PFL Academy

Teacher Guide: Chapter 5.2 — Compound Interest and the Rule of 72

OVERVIEW

TIME	MATERIALS	PREREQUISITES
45-50 Minutes	Student Activity Packet, Calculator	Chapter 5.1 (Saving and Investing)

LESSON FLOW

5 min — **THE CHALLENGE**

- Read Micah's scenario. Ask: "Is it really possible for $100 to become $800?"
- Explain that today's lesson reveals the "magic" (actually math!).
- Preview the Rule of 72 as a quick mental math tool.

10 min — **CORE CONCEPTS**

- Distinguish simple vs. compound interest with a visual example.
- Introduce the Rule of 72 formula. Practice: "At 6%, how long to double?"
- Emphasize that this works for any interest rate and any starting amount.

25-28 min — **APPLY IT**

- **Part A (10 min):** Rule of 72 calculations. Simple division—ensure accuracy.
- **Part B (8 min):** Simple vs. compound comparison. The $1,822 difference is the "aha moment."
- **Part C (7 min):** Opportunity cost. The coffee example resonates with students.

10 min — **CHECK YOUR UNDERSTANDING**

- Focus on Q3 (applying the rule) and Q5 (personal reflection).
- Discuss: Is knowing opportunity cost motivating or discouraging?

DIFFERENTIATION

Support

- Provide calculators for all division.
- Create a reference card with the Rule of 72 formula.
- Walk through Part A as a whole class.
- For Part B, give the simple interest formula step-by-step.

Extension

- Calculate exact compound interest values using the formula A = P(1+r)^t.
- Research historical returns of different investment types.
- Create an opportunity cost analysis of a student's actual spending.

ANSWER KEY

Part A: Rule of 72 Calculations

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Rule of 72 Table:
• 2%: 72 ÷ 2 = 36 years
• 4%: 72 ÷ 4 = 18 years
• 6%: 72 ÷ 6 = 12 years
• 8%: 72 ÷ 8 = 9 years
• 12%: 72 ÷ 12 = 6 years
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1. Years to double at 8%: **9 years**

2. Number of doublings: **3** ($100→$200→$400→$800)

3. Total years: 9 years × 3 doublings = **27 years**

Part B: Simple vs. Compound Interest

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Simple Interest Calculation:
$1,000 + ($1,000 × 0.05 × 30)
= $1,000 + $1,500
= $2,500
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4. Simple Interest Total: **$2,500**

5. Difference: $4,322 - $2,500 = **$1,822 more** with compound interest

Part C: Opportunity Cost Analysis

6. Opportunity cost: **$430,000** (the potential future value)

7. Half the investment: **$215,000** (approximately half)

Check Your Understanding

1. B (You earn interest on your interest, not just the principal)

2. Time is the most important factor in compounding. More time = more doubling periods = exponentially more money. Starting 10 years earlier can be worth more than doubling your contributions.

3. 72 ÷ 9 = **8 years** to double. After two doublings: $5,000 → $10,000 → **$20,000**

4. 72 ÷ 3 = **24 years** (This shows why higher rates matter for shorter goals)

5. *Accept thoughtful responses that identify an expense, estimate annual cost, and calculate rough future value. Look for balance—acknowledging both the math and personal values.*

COMMON MISCONCEPTIONS

Misconception	Clarification
"The Rule of 72 is exact."	It's an approximation. The actual formula is more complex. Rule of 72 is close enough for quick mental math and planning purposes.
"I need to start with a lot of money for compounding to matter."	Time matters more than starting amount. $100/month for 40 years at 7% grows to ~$264,000. The key is starting early.
"Past returns guarantee future returns."	Historical averages help with planning, but actual returns vary year to year. Diversification and long time horizons help manage this uncertainty.