

### **The algebra behind the card trick in the video:**

The card the spectator chooses between 1 and 10, inclusive, will be represented by  $x$ .

Multiply the card value by 2:  $2x$

Add 2:  $2x+2$

Multiply by 5:  $5(2x+2) = 10x+10$

Subtract 7:  $10x+10-7 = 10x+3$

Therefore, the answer after these calculations will always be the original value,  $x$ , times 10, followed by a 3.

### **“The Answer is 2” trick explained with algebra:**

1. Let the number that you thought of be  $x$ .

2. Multiply this number by 3:  $3x$

3. Add 6:  $3x+6$

4. Divide this number by 3:  $\frac{3x+6}{3} = \frac{3x}{3} + \frac{6}{3} = x+2$

5. Subtract the number you thought of in Step 1 from the answer in Step 4:  $(x+2) - x = 2$

**The answer is 2.**