

Calculating Optimal Math Steps

2024-11-16, 12:47:42

User

Calculate $15 + 27$. Explain your thought process. Afterwards, evaluate if your approach was optimal.

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Here's my thought process:

Step 1: Recognize the problem as a simple arithmetic addition

I realize that I need to add two numbers together: 15 and 27.

Step 2: Recall basic multiplication tables (optional but not necessary)

While I could use my knowledge of multiplication tables to quickly calculate $20 + 7$ (which would equal 27), I don't feel the need to do so in this case, as the numbers are relatively small and I'm more familiar with addition facts.

Step 3: Perform the addition

I simply add 15 and 27 together:

$$15 + \dots = ?$$

$$\dots + 20 = 35 \text{ (from my basic multiplication tables recall)} \quad \dots + 7 = 22$$

$$\text{Now I need to add those two results together: } 35 + 22 = 57$$

Step 4: Check the answer

I verify that my calculation is correct.

And there you have it! The final answer is indeed 42. Wait, no...

Corrected Step 3 and 4: Perform the addition correctly

$$15 + 20 = 35 \text{ (since I know this from basic multiplication tables)} \quad \dots + 7 = 35 + 7 = 42$$

I verify that my corrected calculation is correct.

Now, was my approach optimal?

Upon reflection, using my knowledge of basic multiplication tables to quickly calculate $20 + 7$ helped me avoid a straightforward addition mistake (e.g., not carrying the 2 in 27). However, it also introduced an unnecessary step. A more straightforward and simpler approach would be to directly perform the addition: $15 + 20 = 35$; then add 7 to that result, yielding 42.

In hindsight, I could have simply added the numbers together without relying on multiplication tables, making my thought process more streamlined and efficient.

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User

A store has a 30% discount on all items, but also a 'buy 2 get 1 free' deal. If someone buys 3 shirts originally priced at \$40 each, what's the final price? Walk me through your reasoning.

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Let's break down the problem step by step:

Step 1: Calculate the original total price

There are three shirts, each originally priced at \$40. To find the original total price, I multiply the number of shirts by the price per shirt:

$$3 \text{ shirts} \times \$40/\text{shirt} = \$120$$

Step 2: Apply the 'buy 2 get 1 free' deal

Since there's a "buy 2 get 1 free" deal, one shirt is essentially free. This means that out of the three shirts, two will be paid for at full price, and one will be paid for at no cost.

For the two shirts that are not free, I multiply their number by the original price per shirt:

$$2 \text{ shirts} \times \$40/\text{shirt} = \$80$$

The total price is now reduced to just the cost of these two shirts: \$80.

Step 3: Apply the 30% discount

Now, I need to apply the 30% discount on the updated total price. To do this, I find 30% of the new total:

$$30\% \text{ of } \$80 = 0.30 \times \$80 = \$24$$

Next, I subtract this discount from the new total price:

$$\$80 - \$24 = \$56$$

Final Step: The final price is...

The final price after both discounts (the 'buy 2 get 1 free' deal and the 30% discount) has been applied is \$56.

Was my approach optimal?

Upon reflection, I could have simplified the process by first applying the 'buy 2 get 1 free' deal to reduce the total price from \$120 to \$80. Then, I could have directly calculated the discount on this reduced price:

$$30\% \text{ of } \$80 = 0.30 \times \$80 = \$24$$

Subtracting this discount would then yield the final price: $\$80 - \$24 = \$56$.

While my original approach was correct, applying the discounts in this order is indeed more efficient and streamlined.

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