



Problem 1 – Finding the Sequence

In this set of questions, you will find the sequence generated by finding the average of the first two numbers. Look for any patterns that you notice.

1. We will find the next three terms in the following sequence. {16, 80, 48, 64, __, __, __}

The third number is found by taking the arithmetic mean of the first two numbers. What is the mean of 16 and 80? _____

2. What is the mean of 80 and 48? _____
3. What is the mean of 48 and 64? _____

4. We can find the average of 16 and 80 on the TI-73 using the list feature.

To find the average of the first two list elements, press the following from a clear Home screen.

- ▶ For {16, 80}: [2nd] [CATALOG] and [▲] until { is reached. Press [ENTER], [1] [6] [,] [8] [0] [2nd] [CATALOG] and [▲] to }. Press [ENTER] [ENTER] to store the first two elements.

```
{16,80}
      (16 80)
{Ans(2),.5*(Ans(
1)+Ans(2))}
      (80 48)
```

- ▶ To create an entry based on the previous answer: [2nd] [CATALOG] and [▲] to {. Next, Press [2nd] [PRGM] and [▲] to {. Then press [2nd] [ANS] , followed by [(] [2] [)] [,] [.] [5] [x] [(] [2nd] [(-)] [(] [1] [)] [+] [2nd] [(-)] [(] [2] [)] [)] , and [2nd] [CATALOG] and [▲] to }. Press [ENTER] [ENTER] to execute the command.

```
{Ans(2),.5*(Ans(
1)+Ans(2))}
      (48 64)
```

- ▶ To generate each additional element in the list, you can now simply press [ENTER].

What are the next three elements in the sequence? {16, 80, 48, 64, __, __, __}

5. What is the 10th term in the sequence? _____
6. What is the 20th term in the sequence? _____
7. What is the 100th term in the sequence? _____
8. Describe any pattern that you see. _____



Problem 2 – More Sequences

Use what you learned in the previous problem in other situations.

9. What are the next five elements in the sequence?

{20, 62, _____, _____, _____, _____, _____}

Hint: Instead of keying the entire expression again, press **[2nd]** **[ENTRY]** to recall a previously entered expression and edit it.

```

{20, 62}
      (20 62)
{Ans(2), .5*(Ans(
1)+Ans(2))}

```

10. What is the 10th term in the sequence? _____

11. What is the 20th term in the sequence? _____

12. What is the 100th term in the sequence? _____

13. Describe any pattern that you see. _____

14. What are the next five elements in the sequence?

{71, 24, _____, _____, _____, _____, _____}

```

{71, 24}
      (71 24)
{Ans(2), .5*(Ans(
1)+Ans(2))}

```

15. How is this sequence different from the previous sequences? _____

16. What is the 10th term in the sequence? _____

17. What is the 20th term in the sequence? _____

18. What is the 100th term in the sequence? _____

19. Describe any pattern that you see. _____

20. Did this sequence being different make a difference in the pattern? _____
