

# Sec 11-2 continued

①

## \* Sigma Notation \*

Mathematicians are generally lazy. So, they've created a shorthand for writing a series.

This is called Summation or Sigma notation. Greek Letter  $\Sigma$

Sigma

Ex.)

Last value 7  
for variable

$\Sigma$   
 $n=3$

$$2n+5$$

Formula for a sequence

First value for variable

$$2(3)+5$$

11

$$2(4)+5$$

13

$$2(5)+5$$

15

$$2(6)+5$$

17

$$2(7)+5$$

19

Sum is

75

Alternate method (preferred) ②

$$\sum_{n=3}^7 2n+5$$

Use  $S_n = \frac{n}{2}(a_1 + a_n)$

Need  $n=5$ ,  $a_1 = 11$ ,  $a_n = 19$   
 $2(3)+5$ ,  $2(7)+5$

$$S_5 = \frac{5}{2}(11 + 19)$$
$$\frac{5}{2}(30) = 75$$

You Try Find the Sum  $\sum_{n=2}^8 3n$

Find  $n=7$   $a_1 = 6$   $a_n = 24$

$$S_7 = \frac{7}{2}(6+24) = \del{7 \cdot 15}$$
$$3 \cdot 5(30) = \boxed{105}$$