

# Making the Most of Birthday Money!

**Common Core  
Performance Task  
F.BF.1 & F.IF.3  
(two levels)**



**F.BF.1 Build a function that models a relationship between two quantities.**

1. Write a function that describes a relationship between two quantities.★

a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.*

**F.IF.3 Understand the concept of a function and use function notation.**

3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by  $f(0) = f(1) = 1$ ,  $f(n+1) = f(n) + f(n-1)$  for  $n \geq 1$ .*

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This performance task was created to be given at the end of [unit 7 of Algebra 1](#). The original assessment required students to create the table and graph in Excel. While we will eventually be ready for that skill, we are not quite there and so I modified it a bit here.

You will notice that the table and the graph are not labeled. Being able to organize information is a valuable skill. I will be remind my students that the table is a tool and that they may or may not use every column. At this point in the year, I will not remind them to look ahead to the questions before finishing their graph. I hope that they will remember to look at the predictions they are asked to make before they decide on the scales.

As I do have a number of special education students, I will make the modifications of adding labels to the table and graph. I have included these at the end of the document for your use as needed. I also reorder the questions 1 & 2, as many of my struggling students will need to see the pattern before they will be able to come up with a formula.

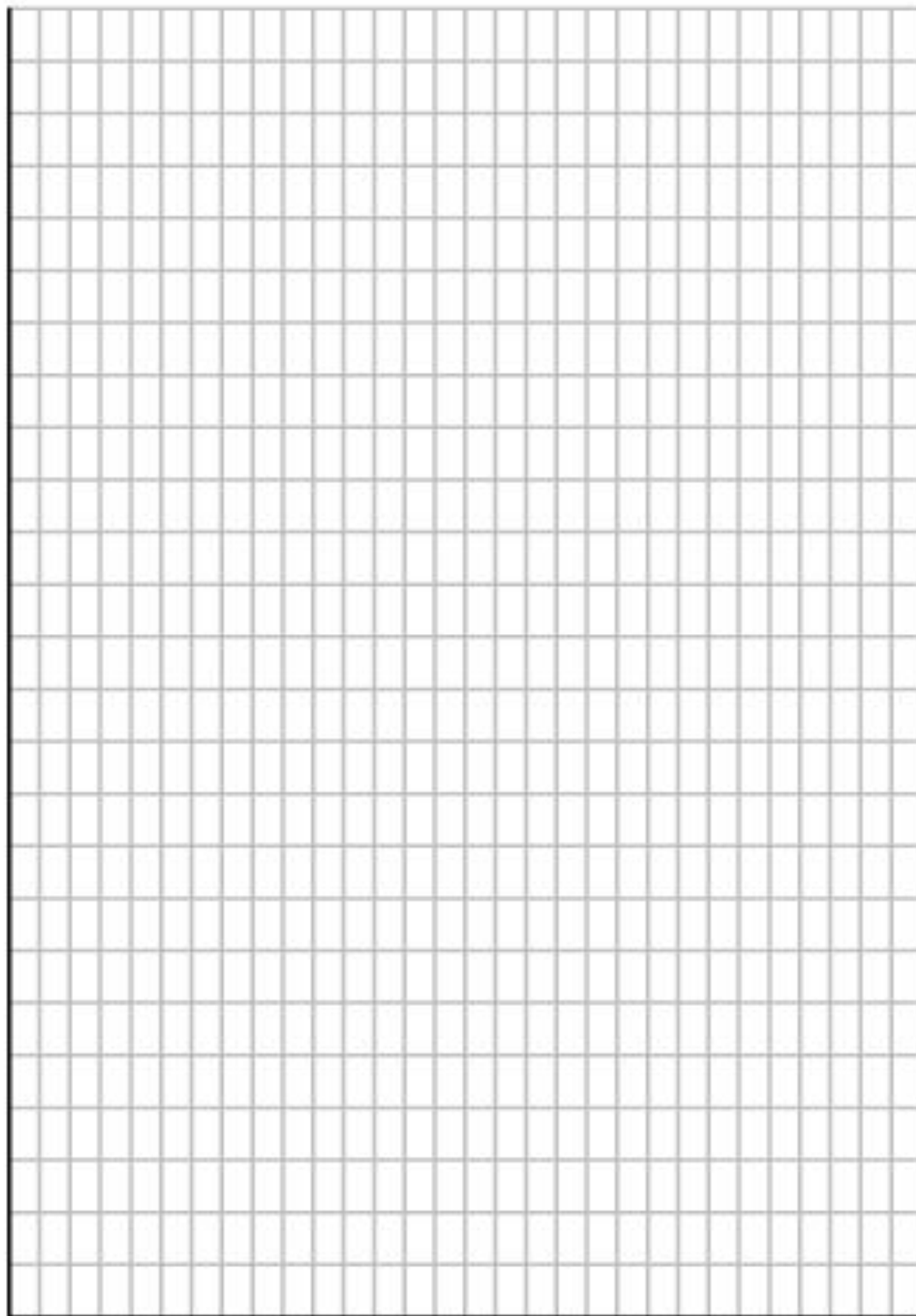
Algebra 1  
Teachers

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3. Create a graph of your data.

*y*



*x*

4. What will your savings account balance be after 2 years? \_\_\_\_\_

5. What will your savings account balance be after 4 years? \_\_\_\_\_

6. If your bank offered you an annual interest rate of 5.4% compounded annually or 0.55% compounded monthly, which interest program would you choose? Explain your reasoning.

F.BF.1 & F.IF.3  
(Modified)

Name \_\_\_\_\_



You were given \$150 for your birthday and decide to open a savings account that earns 0.55% per month.

Your grandma is so impressed with your decision that she gives you an additional \$20 to put into the account each month.

1. Create a table to simulate the growth of your account.

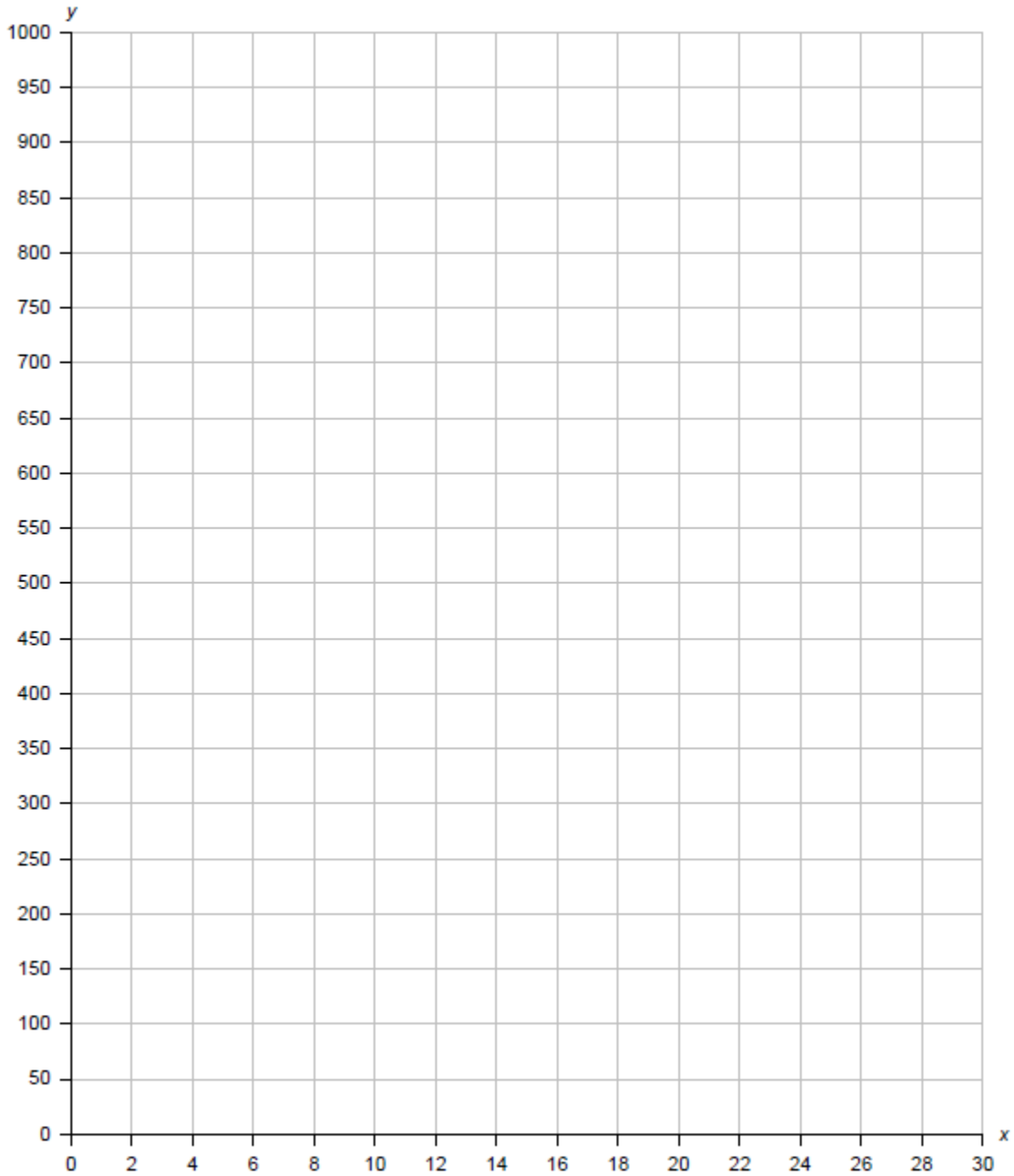
Months	Amount deposited each month	New Balance	Interest gained this month	Total in the bank at the end of the month
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

2. Represent your monthly balance with a recursive equation. \_\_\_\_\_

F.BF.1 & F.IF.3  
(Modified)

Name \_\_\_\_\_

3. Create a graph of your data. Don't forget to label your graph.



**(ANSWER KEY)**

You were given \$150 for your birthday and decide to open a savings account that earns 0.55% per month.

Your grandma is so impressed with your decision that she gives you an additional \$20 to put into the account each month.

1. Represent your monthly balance with a recursive equation.  $a_{n+1} = 1.0055(a_n + 20)$   
Or Next = 1.0055(Now + 20)

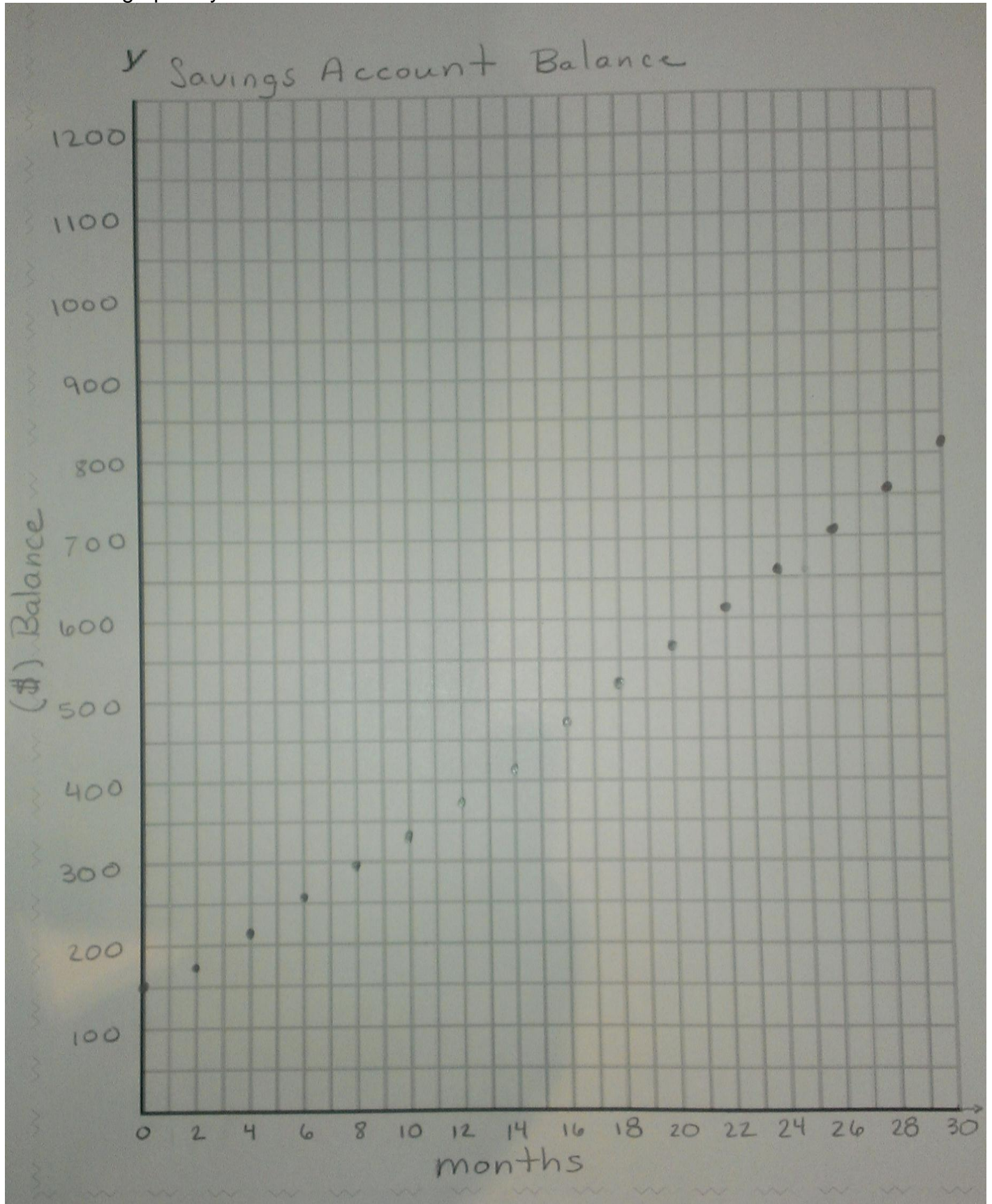
2. Create a table to simulate the growth of your account.

Month	Add	Balance	With Interest
1	\$ 150.00	\$ 150.00	\$ 150.83
2	\$ 20.00	\$ 170.83	\$ 171.76
3	\$ 20.00	\$ 191.76	\$ 192.82
4	\$ 20.00	\$ 212.82	\$ 213.99
5	\$ 20.00	\$ 233.99	\$ 235.28
6	\$ 20.00	\$ 255.28	\$ 256.68
7	\$ 20.00	\$ 276.68	\$ 278.20
8	\$ 20.00	\$ 298.20	\$ 299.84
9	\$ 20.00	\$ 319.84	\$ 321.60
10	\$ 20.00	\$ 341.60	\$ 343.48
11	\$ 20.00	\$ 363.48	\$ 365.48
12	\$ 20.00	\$ 385.48	\$ 387.60
13	\$ 20.00	\$ 407.60	\$ 409.84
14	\$ 20.00	\$ 429.84	\$ 432.21
15	\$ 20.00	\$ 452.21	\$ 454.69



(ANSWER KEY)

3. Create a graph of your data.



**(ANSWER KEY)**

4. What will your savings account balance be after 2 years? \$ 662.73

5. What will your savings account balance be after 4 years? \$ 1,270.40

6. If your bank offered you an annual interest rate of 5.4% compounded annually or 0.55% compounded monthly, which interest program would you choose? Explain your reasoning.

**Assuming \$100 principle:**

**A.  $T = 100(1+.054)^t$**

**B.  $T = 100(1+.0055)^{12t}$**

**After 5 years...**

**A = \$130.08**

**B = \$138.97**

**After 10 years...**

**A = \$169.20**

**B = \$193.13**

**Answers may vary...**