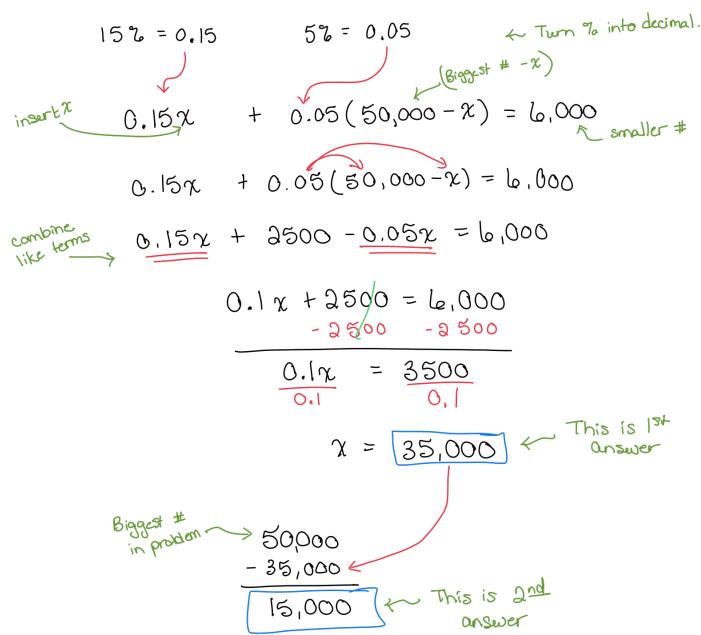1. Betsy, a recent retiree, requires $6000 per year in extra income. She has $50,000 to invest and can invest in B-rated bonds paying 15% per year or in a certificate of deposit (CD) paying 5% per year. How much money should be invested in each to realize exactly $6000 in interest per year?

$$15\% = 0.15 \qquad 5\% = 0.05 \qquad \leftarrow \text{Turn \% into decimal.}$$

$$\leftarrow (\text{Biggest } \# - x)$$

insert x $\qquad 0.15x \quad + \quad 0.05(50{,}000 - x) = 6{,}000$ $\qquad \nwarrow$ smaller $\#$

$$0.15x \quad + \quad 0.05(50{,}000 - x) = 6{,}000$$

combine like terms $\longrightarrow$ $\quad 0.15x + 2500 - 0.05x = 6{,}000$

$$0.1x + 2500 = 6{,}000$$
$$\underline{\qquad -2500 \qquad -2500 \qquad}$$
$$\frac{0.1x}{0.1} = \frac{3500}{0.1}$$

$$x = \boxed{35{,}000} \quad \leftarrow \text{This is 1st answer}$$

Biggest $\#$ in problem $\longrightarrow$ $50{,}000$
$$\underline{-35{,}000}$$
$$\boxed{15{,}000} \leftarrow \text{This is 2nd answer}$$

2. A bank loaned out $17,000, part of it at a rate of 9% per year and the rest at 19% per year. If the interest received in one year totaled $2500, how much was loaned at 9%?

$$9\% = 0.09 \qquad\qquad 19\% = 0.19 \qquad \leftarrow \text{Turn } \% \text{ into decimal}$$

$$\text{insert } x \quad 0.09x \quad + \quad 0.19(17,000-x) \quad \leftarrow (\text{Biggest } \# - x)$$

$$0.09x \quad + \quad 0.19(17,000-x) = 2500 \qquad \leftarrow \text{Smaller } \#$$

combine like terms $\rightarrow$
$$0.09x + 3230 - 0.19x = 2500$$

$$0.1x + 3230 = 2500$$
$$\quad\quad -3230 \quad\quad -3230$$
$$\overline{\rule{6cm}{0.4pt}}$$
$$0.1x = -730$$
$$\overline{0.1} \qquad\quad \overline{0.1}$$

$$x = \boxed{7,300}$$