MATH: Return on Investment [ANSWER KEY] ⏱20 min

Is your investment worth it? Return on Investment(ROI) is a way to measure how much you gained or lost—helping you decide if your investment is paying off.

Math Topics
● Percents ● Order of Operations

Personal Finance Topics
● Individual Stocks

EdPuzzle Video

Part I: Example

Example: Andrew bought one share of Apple stock for $26 in 2019. Two years later, he sold it for $45. What was his ROI? How much money did he gain/lose with this stock?

Solution:

$$ ROI = \frac{(Selling\ Price - Purchased\ Price)}{Purchased\ Price} \cdot 100 $$
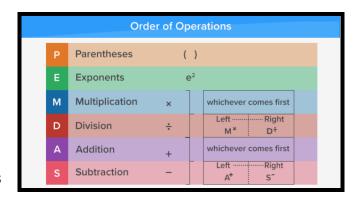
$$ = \frac{(45-26)}{26} \cdot 100 $$

$$ = \frac{19}{26} \cdot 100 $$

$$ = .731 \cdot 100 $$

$$ = 73 $$

Andrew's ROI was +73%. He gained $19 with this stock.

Order of Operations

P	Parentheses	( )	
E	Exponents	e^2	
M	Multiplication	×	whichever comes first
D	Division	÷	Left ⸺ Right $M^×$ $D^÷$
A	Addition	+	whichever comes first
S	Subtraction	−	Left ⸺ Right A^+ S^-

Part II: Practice

Complete each question by showing your work, then writing your answer in the answer box

Question 1	Answer

Tori bought a Macy's share for $33.38 on Nov 1, 2019, and sold it four years later at $5.09.
    a) How much money did she gain/lose with this stock?
    b) What is her ROI?	

Question 2	Answer

Chadwick bought one share of Macy's stock on Nov 1, 2019, and sold it three years later for $13.54.
    a) How much money did he gain/lose with this stock?
    b) What is his ROI?	

Question 3	Answer

Tori bought a Chipotle share on Nov 1, 2019, for $396.33 and sold it four years later for $778.38.
    a) How much money did she gain/lose with this stock?
    b) What was Tori's ROI?	

Question 4	Answer

Chadwick bought 50 Chipotle shares on Nov 1, 2019, for $396.33 each and sold them four years later for $778.38 each.
    a) What did Chadwick pay for all of the shares in 2019?
    b) What was the value of all of his shares four years later?
    c) How much money did he gain/lose with this stock?
    d) What is his ROI on his shares when he sold them?	

Part III: Reflection

5. Justin wrote the ROI formula without parenthesis in the top part of the fraction." Would he still get the same result using his formula? Why or why not?

6. What does it mean if your calculated ROI is negative?

7. Refer back to Questions 3 and 4.
   a. How does the **quantity of shares** you own impact your **ROI**?
   b. How does the **quantity of shares** you own impact your **dollar gains or losses**?
   c. How does the **length of time** you hold the shares impact your **ROI**?

8. What is a potential limitation of using ROI to measure your investment's growth over time? Explain your reasoning.

9. Tori held onto the Macy's stock longer than Chadwick. Hypothesize why someone might hold onto a stock when the value has decreased