AFM **3.1 Linear Equations & Arithmetic Sequences** Chapter 3

*Arithmetic Sequences are Linear Functions!*

*The* ***Explicit Formula*** *gives a direct relationship between two discrete quantities.*

|  |  |  |
| --- | --- | --- |
| **Explicit Formula:**Un = b + mn | **Equation of a Line:**y = mx + b | **Recursive Formula:**Un = Un – 1 + d |

***Remember:*** Slope means “rate of change”

**Example 1:** Consider the recursively defined arithmetic sequence: U0 = 4

 Un = Un – 1 – 5

1. Determine the slope and the y-intercept
2. Write an explicit formula
3. Use the explicit formula to find U22
4. Find the value of n so that Un = 86

**Example 2:** Given the following, find the equation of the line and the explicit formula.

 U1 = 7

 U2 = 11

 U3 = 15

 U4 = 19

**Example 3:** For each sequence, find n so that Un has the specified value.

1. Un = 6 – 3n b) U0 = -10

Un = -162 Un = Un – 1 – 3.7

 Un = -183.9

**Example 4:** Emily typically spends $2 a day on lunch. She notices that she has $17 left after today’s lunch. She thinks of this sequence to model her daily cash balance: U1 = 17

 Un = Un-1 – 2

1. Find the explicit formula that represents her daily cash balance and the equation of the line through the points of this sequence.
2. How useful is this formula for predicting how much money Emily will have each day?