### 2.1 Connecting the Dots: Piggies and Pools

## A Develop Understanding Task



1. My little sister, Savannah, is three years old. She has a piggy bank that she wants to fill. She started with five pennies and each day when I come home from school, she is excited when I give her three pennies that are left over from my lunch money. Use a table, a graph, and an equation to create a mathematical model for the number of pennies in the piggy bank on day $n$.
2. Our family has a small pool for relaxing in the summer that holds 1500 gallons of water. I decided to fill the pool for the summer. When I had 5 gallons of water in the pool, I decided that I didn't want to stand outside and watch the pool fill, so I had to figure out how long it would take so that I could leave, but come back to turn off the water at the right time. I checked the flow on the hose and found that it was filling the pool at a rate of 2 gallons every minute. Use a table, a graph, and an equation to create a mathematical model for the number of gallons of water in the pool at $t$ minutes.
3. I'm more sophisticated than my little sister so I save my money in a bank account that pays me $3 \%$ interest on the money in the account at the end of each month. (If I take my money out before the end of the month, I don't earn any interest for the month.) I started the account with $\$ 50$ that I got for my birthday. Use a table, a graph, and an equation to create a mathematical model of the amount of money I will have in the account after $m$ months.
4. At the end of the summer, I decide to drain the 1500 gallon swimming pool. I noticed that it drains faster when there is more water in the pool. That was interesting to me, so I decided to measure the rate at which it drains. I found that $3 \%$ was draining out of the pool every minute. Use a table, a graph, and an equation to create a mathematical model of the gallons of water in the pool at $t$ minutes.
5. Compare problems 1 and 3 . What similarities do you see? What differences do you notice?
6. Compare problems 1 and 2 . What similarities do you see? What differences do you notice?
7. Compare problems 3 and 4 . What similarities do you see? What differences do you notice?
