Johnny has got a 75, 85, and 91 on his tests so far. What must be the average of the next two grades if he wants to have an overall average of 85 in the class?

1) Introduce two variables to represent the next two grades. Say x and y.

2) Setup an average calculation, as shown below.

$$\frac{75 + 85 + 91 + x + y}{5} = 85 \qquad \text{Apply the defintion of an average.}$$

$$75+85+91+x+y=5(85) \qquad \text{Multiply both sides by 5. On the left, 5 goes.}$$

$$251+x+y=425 \qquad 75+85+91=251 \text{ and } 5(85)=425$$

$$x+y=425\text{-}251 \qquad \text{Subtract 251 from both sides}$$

$$x+y=174 \qquad \text{complete the subtraction}$$

$$\frac{x + y}{2} = \frac{174}{2} \qquad \text{To find the average of } x \text{ and } y, \text{ divide both sides by 2.}$$

$$\frac{x + y}{2} = 87$$

3) Therefore Johnny has to get an averge of 87 on the next two tests.