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| **Fill in the Blanks** | **Solving Simultaneous Equations Using Matrices** |

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| **Simultaneous Equations** | **Matrix Equation** | **Inverse Matrix** | **Inverse Matrix Equation** | **Solutions** |
| $$x+2y+z=11$$$$3x-y+2z=4$$$$2x+3y-z=15$$ | $$\left(\begin{matrix}1&2&1\\3&-1&2\\2&3&-1\end{matrix}\right)\left(\begin{matrix}x\\y\\z\end{matrix}\right)=\left(\begin{matrix}11\\4\\15\end{matrix}\right)$$ | $$\left(\begin{matrix}-\frac{1}{4}&\frac{1}{4}&\frac{1}{4}\\\frac{7}{20}&-\frac{3}{20}&\frac{1}{20}\\\frac{11}{20}&\frac{1}{20}&-\frac{7}{20}\end{matrix}\right)$$ | $$\left(\begin{matrix}-\frac{1}{4}&\frac{1}{4}&\frac{1}{4}\\\frac{7}{20}&-\frac{3}{20}&\frac{1}{20}\\\frac{11}{20}&\frac{1}{20}&-\frac{7}{20}\end{matrix}\right)\left(\begin{matrix}11\\4\\15\end{matrix}\right)=\left(\begin{matrix}x\\y\\z\end{matrix}\right)$$ |  |
| $$x+y-z=-1$$$$3x+2z=4$$$$-x-2y+3z=3$$ |  |  |  |  |
| $$2x+2y+z=2$$$$-x+3y-z=15$$$$3x-y+z=-13$$ |  |  |  |  |
| $$2x+y+z=6$$$$4x+2y-z=-3$$$$x-y+3z=11$$ |  |  |  |  |
| $$-x+2y+z=9$$$$5x+2y-3z=-15$$$$3x-y+2z=-2$$ |  |  |  |  |
| $$2x+3y+z=5$$$$-x-2y+4z=25$$$$5x-y-z=0$$ |  |  |  |  |