

Future Fund Finder

Track compound growth and compare retirement plans.

HIGH SCHOOL • MA.912.FL.4.4

MA.912.FL.4.4 "Collect, organize and interpret data to determine an effective retirement savings plan to meet personal financial goals using spreadsheets and other technology."

NAME _____

DATE _____

TRACK EACH YEAR

For annual compounding, multiply the current balance by 1 + the interest rate written as a decimal at the end of each year. Put each year in a table or spreadsheet, then compare the final balance to your goal and to other plans.

WORKED EXAMPLE

A retirement account starts with \$1,000 and earns 10% interest compounded annually for 2 years. What is the final balance?

1. Year 1: $\$1,000 * 1.10 = \$1,100$.

2. Year 2: $\$1,100 * 1.10 = \$1,210$.

Answer: \$1,210

PRACTICE 6 problems

- 1** A retirement account has \$400 and earns 5% interest for one year. What is the balance after one year?

ANSWER _____

- 2** What yearly multiplier should you use in a spreadsheet for an account earning 7% annual interest?

ANSWER _____

- 3** An account starts with \$800 and earns 5% interest compounded annually for 3 years. What is the final balance?

ANSWER _____

- 4** Plan A starts with \$500 and earns 4% annually for 3 years. Plan B starts with \$500 and earns 6% annually for 3 years. Round final balances to the nearest cent. Which plan has more money, and how much more?

ANSWER _____

- 5** Your retirement account has \$800. It will earn 12.5% interest for one year. Your goal is \$950. How much will you be short after the interest is added?

ANSWER _____

- 6** A spreadsheet shows a starting retirement balance of \$750 with 8% annual interest. Find the balance after Year 1 and after Year 2.

ANSWER _____

APPLY IT Show your work

- 1** After earning money from a summer job, Maya puts \$1,200 into a retirement account. The account earns 5% interest compounded annually, and she makes no additional deposits for 3 years. Her savings goal is \$1,375. Will she meet the goal? If so, by how much?

WORK SPACE

ANSWER _____

- 2** Riley begins a retirement account after a paid internship with \$900. The account earns 5% interest each year. At the end of each year, Riley adds \$100 from work earnings for 3 years. Interest is added before each yearly deposit. Will Riley reach a goal of \$1,350?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

You are comparing two retirement plans for 4 years. Both start with \$750. Plan A earns 8% annual interest and has no added deposits. Plan B earns 5% annual interest, and you add \$50 at the end of each year. Round only final balances to the nearest cent. Which plan gives you more money? Explain why using both final balances.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A retirement account has \$400 and earns 5% interest for one year. What is the balance after one year?	\$420
2	What yearly multiplier should you use in a spreadsheet for an account earning 7% annual interest?	1.07
3	An account starts with \$800 and earns 5% interest compounded annually for 3 years. What is the final balance?	\$926.10
4	Plan A starts with \$500 and earns 4% annually for 3 years. Plan B starts with \$500 and earns 6% annually for 3 years. Round final balances to the nearest cent. Which plan has more money, and how much more?	Plan B has \$595.51, which is \$33.08 more than Plan A's \$562.43.
5	Your retirement account has \$800. It will earn 12.5% interest for one year. Your goal is \$950. How much will you be short after the interest is added?	\$50
6	A spreadsheet shows a starting retirement balance of \$750 with 8% annual interest. Find the balance after Year 1 and after Year 2.	Year 1: \$810; Year 2: \$874.80

PART 2 • APPLY IT

- Yes. The final balance is \$1,389.15, so Maya exceeds her goal by \$14.15.** Multiply \$1,200 by 1.05 for each of 3 years. Compare the resulting \$1,389.15 balance with the \$1,375 goal.
- Yes. Riley's final balance is \$1,357.11, which is \$7.11 above the goal.** For each year, multiply the current balance by 1.05, then add \$100. After the third deposit, compare \$1,357.11 with \$1,350.

CHALLENGE

Plan B gives more money. Plan A ends with \$1,020.37, and Plan B ends with \$1,127.14. Plan B is \$106.77 higher because the four end-of-year deposits add enough money to overcome its lower interest rate.

Accept equivalent calculations and final dollar amounts rounded to the nearest cent. For plans with end-of-year deposits, interest must be calculated before each deposit is added.