LESSON MAKER PRO

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?

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?

CHALLENGE One step up

Your hypothetical goal is $1,100 after four years. Collect these terms into an assumption table in a spreadsheet: both plans start at $750; A assumes 8% annual growth and no deposits; B assumes 5% annual growth and a $50 personal deposit at each year-end; no fees. Build four annual rows with formulas, applying growth before deposits. Compare ending balances, total personal deposits and growth beyond all contributions. Which meets the goal under these assumptions? Explain the tradeoff. Attach or show the spreadsheet.

ANSWER KEY

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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

1. **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.
2. **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

A ends $1,020.37; B ends $1,127.14, about $106.77 higher. B alone meets $1,100 under the assumptions. Additional personal deposits: A=$0, B=$200. Growth beyond starting balance and deposits: A=$270.37, B=$177.14.

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. Require the assumptions table, working four-year formulas, goal comparison and separation of contributions from growth. Terms are explicitly supplied classroom data, not purported research on current plans.