



# Sequences, Series, Sigma Notation

## TI PROFESSIONAL DEVELOPMENT

## TEACHER NOTES AND SOLUTIONS

1. Create a sequence of consecutive odd numbers on the screen, beginning with 1.

**2nd** **0** **[catalog]** **[In]** (for S)  
Scroll to seq(  
Press **+** to see help screen.

NORMAL FLOAT AUTO REAL RADIAN MP  
seq(  
(expression,variable  
,begin,end[,increment])  
PASTE ESC

2. Complete as shown below:

NORMAL FLOAT AUTO REAL RADIAN MP  
seq(2I-1,I,1,100,1)  
(expression,variable  
,begin,end[,increment])  
PASTE ESC

Press **trace** to PASTE onto the home screen.

3. Press **enter**.

NORMAL FLOAT AUTO REAL RADIAN MP  
seq(2I-1,I,1,100,1)  
{1 3 5 7 9 11 13 15 17 19}

Store into list L1 by pressing  
**sto→** **2nd** **1**

4. View in list L1 by pressing  
**stat** **enter**

L1	L2	L3	L4	L5	1
1					
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					

L1(1)=1

5. Press **▲** **▲** to see the end of the list data.

L1	L2	L3	L4	L5	1
181					
183					
185					
187					
189					
191					
193					
195					
197					
199					

L1(101)=

6. Create a running (cumulative) total of the odd numbers that are in list L1 into list L2. Use **2nd** **stat** **►** **6** to obtain the cumSum command.

L1	L2	L3	L4	L5	2
1					
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					

L2=cumSum(L1)

7. Press **enter**.

L1	L2	L3	L4	L5	2
1	1				
3	4				
5	9				
7	16				
9	25				
11	36				
13	49				
15	64				
17	81				
19	100				
21	121				

L2(1)=1

Notice any patterns in list L2?  
**They are perfect squares.**

8. Verify your conjecture by typing the following into list L3:

L1	L2	L3	L4	L5	3
1	1				
3	4				
5	9				
7	16				
9	25				
11	36				
13	49				
15	64				
17	81				
19	100				

L3=seq(X<sup>2</sup>,X,1,100,1)

Press **enter**.

9. Press **▲** **▲** to see the end of the list data.

L1	L2	L3	L4	L5	3
181	8281	8281			
183	8464	8464			
185	8649	8649			
187	8836	8836			
189	9025	9025			
191	9216	9216			
193	9409	9409			
195	9604	9604			
197	9801	9801			
199	10000	10000			

L3(100)= 10000



# Sequences, Series, Sigma Notation

## TI PROFESSIONAL DEVELOPMENT

## TEACHER NOTES AND SOLUTIONS

10. What is the sum of the first positive odd numbers?

Find your answer by looking in the list.

**10,000**

NORMAL FLOAT AUTO REAL RADIAN MP					
L1	L2	L3	L4	L5	3
181	8281	8281			
183	8464	8464			
185	8649	8649			
187	8836	8836			
189	9025	9025			
191	9216	9216			
193	9409	9409			
195	9604	9604			
197	9801	9801			
199	10000	10000			

L3(100)= 10000

11. What is the sum of the first positive odd numbers?

Find your answer by using sigma notation as shown below:

[alpha] [window] [2]

NORMAL FLOAT AUTO REAL RADIAN MP					
100					
$\sum_{I=1} (2I-1)$					
					10000

12. Compare the answers in numbers 10 and 11.

They should be the same.

**They are!**

13. Rewrite using sigma notation:

$$1 + 3 + 5 + \dots + (2n - 1)$$

$$= \sum_{i=1}^n (2i - 1)$$

14. Rewrite as a single term in terms of  $n$ :

$$1 + 3 + 5 + \dots + (2n - 1)$$

$$= n^2$$