

Instant Riches

AMAZING OPPORTUNITY!

The following ad appeared in the school paper.

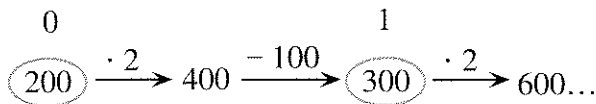
Amazing investment opportunity at Algebank! Double your money instantly! Invest any amount! No amount is too small. Our bank will *double* the amount of money in your account every month. Watch your money grow!

A service charge of \$100 will be deducted from your account at the end of every month.

- Exploration** Do you think this is a good deal? Why or why not? Use some calculations to back up your opinion.
- Reg was interested in this investment. After calling to make sure that the \$100 fee would be deducted *after* his money was doubled, he decided to join. However, after his service charge was deducted at the end of the fourth month, he discovered that his bank balance was exactly \$0! How much money did he start out with? Explain your answer.

Three other students invested their money. Gabe started with \$45, Earl with \$60, and Lara with \$200. The figure shows a way to keep track of what happened to Lara's investment.

Month:



- Use arrows in this way to show what happened to Lara's, Gabe's, and Earl's investments for the first five months
 - Give advice to each of these student

RUNNING OUT OF MONEY

- Bea joined the plan, but discovered after one month that she had an account balance of exactly \$0. How much money had she invested?
- Lea discovered that she had an account balance of exactly \$0 after two months. What was her initial investment?
- Rea had an account balance of exactly \$0 after three months. How much money did she start out with?
- Summarize your answers to problems 4–7 by making a table like the one below. Then extend the table to show up to at least 10 months.

Months to Reach a Zero-Dollar Balance

Months	Amount Invested
1	
2	
...	

- Describe the pattern in your table.

GAINING AND LOSING

- Mr. Lear joined the plan, but discovered that at the end of every month he had exactly the same amount of money as when he started. How much money is it? Explain how that happened.

10. Algebank sends its customers statements quarterly (every three months). Several students were comparing their statements at the end of the first quarter. One had \$50, another had \$100, and a third had \$150 in the account.
- What will happen to each student? Will all of them eventually gain money? What will their next quarterly statements look like? Explain.
 - Explain how you can figure out how much money each of them started with.
11. 💡 Find two initial investment amounts that differ by \$1, such that one of them will make money in this plan, and the other will lose money. How far apart will the amounts be in six months? Explain.
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12. **Report** You have been asked to write an article on Algebank's investment plan for the Consumers' Guide column in the school paper. Write an article giving general advice to people wanting to join this plan. Describe the plan clearly and explain the pros and cons of joining it. Who will benefit from the plan? Who will lose in the long run? Explain, giving some examples. Make your article interesting, eye-catching, and readable.
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13. **Generalization** Use what you have learned in this lesson to answer the following questions about plans with similar policies, but different numbers.
- Give advice to people wanting to join a plan, if their money is *tripled* every month and the service charge is \$100.
 - Give advice to people wanting to join a plan if their money is doubled every month but the service charge is \$200.
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14. 💡 Suppose Algebank were to deduct the service charge *before* doubling the money. How would this change your answers to problems 12 and 13b?
15. Describe another possible investment scheme and give advice to people about who should join and who should not.