \end{array}$$

$$\begin{array}{l}
 8.) \quad \begin{array}{l} 2x-3y-z=0 \\ -x+2y+z=5 \\ 3x-4y-z=1 \end{array} \xrightarrow{(1+2)} \begin{array}{l} 2x-3y-z=0 \\ -x+2y+z=5 \\ \hline x-y=5 \end{array} \xrightarrow{-2} \begin{array}{l} x-y=5 \\ -2x+2y=-10 \\ \hline 2x-2y=6 \end{array} \\
 \xrightarrow{(2+3)} \begin{array}{l} -x+2y+z=5 \\ 3x-4y-z=1 \\ \hline 2x-2y=6 \end{array} \xrightarrow{0=-4} \boxed{\text{NO SOLUTION - INCONSISTENT}}
 \end{array}$$

$$\begin{array}{l}
 13.) \quad \begin{array}{l} x+y-z=6 \\ 3x-2y+z=-5 \\ x+3y-2z=14 \end{array} \xrightarrow{(2+3)} \begin{array}{l} 6x-4y+2z=-10 \\ +x+3y-2z=14 \\ \hline 7x-y=4 \end{array} \xrightarrow{7(1)-y=4} \begin{array}{l} 7x-y=4 \\ 7-y=4 \\ -y=-3 \\ \boxed{y=3} \end{array} \\
 \xrightarrow{(1+2)} \begin{array}{l} x+y-z=6 \\ 3x-2y+z=-5 \\ \hline 4x-y=1 \end{array} \xrightarrow{7(1)-y=4} \begin{array}{l} -7x+y=-4 \\ 4x-y=1 \\ \hline -3x=-3 \\ \boxed{x=1} \end{array} \\
 \begin{array}{l} x+y-z=6 \\ 1+3-z=6 \\ 4-z=6 \\ -z=2 \\ \boxed{z=-2} \end{array}
 \end{array}$$

$$\begin{array}{l}
 12.) \quad \text{CONTAINS: } (-1,2) (1,-4) (2,4) \\
 y = ax^2 + bx + c \\
 \begin{array}{l} -2 = a(-1)^2 + b(-1) + c \\ -4 = a(1)^2 + b(1) + c \\ 4 = a(2)^2 + b(2) + c \end{array} \\
 \begin{array}{l} -2 = a - b + c \\ -4 = a + b + c \\ 4 = 4a + 2b + c \end{array} \\
 \begin{array}{l} (1+2): \quad \begin{array}{l} -2 = a - b + c \\ -4 = a + b + c \\ \hline -6 = 2a + 2c \end{array} \xrightarrow{-6=2a+2c} \begin{array}{l} -6 = 2a + 2c \\ -12 = 2a + c \\ \hline -18 = 3c \\ \boxed{-6 = c} \end{array} \\
 (2+3): \quad \begin{array}{l} 8 = -2a - 2b - 2c \\ 4 = 4a + 2b + c \\ \hline (12 = 2a - c) \cdot -1 \end{array} \xrightarrow{-12=2a+c} \begin{array}{l} 12 = 2a - -6 \\ 12 = 2a + 6 \\ 6 = 2a \\ \boxed{3 = a} \end{array} \\
 \begin{array}{l} -4 = a + b + c \\ -4 = 3 + b - 6 \\ -4 = b - 3 \\ \boxed{-1 = b} \end{array} \\
 \boxed{y = 3x^2 - x - 6}
 \end{array}$$

$$21) \begin{aligned} O + M + B &= 500 \\ 50O + 35M + 25B &= 17,100 \\ (50(\frac{1}{2}O) + 35M + 25B &= 14,600) -1 \end{aligned}$$

$$(2 \cdot 2) \begin{aligned} 50O + 35M + 25B &= 17,100 \\ -25O - 35M - 25B &= -14,600 \\ \hline 25O &= 2500 \\ \boxed{O = 100} \end{aligned}$$

$$(1+2): \begin{aligned} 100 + M + B &= 500 \\ 50(100) + 35M + 25B &= 17,100 \end{aligned}$$

$$B = 400 - M$$

$$\begin{aligned} 500 + 35M + 25B &= 17,100 \\ 500 + 35M + 25(400 - M) &= 17,100 \\ 500 + 35M + 10,000 - 25M &= 17,100 \\ 10M + 10,500 &= 17,100 \end{aligned}$$

$$10M = 7,100$$

$$\boxed{M = 710}$$

$$O + M + B = 500$$

$$100 + 710 + B = 500$$

$$310 + B = 500$$

$$\boxed{B = 190}$$

$$22) \begin{aligned} a + c + s &= 405 \\ 8a + 4.5c + 6s &= 2320 \\ c &= 2a \end{aligned}$$

$$\begin{aligned} a + 2a + s &= 405 \\ 8a + 4.5(2a) + 6s &= 2320 \end{aligned}$$

$$\begin{aligned} 3a + s &= 405 \\ 17a + 6s &= 2320 \\ s &= 405 - 3a \end{aligned}$$

$$\begin{aligned} 17a + 6(405 - 3a) &= 2320 \\ 17a + 2430 - 18a &= 2320 \end{aligned}$$

$$\begin{aligned} -a + 2430 &= 2320 \\ -a &= -110 \\ \boxed{a = 110} \end{aligned}$$

$$\begin{aligned} s &= 405 - 3(110) \\ s &= 405 - 330 \\ \boxed{s = 75} \end{aligned}$$

$$\begin{aligned} c &= 2a \\ &= 2(110) \\ \boxed{c = 220} \end{aligned}$$

$$23) \begin{aligned} x &= \# \text{ of servings of chicken} \\ y &= \# \text{ of servings of corn} \\ z &= \# \text{ of servings of milk} \end{aligned}$$

$$\begin{aligned} \text{protein} &\rightarrow 30x + 3y + 9z = 66 \\ \text{Carbs} &\rightarrow 35x + 16y + 13z = 94.5 \\ \text{Calcium} &\rightarrow 200x + 10y + 300z = 910 \end{aligned}$$

SET UP ONLY!

$$25) \begin{aligned} 8H + 6F + 6C &= 26.10 \\ 10H + 6F + 8C &= 31.60 \end{aligned}$$

NOT ENOUGH INFORMATION - A SYSTEM WITH 3 VARIABLES NEEDS 3 EQUATIONS IN ORDER TO BE ABLE TO SOLVE IT.