To determine whether the conclusion is valid, we need to analyze the given information and the provided graph. Let's break down the statement and the data:

1. \*\*Statement\*\*: "The average time for the new formula to relieve a headache is lower than the average time for the old formula. I would conclude that people taking the new formula will tend to feel relief about 20 minutes sooner than those taking the old formula."

2. \*\*Data\*\*:

- New formula group: \( N = 100 \)

- Old formula group: \( N = 150 \)

- The graph shows the distribution of time to relief for both groups.

From the graph:

- The distribution for the new formula is more concentrated around lower times (mostly between 20-60 minutes).

- The distribution for the old formula is more spread out and extends to higher times (up to around 120 minutes).

To validate the statement, we need to consider:

- Whether the average time for the new formula is indeed lower than that for the old formula.

- Whether the difference in average time is approximately 20 minutes.

\*\*Analysis\*\*:

- The visual inspection of the graph suggests that the new formula group has a lower mean time to relief since the bulk of the data points are clustered at lower values compared to the old formula group.

- However, to precisely determine if the difference is about 20 minutes, we would need the actual numerical values of the means or perform a statistical test.

Given that the statement is making a specific claim about a 20-minute difference, without the exact numerical data, we cannot definitively confirm this precise difference from the graph alone. However, the general trend that the new formula is faster is supported by the graph.

\*\*Conclusion\*\*:

Since the statement claims a specific 20-minute difference without providing exact numerical data, we should be cautious. While it is reasonable to conclude that the new formula is faster, the precise 20-minute difference is not strictly validated from the graph alone.

Therefore, the most cautious and statistically rigorous answer would be:

(B) Not Valid.

This is because while we can infer that the new formula is likely faster, the exact 20-minute difference is not directly supported by the visual data provided. To make such a precise claim, we would need the actual mean values or a statistical test to confirm the difference.