Name_____ Date_____

Exponential Equations

Derrick is trying to save money for the down payment on a used car. His parents have said that, in an effort to help him put aside money, they will pay him 10% interest on the money Derrick accumulates each month. At the moment, he has saved $200.

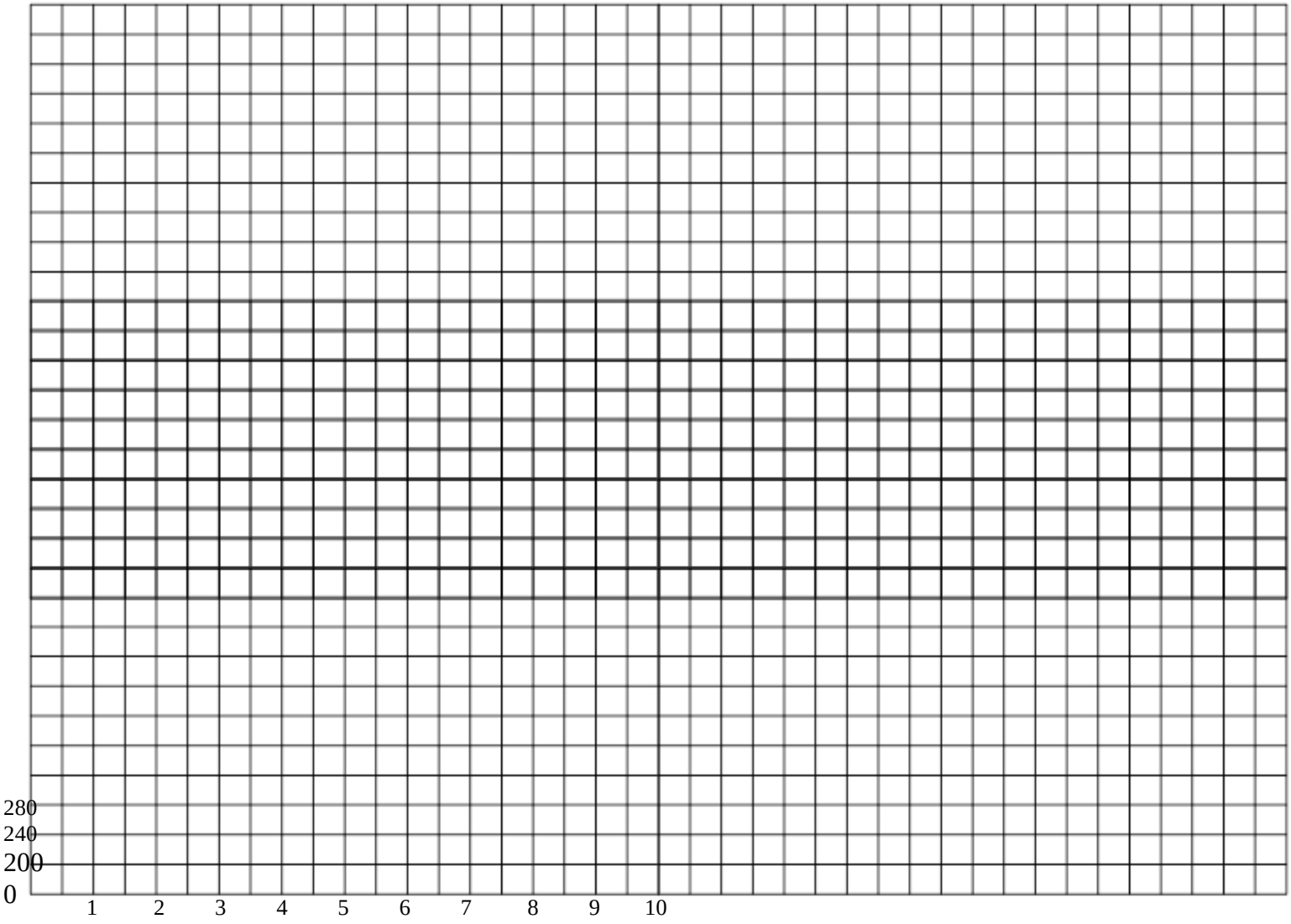
1. Suppose Derrick does not add any money to savings.
   a. Write a recursive rule that models this

   b. Write an explicit rule that models this

2. Fill in the plot below to determine how much he will have in 10 months.

Months(x)	0	1	2	3	4	5	6	7	8	9	10
Money (y)											

3. Graph the information **(for your y-values, start at 200 and count by 40s- do not skip lines on the y-axis!)**



4. How long will it take Derrick to save at least $2,000 for the down payment if the only additions to his savings account are his parent's interest payments? Explain how you go this answer.

5. In order to speed up the time needed to save $2,000, Derrick decides to take on some jobs in his community. Suppose he commits to adding $50 **per month** to his savings, starting with the initial deposit from his parents (who will still be giving him 10% interest). Fill in the table to see how much he will have in 10 months

Months(x)	0	1	2	3	4	5	6	7	8	9	10
Money (y)											

6. Graph this information on the graph from number 3

7. How much more does he have saved at 10 months if he is adding $50 each month to his account?

8. How long will it take Derrick to save at least $2,000 for the down payment if he continues to make $50 each month. Explain how you got your answer.

9. Suppose Derrick decides to add $100 to his savings every month. How long will it take him to have the $2,000 saved up?

10. How much would he need to put aside each month to have the money saved up in 6 months? (Show work to how you got your answer)