

Additional Practice 3-9 Critique Reasoning

Another Look!

Mr. Jansen needs to order picture frames for his paintings. He has \$4,000 to buy 98 frames priced at \$42 each. Mr. Jansen says he has enough money because $100 \times \$40 = \$4,000$.

Tell how you can critique Mr. Jansen's reasoning.

- I can decide if his strategy makes sense to me.
- I can look for flaws in his estimates.

Critique Mr. Jansen's reasoning.

His reasoning does not make sense. He should find an overestimate or an exact amount to be sure he has enough money. An overestimate would be $100 \times \$42 = \$4,200$, and the exact amount is $98 \times \$42 = \$4,116$.

He does not have enough money.

When you critique reasoning, you explain why someone's thinking is correct or incorrect.



Critique Reasoning

Jason has 75 feet of wallpaper border. He wants to put up a wallpaper border around his rectangular bedroom that measures 12 feet by 14 feet. He multiplies $12 \times 14 = 168$ to get an exact answer of how much border he needs. He concludes that he does not have enough border for the whole job.

1. Tell how you can critique Jason's reasoning.

I can look for flaws in his method or calculations.

2. Critique Jason's reasoning.

His reasoning does not make sense. His method is incorrect. He should have calculated the perimeter of his room, not the area. The perimeter is $12 + 14 + 12 + 14 = 52$ feet. So, his conclusion should have been that he has enough wallpaper.

3. Jason uses an overestimate to decide how many rolls of wallpaper he needs for another room. Explain why his reasoning to use an overestimate does or does not make sense.

An overestimate makes sense so he is sure to have enough wallpaper.

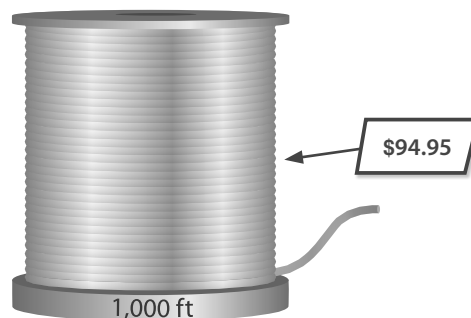




Performance Task

A Spool of Wire

Todd has a new spool of wire like the one pictured. He needs 48 pieces of wire, each 22 feet long. He estimates that he needs $50 \times 20 = 1,000$ feet, and he concludes that 1 spool with 1,000 feet will be enough.



4. **Make Sense and Persevere** Does it make sense for Todd to find an overestimate or an underestimate to decide if one spool is enough? Why?

Overestimate. An overestimate is greater than the actual amount. Todd has to be sure that he needs no more than 1,000 feet.

5. **Reasoning** Should Todd use multiplication to estimate the total amount of wire he needs? Explain your reasoning.

Yes. Todd is joining 50 equal groups of 20 feet.

6. **Be Precise** Did Todd correctly calculate the appropriate estimate? Explain.

No; Todd's calculation is accurate, but he replaced 48 with a greater number and 22 with a lesser number, so you cannot tell whether he found an overestimate or an underestimate.

7. **Critique Reasoning** Explain if Todd's conclusion is logical. How did you decide? If it is not logical, what can you do to improve his reasoning?

Todd's conclusion is not logical. Todd does not know whether his estimate of 1,000 feet is an overestimate or underestimate, so he should not conclude that 1 spool is enough. Since his estimate is so close to 1,000 feet, he should find the exact product to be sure that 1 spool is enough. $48 \times 22 = 1,056$ feet. One spool is not enough.

When you critique reasoning, you need to carefully consider all parts of an argument.

