

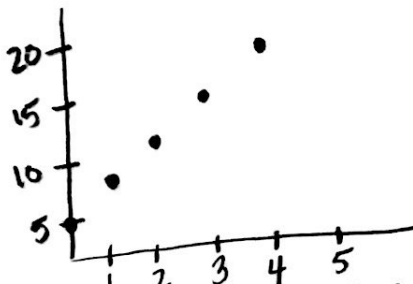
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2.1 Connecting the Dots: Piggies and Pools

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 .

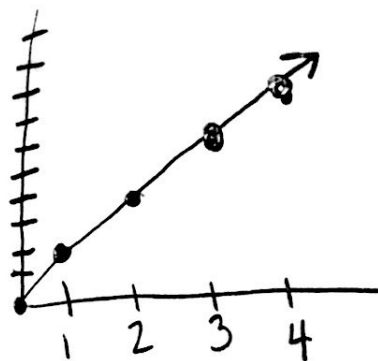
Days	\$	
0	.05	5¢
1	.08	8¢
2	.11	11¢
3	.14	14¢
4	.17	17¢



$y = mx + b$
 ↑ Pattern ↑ start
 $y = 3x + 5$

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.

0	0
1	2
2	4
3	6
4	8



$y = 2x + 5$
 $y = 2x + 0$

$\frac{1500}{2} = 750$
 minutes

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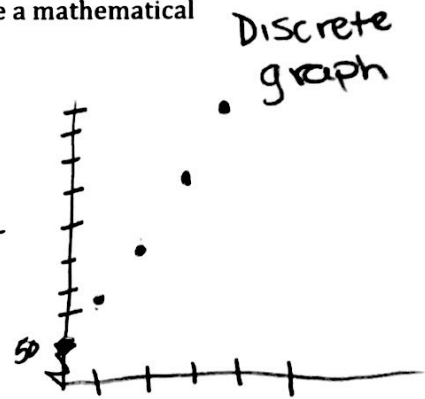
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3. I'm more sophisticated than my little sister so I save my money in a bank account that pays me 3% interest on the money in the account at the end of each month. (If I take my money out before the end of the month, I don't earn any interest for the 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.

$1 + .03$

0	50
1	51.50
2	53.05
3	54.64
4	56.28

$3\% = .03$
 $50(.03) = 1.5$
 $51.50(.03) = 1.545 = 1.55$
 $y = ab^x$
 $y = 50(1.03)^x$



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.

$1 - .03$

0	1500
1	1455
2	1411.35
3	1369.01
4	1328.09

$1500(.03) = 45$
 $y = 1500(.97)^x$

