The Westfall Youth Baseball and Softball League charges the following registration fees: ages 7–8, $45; ages 9–10, $55; and ages 11–14, $65.

21) Write a matrix for the registration fees and a matrix for the number of players.

22) Find the total amount of money the League received from baseball and softball registrations.

Team Members		
Age	Baseball	Softball
7–8	350	280
9–10	320	165
11–14	180	120

Set up the matrix for the number of players

$$\begin{bmatrix} 350 & 280 \\ 320 & 165 \\ 180 & 120 \end{bmatrix}$$

Notice that the players matrix has the dimensions 3x2 so we need to keep that in mind as we make the matrix of the fees. We know that we have 3 different prices that are charged and we know that in order to multiply matrices together they must share the middle value. So let's look at the possible fee matrices we could have

$$\begin{bmatrix} 45 & 55 & 65 \end{bmatrix}$$
1x3

$$\begin{bmatrix} 45 \\ 55 \\ 65 \end{bmatrix}$$
3x1

So now let's see how we need to combine them base on dimensions.
3x2. 1x3 doesn't work
3x2. 3x1 doesn't work
1x3. 3x2 Works

In order for the dimensions to work we must multiply the 1x3 by 3x2

$$\begin{bmatrix} 45 & 55 & 65 \end{bmatrix} \times \begin{bmatrix} 350 & 280 \\ 320 & 165 \\ 180 & 120 \end{bmatrix}$$

1x3 3x2

1x2

$$(45 \cdot 350) + 55(320) + 65(180)$$
$$15750 + 17600 + 11700$$
$$45050$$

$$45(280) + 55(165) + 65(120)$$
$$12600 + 9075 + 7800$$
$$29475$$

$$[\; 45050 \quad 29475 \;]$$ Answer

↑ Total money from Baseball

↑ Total money from Softball