Build an Investment Plan: The Cost of Waiting — Teacher Guide

Financial Algebra · Unit 6: Investing & Compound Growth

2–3 class periods | Individual | Skills: Skill 1, Skill 2, Skill 3, Skill 4

Overview

Investing is not about picking a lucky stock — it is about time, consistency, low costs, and matching risk to goals. You will build an investment plan for Priya, project it under several assumptions, measure the cost of waiting 10 years, and evaluate risk honestly.

Skills covered

- Calculate compound growth (investing-skill-01)
- Model recurring contributions (investing-skill-02)
- Compare investment scenarios (investing-skill-03)
- Interpret investment risk (investing-skill-04)

Required materials

- Student packet
- Spreadsheet software
- Decision Lab “The Cost of Waiting” (optional)

Suggested pacing

Session	Focus
Day 1	Tasks 1–3
Day 2	Tasks 4–5
Day 3 (optional)	Share plans

Implementation guidance

- Stress “hypothetical” in every projection.
- Do not recommend specific real funds or companies.

Worked calculations

Tasks 1–2

1. 4%: start at 23 → $202,928.82; start at 33 → $116,363.74; cost of waiting $86,565.09.
2. 6%: start at 23 → $326,261.62; start at 33 → $161,309.37; cost of waiting $164,952.24.
3. 8%: start at 23 → $543,280.05; start at 33 → $228,276.11; cost of waiting $315,003.94.
4. Contributions: $200 × 12 × 37 = $88,800 (start at 23).

Task 3

1. Index fund net 7.46%: $471,910.58.
2. Active fund net 6.40%: $360,339.49.
3. Fees cost ≈ $111,571.09.

Task 4

1. Ending value = $20,920.94.
2. Simple average 8.5% → steady path $22,609.83.
3. Worst single year −18%; volatility lowers the result vs. a steady average.

Sample student responses

> “I chose a low-cost stock index fund because Priya’s horizon is 37 years. At a hypothetical 6% she would have about $326,261.62, but waiting 10 years would cost her about $164,952.24. If the market drops 30%, her rule is to keep contributing and not sell.”

Common misconceptions

- Treating averages as guarantees.
- Ignoring fees.
- Confusing contributions with returns.

Differentiation

Support

- FV formula worksheet.

Extend

- Simulate random annual returns for 1,000 paths in a spreadsheet.

Extension opportunities

- Research what an expense ratio is for a real index fund (public fact sheets).

100-point rubric

Category (points)	Exemplary (100%)	Proficient (~80%)	Developing (~60%)	Beginning (~30%)
Financial understanding (20)	Uses vocabulary precisely and explains every financial concept involved, including assumptions.	Mostly accurate explanations with minor vocabulary gaps.	Partial understanding; some concepts misapplied.	Little evidence of understanding.
Mathematical accuracy (25)	Projections, fee comparison, and volatility calculations correct.	1–2 minor errors that do not change conclusions.	Several errors or missing work.	Calculations largely missing or incorrect.
Analysis & comparison (20)	Compares every option on the same basis and tests at least one changed assumption.	Compares options with small gaps.	Comparison superficial or uneven.	Little analysis.
Justification (15)	Recommendation is supported by specific numbers and weighs non-financial factors and risks.	Mostly supported.	Mostly opinion.	No justification.
Communication & presentation (10)	Clear, organized, well-labeled tables, charts, and writing.	Minor clarity issues.	Hard to follow in places.	Disorganized.
Completion (10)	Every checklist item complete.	One item missing.	Two or three items missing.	Most items missing.

Total: 100 points. Alternative recommendations earn full credit when supported by accurate evidence.

Student documents (reference)

Investment options (hypothetical long-run assumptions)

Option	Avg. return (hypothetical)	Expense ratio	Example worst year
High-yield savings	3.5%	0%	0%
Bond index fund	4.5%	0.05%	−13%
Balanced fund (60/40)	6%	0.20%	−20%
Stock index fund	7.5%	0.04%	−37%
Actively managed stock fund	7.5% before fees	1.10%	−40%

Sample 10-year return path (illustrative, stock fund)

Year	1	2	3	4	5	6	7	8	9	10
Return	+12%	+21%	−4%	+15%	−18%	+26%	+9%	−6%	+19%	+11%