

Kalamazoo Lottery

A Kalamazoo teenager has just won the \$10000 lottery from a Michigan lottery ticket that she got as a birthday gift from her uncle. She has some options in how to receive this money.

- One option is to receive a single \$10,000 payment now.
- In the other plan, the lottery promises a single payment of \$20,000 ten years from now.
- Suppose a local bank called and said you could invest your \$10,000 payment in a special 10-year certificate of deposit (CD), earning 8% interest compounded yearly.

Imagine that you had just won that Michigan lottery prize. Should she take the banks offer to invest in the 10 year CD? Explain with mathematics.

- Suppose that the prize winner decided to leave the money in the CD, earning 8% interest for more than 10 years. Use tables or graphs to estimate solutions for the following equations and inequalities. In each case, be prepared to explain what the solution tells about the growth of a \$10,000 investment that earns 8% interest compounded annually.

- a. $10,000(1.08x) = 25,000$

- b. $10,000(1.08x) = 37,000$

- c. $10,000(1.08x) = 50,000$

- d. $10,000(1.08x) \geq 25,000$

- e. $10,000(1.08x) \leq 30,000$

- f. $10,000(1.08x) = 10,000$

- Compare the pattern of change and the final account balance for the plan that invests \$10,000 in a CD that earns 8% interest compounded annually over 10 years to those for the following possible savings plans over 10 years. Write a summary of your findings.
 - a. Initial investment of \$15,000 earning only 4% annual interest compounded yearly
 - b. Initial investment of \$5,000 earning 12% annual interest compounded yearly