

2. Carolyn invests a total of \$12000 in two municipal bonds, one paying 10.5% interest and other paying 12% interest. The annual interest earned on the two investments last year was \$1335. How much was invested at each rate?

Solⁿ

let x = the amount invested at 10.5% interest
 y = the amount invested at 12% interest.

$$x + y = 12000$$

$$0.105x + 0.12y = 1335$$

$$\begin{bmatrix} 1 & 1 \\ 0.105 & 0.12 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 12000 \\ 1335 \end{bmatrix}$$

augmented matrix $(A|B) = \left[\begin{array}{cc|c} 1 & 1 & 12000 \\ 0.105 & 0.12 & 1335 \end{array} \right]$

$$R_2 \rightarrow R_2 - 0.105R_1 \Rightarrow (A|B) = \left[\begin{array}{cc|c} 1 & 1 & 12000 \\ 0 & 0.015 & 75 \end{array} \right]$$

$$0.015y = 75$$

$$y = 5000$$

$$x = 12000 - y$$

$$x = 7000$$

Thus \$5000 was invested at 12% interest and \$7000 at 10.5% interest.