PATIENCE LEARNING · FREE 1-DAY CASE

Eighty Percent of What?

A free single-session case from the world of **The Projection**, the 11-day business-math simulation.

GRADE 8 · MATH (PERCENTS, MARGIN & PROJECTIONS) · ~45 MIN · 1 CLASS PERIOD

Your students are pitching a PTA-funded student store. The plan shows an 80% profit margin — it looks like it prints money. But 80% of a big number and 80% of a small number are very different things, and a survey said one thing while a real store's data says another.

TEACHER QUICK-START

Objective: Students compute profit margin and weekly profit under an optimistic projection versus real comparable-store data, learning that a high margin percent on inflated volume can hide a modest business.

Standards tie-in: CCSS 8.EE.C (linear reasoning), 7–8.RP/percent applications, 8.F.B.4 (rate of change / break-even); construct a viable argument (MP.3).

What you need: Just this packet. Print the student pages (works individually or in teams of 3–4). Calculators optional. No prep.

1. Set the scene (5 min). “Your student store plan shows an 80% margin. The PTA is thrilled. Before they spend $600, pressure-test it.”

2. Read the plan (8 min). Teams read the optimistic projection and the real comparable-store data.

3. Compute & decide (20 min). Check the margin, compare the two sales estimates, find the real break-even.

4. The reveal (8 min). Walk the answer key. The point: the margin percent was true; the volume behind it was not.

5. Reflection (4 min). Each student answers the reflection question.

STUDENT PAGE 1

The Business Plan

You're on the team pitching a PTA-funded student store. The PTA is putting up **$600** to start it. Your plan sells spirit items and shows an **80% profit margin** — the grown-ups love it. Here are the numbers behind the pitch.

THE PLAN'S NUMBERS

Item	Value
Price you sell each item for	$5
What each item costs you	$1
Weekly sales — from a survey (“would you buy one?”)	200 items/week
Weekly fixed cost (booth + supplies)	$40/week

THE NUMBER NOBODY ASKED ABOUT

A nearby school ran the **same kind of store** last year. Their actual sales weren't 200 a week. They sold **60 items a week.** The 200 came from a survey asking students if they'd *ever* buy one — not how often they actually would.

STUDENT PAGE 2

Your Call (Decision Sheet)

Team name: _____ Period: _____

Step 1 — Check the margin. Profit per item = price – cost = $5 – $1 = $_____. Margin = profit ÷ price = ____ ÷ 5 = _____% (Is the 80% claim true?) _____

Step 2 — Two very different weeks. Weekly profit = items sold × $4 profit each.

Optimistic (200/wk): 200 × $4 = $_____ Real store (60/wk): 60 × $4 = $_____

Step 3 — After fixed costs. Subtract the $40/week booth cost from each:

Optimistic net: $_____ Realistic net: $_____

Step 4 — Break-even on the $600. How many weeks to earn back the $600 startup at each pace? ($600 ÷ weekly net, round up)

Optimistic: _____ week(s) Realistic: _____ weeks

Step 5 — Your recommendation. Is the 80% margin a lie? Should the store still open? Use your numbers, and explain what “80% of what?” means here:

_____

_____

ANSWER KEY (for the reveal)

Step 1 — The margin is TRUE:

Profit per item = $4. Margin = 4 ÷ 5 = **80%**. The claim is real — this is what makes it convincing.

Step 2 — The two weeks:

Optimistic: 200 × $4 = **$800/week**. Real store's pace: 60 × $4 = **$240/week**. Same 80% margin, but the projection assumed more than 3× the real sales.

Step 3 — After fixed costs:

Optimistic net = 800 – 40 = **$760/week**. Realistic net = 240 – 40 = **$200/week**.

Step 4 — Break-even:

Optimistic: 600 ÷ 760 ≈ **1 week**. Realistic: 600 ÷ 200 = **3 weeks**. Both pay back — but the "sure thing" was oversold about 4×.

Step 5 — The judgment:

The 80% margin is **not** a lie — that's the trap. What's misleading is the VOLUME: 80% of $5 × 200 imagined items is a lot; 80% of $5 × 60 real items is modest. A strong answer says the store can still work (it does break even in ~3 weeks), but the plan should use the real 60/week number, not the survey's 200. Honest projection beats optimistic projection.

The big idea:

"80% margin" sounds like it prints money — until you ask 80% *of what*. A true percent on an inflated base is how good projections fool smart people. Always check the number the percent is standing on.

REFLECTION (graded on thinking, not the "right" answer)

"The 80% margin was real, and it still misled everyone. What did you have to check before you trusted the plan?"

SCORING THE THINKING

	3 — Strong	2 — Developing	1 — Beginning
Computes correctly	Margin, profit, break-even all right	Some correct	Not computed
Finds the real trap	Names volume, not margin, as the flaw	Mentions volume	Thinks 80% is the lie
Uses real data	Recommends the 60/wk figure	Leans real weakly	Keeps the survey number
Explains clearly	A reader can follow it	Partly clear	Unclear

READY FOR THE FULL SIMULATION?

This was one projection. The Projection is eleven days of them.

In the full 11-day simulation, students build the business plan for a PTA-funded student store — projecting revenue, margin, and a break-even date the grown-ups are counting on. An optimistic survey and a flattering markup make it look like a sure thing, while real data from a comparable store tells a colder story. Graded on reasoning, never on the “right” forecast.

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