Savings and purchasing power

Compare the dollars in an account with what they can buy. Use the linked calculator or work by hand. Treat today as the start of the year and round only your final answers to cents.

A. Does interest beat inflation?

Start with $10,000 and make no further deposits. The account earns 5% nominal annual interest compounded monthly for one year. Prices rise 3% over the year.

1. Find the ending balance.

2. Express that balance in today's dollars. How much buying power did you gain?

Hint: apply one-twelfth of the annual rate each month. Divide the ending balance by 1.03 to express it in today's dollars.

B. Does the deposit date matter?

Start with $1,000, earn 0% interest and assume prices rise 5% over one year. Add a single $100 deposit, either on the last day of the year or on the first. Complete both columns.

After one year	Deposit at year-end	Deposit at year-start
Ending account balance		
Ending balance in today's dollars		
Total deposits in today's dollars, incl. $1,000		
Buying power gained or lost		

Why can two accounts with the same ending balance show different losses? Think about when each saver gave up the use of the extra $100.

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All figures are in US dollars. These examples use constant rates and exclude fees and taxes. Today's dollars measure buying power at the start of the year.

A. Interest after a year of rising prices

1. Ending balance = $10,000 x (1 + 0.05 / 12) to the 12th power = $10,511.62.

2. Divide the unrounded balance by 1.03 to get $10,205.46 in today's dollars. Subtract the original $10,000 to find a buying-power gain of $205.46.

The account earned $511.62 in interest. Some of that growth offset the rise in prices.

B. One deposit, two dates

After one year	Deposit at year-end	Deposit at year-start
Ending account balance	$1,100.00	$1,100.00
Ending balance in today's dollars	$1,047.62	$1,047.62
Total deposits in today's dollars, incl. $1,000	$1,095.24	$1,100.00
Buying power gained or lost	$47.62 loss	$52.38 loss

Both accounts finish with $1,100.00. In today's dollars, $1,100 / 1.05 = $1,047.62.

Year-end deposit. The final $100 is worth $95.24 in today's dollars ($100 / 1.05). Add that to the original $1,000, then compare with the ending buying power.

Year-start deposit. Both deposits were made at today's prices. The extra $100 was in the account, earning zero interest, throughout the full year's price increase.

To reproduce B in the calculator, choose a one-year duration and annual contributions. Switch contribution timing between end and beginning. Keep all other settings fixed.