

Johnny has got a 75, 85, and 91 on his tests so far. What grade must he get on the fourth test if he wants to have an average of 87?

- 1) Introduce a variable to represent the unknown: x is the grade on the fourth test
- 2) Setup an equation incorporating the variable. Here, on the left side we have the definition of an average.

$$\frac{75 + 85 + 91 + x}{4} = 87$$

This equation tells us that the average with x should be 87.

$$75 + 85 + 91 + x = 4(87)$$

Multiply both sides by 4. The four on the left goes.

$$251 + x = 348$$

Add 75, 87 and 91 to get 251 on the left. On the right,
 $4(87) = 348$.

$$x = 348 - 251$$

Subtract 251 from both sides.

$$x = 97$$

- 3) This tells us that Johnny has to get a 97 on the last test.