

When More Dollars Buy Less

Ages 13-18 | Homeschooling, summer learning, classroom enrichment, and library groups

Central question: Can a pay rise leave you buying less?

By the end: Learners should distinguish dollars from purchasing power, compare income or savings with prices, and explain why a positive nominal increase can coexist with a real loss.

PREPARE IN 5-10 MINUTES

Choose one route. Online: student pages **1 and 3**, a connected device, pencil, and the Purchasing Power Simulator. Paper: student pages **2 and 3**, pencil, and a calculator. Open the simulator and enter the settings before teaching. Either route works with one adult and one learner.

Skills: Basic reading and division. Decimal basket-equivalents are allowed. Percentage work and compound-growth calculations are optional; students can explain the core result by comparing quantities.

Minutes	Teacher and learner actions
0-2	Ask: Can your pay rise while what it buys falls? Record a prediction.
2-4	Read the short explanation on page 2; introduce the chosen route.
4-9	Run A and B online OR complete the two core rows on paper.
9-13	Discuss the three questions on student page 3. Oral answers are fine.
13-15	Complete the exit sentence and revisit the prediction.

OPTIONAL EXTENSIONS - SCHEDULE SEPARATELY

5-10 minutes: Savings and percentage work on student pages 1-2 or the assessment on page 3.

15-20 minutes: Historical calculator investigation on page 4. **Viewing/reading time, then 15-20 minutes:** Documentary worksheet on page 5.

Curriculum bridge: Pack 03 and Money vs. Currency introduce purchasing power. Pack 04 examines who receives new purchasing power first. Pack 05 measures what happens when incomes, savings, and prices change at different rates. Nominal Confusion supplies the extended reading.

Print only the pages needed. Keep this answer guide separate from the student worksheets. The core lesson needs no personal income or account information.

Teach the distinction

Read-aloud explanation, vocabulary, and the paper activity answer key

Read aloud: The number of dollars is one measurement. What those dollars buy is another. A bigger paycheck can buy less if prices rise faster than pay. A savings balance can grow through interest while losing purchasing power. To compare fairly, use the same period and the same basket of goods and services.

Nominal: The amount stated in current dollars. **Real:** Adjusted for the change in a chosen price measure. **Purchasing power:** The quantity of goods and services an amount can buy. **Price inflation:** A rise in the general price level; one item becoming dearer does not by itself establish economy-wide inflation.

PAPER ROUTE | STUDENT PAGE 2

Measure	Before	After
Basket price	\$100	\$125
Monthly pay	\$1,000	\$1,100
Pay / basket price	10 baskets	8.8 baskets
Unchanged \$100 / basket price	1 basket	0.8 basket
Optional savings / basket price	$\$500 / \$100 = 5$	$\$525 / \$125 = 4.2$

Core conclusion: Pay is \$100 higher but buys 1.2 fewer basket-equivalents. The new paycheck has the buying capacity that \$880 had a year earlier: $\$1,100 / 1.25$. That is a **12% real decline**, despite a 10% nominal pay rise.

Savings: Interest adds \$25, but the new balance has \$420 of starting-year buying power: $\$525 / 1.25$. That is a **16% real decline**. Interest is not automatically enough to offset price inflation.

Percentage challenge: The basket price rises 25%: $(125 / 100 - 1) \times 100$. The buying capacity of unchanged \$100 falls 20%: $(0.8 / 1 - 1) \times 100$. The measures are reciprocals, so the percentages differ.

KEEP THE EXPLANATION PRECISE

The exercise sets prices; it does not explain their cause. Changes in spending, production, supply conditions, and monetary conditions can all matter. A growing money-stock series is not itself a consumer price index. The same national index also need not match each household's experience.

Simulator answer key

Student page 1 | Illustrative constant annual rates, compounded for 10 years

Both runs: Annual Income \$60,000; Cash Savings \$25,000; Annual Price Inflation 5%; Savings Interest Rate 1%; Time Horizon 10 years. **A:** wage growth 2%. **B:** wage growth 5%. Run the analysis after each change. Only the wage-growth input changes.

Year-10 result	A: 2% wage growth	B: 5% wage growth
Future nominal income	\$73,139.67	\$97,733.68
Real income, starting-year dollars	\$44,901.41	\$60,000.00
Real income change	-25.16%	0.00%
Cost of the initial \$100 basket	\$162.89	\$162.89
Buying power of unchanged \$100	\$61.39	\$61.39
Optional: nominal savings	\$27,615.55	\$27,615.55
Optional: real savings	\$16,953.55	\$16,953.55

Expected results: These values are calculated from the stated rates. The interface may round to whole dollars or fewer decimal places. Use end-of-horizon outputs, or move the timeline to year 10. If results differ beyond rounding, recheck the inputs and selected year.

HOW TO CHECK THE ARITHMETIC

Use rates as decimals: 2% = 0.02.

Price factor = $1.05^{10} = 1.6288946$.

Nominal income = $60,000 \times (1 + \text{wage growth})^{10}$.

Real income = nominal income / price factor.

Real income change = $(\text{real income} / 60,000 - 1) \times 100\%$.

Nominal savings = $25,000 \times 1.01^{10}$; divide by the price factor for real savings.

Buying power of an unchanged \$100 = $100 / \text{price factor}$.

Interpretation: In A, income rises in dollars but buying power falls about 25.2%. In B, income keeps pace with the basket, so real income is unchanged. Savings lose about 32.2% of their initial buying power in both runs because the savings inputs did not change.

Model limits: Constant annual rates, no taxes or fees, no additional deposits or withdrawals, and an unchanged comparison basket. Real households face changing prices, incomes, and spending patterns. This activity does not establish a forecast or recommend an asset.

Discussion and assessment

Student pages 3-4 | Accept clear reasoning, including oral explanations

THREE DISCUSSION QUESTIONS | STUDENT PAGE 3

- 1. Bigger pay, less buying power:** Look for a comparison with prices. Paper: 10 baskets falls to 8.8. Online A: the annual 2% pay rise falls behind annual 5% price inflation. A larger nominal amount is insufficient evidence of a real improvement.
- 2. Keeping pace:** Income must grow by the same proportion as the chosen basket over the same interval. For savings, compare the net growth after relevant costs with prices. In the simplified model, equal annual interest and inflation preserve buying power.
- 3. Different households:** Budgets, locations, and the prices people actually pay differ. Ask for spending shares and matched price changes. The CPI is an aggregate measure; it is not a personal household budget.

Sample exit: A larger dollar amount does not necessarily mean I can buy more. I need to compare the change in dollars with the change in the price of what I buy, over the same period.

OPTIONAL ASSESSMENT | 4 POINTS

- A. Equal growth (2 points):** $\$1,000 / \$100 = 10$ baskets and $\$1,100 / \$110 = 10$ baskets (1 point). Buying power is unchanged because income and the basket price both rise 10% (1 point).
- B. Slower inflation (2 points):** Prices are still rising (1 point), but at a slower positive rate (1 point). This is disinflation, not deflation. Optional arithmetic: $\$100 \times 1.05 \times 1.02 = \mathbf{\$107.10}$. Do not add the two rates to obtain the exact cumulative change.

HISTORICAL CALCULATOR | STUDENT PAGE 4

Check \$100, 2001 to 2024, and the named measurement in every run. Learners record the live outputs and access date. No fixed historical values are supplied here: assess the recorded inputs, arithmetic, source notes, and interpretation. For equivalent amount E, check $(E / 100 - 1) \times 100\%$ and $10,000 / E$.

CPI-U, EPI, and TLC cover different baskets or populations. The calculator uses January observations for CPI-U and EPI but annual estimates for TLC. The comparison illustrates measurement choices; it is not a perfectly matched comparison of dates or populations.

M2: The calculator compares a broad money stock and reports the amount needed to retain the same proportional share of M2. That is different from the dollars needed to buy a consumer basket. An M2 percentage increase does not prove an equal percentage increase in consumer prices.

Extend the learning

Student page 5 | Documentary, curriculum reading, and evidence

PREPARE THE VIEWING AND READING

Preview **Hidden Secrets of Money, Episode 1: Money vs. Currency**. Choose the full film or a checked excerpt. Allow viewing and reading time separately. Learners record actual timestamps for their selected claim; this pack does not prescribe an unverified clip.

Use the second post of **Nominal Confusion**, especially **What Is Nominal Confusion?** and **The Real Return Calculation**. Connect the reading to Pack 03, the Money vs. Currency curriculum lesson, and the timing issue explored in Pack 04.

GUIDE THE FOUR RESPONSES

1. Locate and classify: Check the paraphrase against the selected passage and its timestamps. Definitions specify how a term is used; historical claims require evidence about a period; predictions concern what may happen. A passage can contain more than one kind of claim.

2. Propose a test: A useful response specifies a period and a comparison measure, then identifies relevant price, wage, interest, or asset-price records. Comparing purchasing power requires consistent dates and treatment of quality, costs, and income. The invented basket and constant-rate model illustrate a relationship; they cannot verify an actual historical sequence.

3. Apply the formula: $(1.08 / 1.06 - 1) \times 100\% = 1.8868\%$, or about **1.89%**. The savings buy about 1.89% more of the comparison basket before any excluded taxes or costs. Simply subtracting 6 from 8 gives an approximation, not the exact answer.

4. Reconsider: Look for an improved explanation and a question that could be investigated. For example: "My balance can grow without buying more. I would compare its growth with the prices relevant to my spending. I still want to know which price measure best describes that spending."

MAKE ROOM FOR CAREFUL COMPARISONS

The film and MLMF use a particular money-versus-currency distinction. In standard economics, money also commonly includes bank deposits. State which definition is in use. A definition alone does not demonstrate that an asset will preserve purchasing power over every period.

Adaptation: Younger learners can use drawings and basket counts, with oral answers. Older learners can compare monthly price and wage series for a chosen period, show their calculation, and separate a purchasing-power result from a claim about what caused it.

Further question: How would taxes on interest change the savings result? For a simplified example, replace the nominal interest rate with its after-tax rate before adjusting for inflation.

Sources and resource links

Prepared 28 September 2026 | Click a title or use the printed address

1. MLMF Inflation & Purchasing Power Simulator

Core online activity. Calculated examples in this pack use fixed annual rates.

<https://www.monetarymastery.net/pages/purchasingpower>

2. MLMF Inflation Calculator

Optional comparison of price measures and the separate M2 money-stock measure.

<https://www.monetarymastery.net/pages/inflationcalculator>

3. Nominal Confusion

Extended reading: the second post's definition and real-return calculation.

<https://www.monetarymastery.net/topics/70864-nominal-confusion-why-rising-prices-dont-always-mean-rising-value>

4. Money vs. Currency - curriculum lesson

Connect purchasing power to the Foundation's monetary framework.

<https://www.monetarymastery.net/topics/70817-why-we-are-confused-money-vs-currency>

5. Teaching Pack 04: Who Receives New Currency First?

Previous activity: receipt order, prices, and income timing.

<https://www.monetarymastery.net/forums/topics/70943-teaching-pack-04-who-receives-new-currency-first>

6. Hidden Secrets of Money, Episode 1

Documentary extension hosted in the MLMF video curriculum.

<https://www.monetarymastery.net/topics/70731-episode-1-money-vs-currency-the-hidden-difference>

7. U.S. Bureau of Labor Statistics: CPI Questions and Answers

Primary reference for CPI coverage and why an average differs from an individual budget.

<https://www.bls.gov/cpi/questions-and-answers.htm>

Continue: Teaching Resources contains the full collection.

<https://www.monetarymastery.net/forums/forum/90181-teaching-resources>