Compound Interest Introduction

Explore ideas and representations

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

With annual compounding, each new balance is the previous balance times $1 + r$. At 10%, 100 dollars becomes 110 after one year, then 121 after two: $100(1.10)^2 = 121$. Simple interest would give only 120 dollars. Round final money only.

Worked example

Example: \$100.00 earns 10% compounded annually for 2 years. List the balance after each year. Round only the final balance to cents.

1. The yearly multiplier is $1 + 10/100 = \frac{11}{10}$.
2. Year 1: $100(\frac{11}{10}) = 110$ dollars.
3. Year 2: $110(\frac{11}{10}) = 121$ dollars.
Answer: Year 1: \$110.00; Year 2: \$121.00.

Practice Problems

Show your thinking.

1. Savings: \$200.00 earns 10% compounded annually for 2 years. List the balance after each year. Round only the final balance to cents.

2. Deposit: \$400.00 at 5% annually for 2 years. A student uses simple interest and gets \$440.00. Find the compound balance and explain the difference.

3. Fund: \$100.00 earns 20% compounded annually for 3 years. List the balance after each year. Round only the final balance to cents.

4. Account: after 2 annual 5% growth steps the balance is exactly 882 dollars. Divide back through the growth factors to find the starting balance.

5. Longer plan: compare annual compounding and simple interest on \$500.00 at 4% for 3 years. Find each final balance and which is greater. Round only final money amounts.

6. Club reserve: \$1000.00 earns 2% compounded annually for 2 years. List the balance after each year. Round only the final balance to cents.

7. Student fund: \$300.00 earns 6% compounded annually for 2 years. List the balance after each year. Round only the final balance to cents.

8. Equipment reserve: \$250.00 at 8% annually for 3 years. A student uses simple interest and gets \$310.00. Find the compound balance and explain the difference.

Answer Key

1. Year 1: \$220.00; Year 2: \$242.00.
2. Compound \$441.00; simple \$440.00; compound is greater by \$1.00.
3. Year 1: \$120.00; Year 2: \$144.00; Year 3: \$172.80.
4. \$800.00
5. Compound \$562.43; simple \$560.00; compound is greater by \$2.43.
6. Year 1: \$1020.00; Year 2: \$1040.40.
7. Year 1: \$318.00; Year 2: \$337.08.
8. Compound \$314.93; simple \$310.00; compound is greater by \$4.93.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The yearly multiplier is $1 + 10/100 = \frac{11}{10}$.
2. Year 1: $200(\frac{11}{10}) = 220$ dollars.
3. Year 2: $220(\frac{11}{10}) = 242$ dollars.

Problem 2

1. The yearly multiplier is $1 + 5/100 = \frac{21}{20}$.
2. Year 1: $400(\frac{21}{20}) = 420$ dollars.
3. Year 2: $420(\frac{21}{20}) = 441$ dollars.
4. Simple balance $= 400[1 + (5/100)(2)] = 440$ dollars.
5. Compound minus simple: $441 - (440) = 1$ dollars. This is positive, so the compound balance is greater by \$1.00; it includes interest on earlier interest.

Problem 3

1. The yearly multiplier is $1 + 20/100 = \frac{6}{5}$.
2. Year 1: $100(\frac{6}{5}) = 120$ dollars.
3. Year 2: $120(\frac{6}{5}) = 144$ dollars.
4. Year 3: $144(\frac{6}{5}) = \frac{864}{5}$ dollars.

Problem 4

1. Undo all yearly growth factors: $882 \div (1 + 5/100)^2 = 800$ dollars, the starting balance.
2. The yearly multiplier is $1 + 5/100 = \frac{21}{20}$.
3. Year 1: $800(\frac{21}{20}) = 840$ dollars.
4. Year 2: $840(\frac{21}{20}) = 882$ dollars.

Problem 5

1. The yearly multiplier is $1 + 4/100 = \frac{26}{25}$.
2. Year 1: $500(\frac{26}{25}) = 520$ dollars.
3. Year 2: $520(\frac{26}{25}) = \frac{2704}{5}$ dollars.
4. Year 3: $\frac{2704}{5}(\frac{26}{25}) = \frac{70304}{125}$ dollars.
5. Simple balance $= 500[1 + (4/100)(3)] = 560$ dollars.
6. Compound minus simple: $\frac{70304}{125} - (560) = \frac{304}{125}$ dollars. This is positive, so the compound balance is greater by \$2.43; it includes interest on earlier interest.

Problem 6

1. The yearly multiplier is $1 + 2/100 = \frac{51}{50}$.
2. Year 1: $1000(\frac{51}{50}) = 1020$ dollars.
3. Year 2: $1020(\frac{51}{50}) = \frac{5202}{5}$ dollars.

Problem 7

1. The yearly multiplier is $1 + 6/100 = \frac{53}{50}$.
2. Year 1: $300(\frac{53}{50}) = 318$ dollars.
3. Year 2: $318(\frac{53}{50}) = \frac{8427}{25}$ dollars.

Problem 8

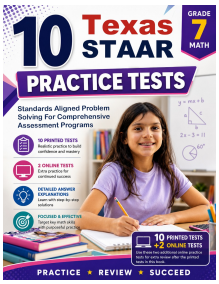
1. The yearly multiplier is $1 + 8/100 = \frac{27}{25}$.
2. Year 1: $250(\frac{27}{25}) = 270$ dollars.
3. Year 2: $270(\frac{27}{25}) = \frac{1458}{5}$ dollars.
4. Year 3: $\frac{1458}{5}(\frac{27}{25}) = \frac{39366}{125}$ dollars.
5. Simple balance $= 250[1 + (8/100)(3)] = 310$ dollars.
6. Compound minus simple: $\frac{39366}{125} - (310) = \frac{616}{125}$ dollars. This is positive, so the compound balance is greater by \$4.93; it includes interest on earlier interest.

TESTINAR

Keep Building Grade 7 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 7 books



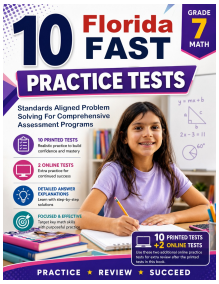
TEXAS STAAR

10 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



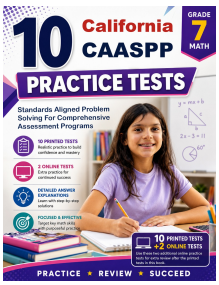
FLORIDA FAST

10 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



CALIFORNIA CAASPP

10 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 7 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/7