Recall that sigma notation is just a way of writting sums in a more condenced form. A problem in sigma notation looks something like

$$\sum_{j=0}^{6} j^2$$

read as "the sum of j going from 0 to 6 of j^2." The two numbers on the top and bottom of the Σ symbol give the limits of the sum. Above, we have $j = 0$ and 6, so we are going to have terms for $j = 0$, $j = 1$, $j = 2$, $j = 3$, $j = 4$, $j = 5$ and $j = 6$. This expands to become

$$\begin{aligned}\sum_{j=0}^{6} j^2 &= 0^2 + 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 \\ &= 0 + 1 + 4 + 9 + 16 + 25 + 36 \\ &= 91\end{aligned}$$

Or another example

$$\begin{aligned}\sum_{k=4}^{8} 3(k+2) &= 3(4+2) + 3(5+2) + 3(6+2) + 3(7+2) + 3(8+2) \\ &= 3(6) + 3(7) + 3(8) + 3(9) + 3(10) \\ &= 18 + 21 + 24 + 27 + 30 \\ &= 120\end{aligned}$$

Below are 10 practice questions to get you used to dealing with sigma notation, along with the final answer on the next page. Please make sure that you can show the intermediate steps to find the answer for each calculation. Because I didn't post a worksheet like this sooner, I have included within the below the exact question that will be on the test. However, I used a random number generator to choose which one to put on the test, so don't try to guess which one it is.

1. $\sum_{k=3}^{7} 3 - k$
2. $\sum_{j=0}^{3} j - 1$
3. $\sum_{m=2}^{4} 2m$
4. $\sum_{i=18}^{21} i$
5. $\sum_{n=3}^{7} 2n + 1$
6. $\sum_{j=0}^{5} j^2 - j$
7. $\sum_{m=1}^{3} 2m - 1$
8. $\sum_{j=0}^{4} j^3$
9. $\sum_{n=2}^{4} 3n$
10. $\sum_{i=1}^{4} 2(i+1)$

1. -10
2. 2
3. 18
4. 78
5. 55
6. 40
7. 9
8. 100
9. 27
10. 28