Name _____ Class _____ Date _____

Reteaching 11-4

Arithmetic Series

OBJECTIVE: Finding the sum of a given number of terms of a series

MATERIALS: None

Example

Evaluate the series $\sum_{n=2}^{4}(5-2n)$.

$\sum_{n=②}^{④}\boxed{(5-2n)}$ ← **Circle the upper and lower limits. Box the explicit formula.**

(n = 2) (n = 3) (n = 4) ← **In circles, write all possible values of *n*, beginning with the lower limit and ending with the upper limit.**

(n = 2) (n = 3) (n = 4)

$\boxed{5-2(2)}$ $\boxed{5-2(3)}$ $\boxed{5-2(4)}$ ← **Under each circle, draw a box; copy the explicit formula, substituting the value in the circle above the box for the value of *n*.**

(n = 2) (n = 3) (n = 4)

$\sum_{n=2}^{4}(5-2n) = \boxed{5-2(2)} + \boxed{5-2(3)} + \boxed{5-2(4)}$ ← **The value of the series is the sum of the values in the boxes.**

$= 1 + (-1) + (-3)$ ← **Evaluate each expression.**

$= -3$ ← **Find the sum of the terms.**

The sum of the series is −3.

Exercises

Evaluate each series.

1. $\sum_{n=1}^{3}(n-4)$

2. $\sum_{n=1}^{4}\frac{1}{3n}$

3. $\sum_{n=3}^{8}(3n-1)$

4. $\sum_{n=3}^{8}\frac{2n}{3}$

5. $\sum_{n=3}^{9}(4-2n)$

6. $\sum_{n=1}^{5}8n$

7. $\sum_{n=2}^{7}4n$

8. $\sum_{n=1}^{7}(3-2n)$

9. $\sum_{n=2}^{5}(5n+1)$

10. An outdoor amphitheater has 45 rows of seats. The first row has 89 seats. The last row has 177 seats. Each row has 2 more seats than the previous row. Write an explicit formula representing the number of seats in the *n*th row. Then find the sum of the 45 rows of seats.