Exploring Compound Interest

5619

Introduction

In this activity, students will explore the effect of compound interest on the amount of an investment over time.

Grades 9-12

NCTM Algebra Standards

- Use mathematical models to represent and understand quantitative relationships
- Use symbolic expressions, including iterative and recursive forms, to represent relationships arising from various contexts

Files/Materials Needed

compound.act

1

a. Launch TI-Navigator™ on the computer and start the session.

b. Have each student log into NavNet on their calculator.

2

Use Quick Poll (with *Open Response***) to ask:**

- *If you had $1000 to invest at age 20, how much would it be worth by the time you are 70 years old if you earn 8% interest annually?*

(The answer is approximately $47,000.)

3

a. Load the activity settings file ***compound.act***.

b. Arrange students into five groups. Each group will be responsible for a different range of 10 years, 21–30, 31–40, 41–50, 51–60, 61–70. Students will enter the age in L1.

c. Students will enter the value of the account in L2. Tell each group what value goes with the first year that they have been assigned (21: 1080, 31: 2331.66, 41: 5033.88, 51: 10,867.76, 61: 23,462.67). They can calculate each subsequent year's amount by multiplying the previous amount by 1.08. This can be done right on the calculator as they enter the list values.

Note: This method places the emphasis on calculating account values recursively rather than use an explicit formula. Also, the values given reflect rounding to the nearest penny after each year's calculation.

d. Have students submit their data.

4

a. Stop the activity and click **Configure**. Click **Existing Activity Center Lists** and **OK**.

b. Restart the activity to send the aggregated data to each student calculator.

5

a. Have students log out of NavNet and use their calculator to create a scatter plot of L2 versus L1.

b. Tell students to use [TRACE] to estimate the number of years it takes for the account balance to double.

c. Use **Screen Capture** to check student understanding.

6

a. Have students log back into NavNet and use **Quick Poll** (with *Open Response*) to ask questions such as:

- *Approximately how many years does it take your account to double in value if it earns 8% annually?*

b. Discuss how and why the account values increase more rapidly over time.