

Table 13: BoT’s success reasoning process for “4 5 10 11”.

Experience obtained in Iteration 7
The 7-th Reasoning Chain with Comments ##### Below is a reasoning chain containing reasoning steps presented in order: Step 1: Current set: 4 5 10 11, Selected two numbers: 4 10, Operation: *, Computed new number: 40, Remaining numbers: 5 11, New set: 40 5 11.. Evaluate Score: 0.9 Step 2: Current set: 40 5 11, Selected two numbers: 5 11, Operation: +, Computed new number: 16, Remaining numbers: 40, New set: 16 40.. Evaluate Score: 0.9 Step 3: Current set: 16 40, Selected two numbers: 16 40, Operation: -, Computed new number: 24, Remaining numbers: None, New set: 24. Evaluate Score: 0.9 Analysis Report: This reasoning chain can complete the task and reach the target correctly by executing its reasoning steps. The final result obtained in the last step is 24, which is mathematically equal to the target number 24. Step 1: This step is a logical inference of the given numbers and the goal of the game. The selected two numbers, 4 and 10, are multiplied to obtain the new number 40. The remaining numbers, 5 and 11, are correctly included in the new set. This step is beneficial to the correct solution as it reduces the number of elements in the set and progresses towards the target. Step 2: This step is a logical inference of the previous step. The selected two numbers, 5 and 11, are added to obtain the new number 16. The remaining number, 40, is correctly included in the new set. This step is beneficial to the correct solution as it reduces the number of elements in the set and progresses towards the target. Step 3: This step is a logical inference of the previous step. The selected two numbers, 16 and 40, are subtracted to obtain the new number 24. Since there are no remaining numbers, the reasoning chain ends here. The final result of 24 is mathematically equal to 24. No errors were found in this reasoning chain. The steps are correctly executed and lead to the correct solution. Recommendation or Reject description: The reasoning chain is recommended as it successfully reaches the target and provides the correct solution. Confidence score: 0.9
Experience obtained in Iteration 8
The 8-th Reasoning Chain with Comments ##### Below is a reasoning chain containing reasoning steps presented in order: Step 1: Current set: 4 5 10 11, Selected two numbers: 4 10, Operation: *, Computed new number: 40, Remaining numbers: 5 11, New set: 40 5 11.. Evaluate Score: 0.9 Step 2: Current set: 40 5 11, Selected two numbers: 5 11, Operation: +, Computed new number: 16, Remaining numbers: 40, New set: 16 40.. Evaluate Score: 0.9 Step 3: Current set: 16 40, Selected two numbers: 16 40, Operation: -, Computed new number: 24, Remaining numbers: None, New set: 24. Evaluate Score: 0.9 Analysis Report: This reasoning chain can successfully complete the task and reach the target correctly by executing its reasoning steps. The final result of 24 is mathematically correct and equal to 24. Reasoning step 1: This reasoning step is a logical inference of the given task rule. It follows the rule of selecting two numbers (4 and 10) and performing the operation of multiplication to obtain a new number (40). The remaining numbers (5 and 11) are correctly updated to the new set (40 5 11). This reasoning step is beneficial to the correct solution. Reasoning step 2: This reasoning step is a logical inference of the previous step. It follows the rule of selecting two numbers (5 and 11) and performing the operation of addition to obtain a new number (16). The remaining number (40) is correctly updated to the new set (16 40). This reasoning step is beneficial to the correct solution. Reasoning step 3: This reasoning step is a logical inference of the previous step. It follows the rule of selecting two numbers (16 and 40) and performing the operation of subtraction to obtain a new number (24). Since there are no remaining numbers, the new set is empty. The final result of 24 is mathematically correct and equal to 24. This reasoning step is beneficial to the correct solution. Advice: No errors were found in this reasoning chain. The steps are correctly executed according to the given task rule. Recommendation or Reject description: All reasoning steps in this reasoning chain are recommended as they are correct and contribute to the correct solution. Confidence score: 0.9
Experience obtained in Iteration 9
The 9-th Reasoning Chain with Comments ##### Below is a reasoning chain containing reasoning steps presented in order: Step 1: Current set: 4 5 10 11, Selected two numbers: 4 10, Operation: *, Computed new number: 40, Remaining numbers: 5 11, New set: 40 5 11.. Evaluate Score: 0.9 Step 2: Current set: 40 5 11, Selected two numbers: 5 11, Operation: +, Computed new number: 16, Remaining numbers: 40, New set: 16 40.. Evaluate Score: 0.9 Step 3: Current set: 16 40, Selected two numbers: 16 40, Operation: -, Computed new number: 24, Remaining numbers: None, New set: 24. Evaluate Score: 0.9 Analysis Report: This reasoning chain can successfully complete the task and reach the target correctly by executing its reasoning steps. The final result of 24 is mathematically correct and equals 24 when evaluated. Reasoning step 1: This step is a logical inference of the previous step as it follows the task rule of selecting two numbers (4 and 10) from the current set and performing the * operation to obtain a new number (40). The remaining numbers (5 and 11) are correctly updated, and the new set (40 5 11) is formed. This step is beneficial to the correct solution as it reduces the number of elements in the set. Reasoning step 2: This step is a logical inference of the previous step as it follows the task rule of selecting two numbers (5 and 11) from the current set and performing the + operation to obtain a new number (16). The remaining number (40) is correctly updated, and the new set (16 40) is formed. This step is beneficial to the correct solution as it further reduces the number of elements in the set. Reasoning step 3: This step is a logical inference of the previous step as it follows the task rule of selecting two numbers (16 and 40) from the current set and performing the - operation to obtain a new number (24). Since there are no remaining numbers, the new set is formed with only the computed new number (24). This step is beneficial to the correct solution as it reaches the final result. Advice: No errors were found in the reasoning steps. Recommendation or Reject description: All reasoning steps are recommended as they follow the task rules and contribute to reaching the correct solution. Confidence score: 1.0
Experience obtained in Iteration 10
The 10-th Reasoning Chain with Comments ##### Below is a reasoning chain containing reasoning steps presented in order: Step 1: Current set: 4 5 10 11, Selected two numbers: 4 10, Operation: *, Computed new number: 40, Remaining numbers: 5 11, New set: 40 5 11.. Evaluate Score: 0.9 Step 2: Current set: 40 5 11, Selected two numbers: 5 11, Operation: +, Computed new number: 16, Remaining numbers: 40, New set: 16 40.. Evaluate Score: 0.9 Step 3: Current set: 16 40, Selected two numbers: 16 40, Operation: -, Computed new number: 24, Remaining numbers: None, New set: 24. Evaluate Score: 0.9 Analysis Report: This reasoning chain can complete the task and reach the target correctly by executing its reasoning steps. The final result of the reasoning chain is 24, which is mathematically correct. Reasoning step 1: This step is a logical inference of the given task as it follows the rule of selecting two numbers and performing an operation to obtain a new number. In this case, 4 and 10 are selected, and the operation is multiplication (*). The computed new number is 40, and the remaining numbers are 5 and 11. This reasoning step is beneficial to the correct solution as it reduces the number of elements in the set and produces a new number. Reasoning step 2: This step is a logical inference of the previous step as it follows the rule of selecting two numbers and performing an operation to obtain a new number. In this case, 5 and 11 are selected, and the operation is addition (+). The computed new number is 16, and the remaining number is 40. This reasoning step is beneficial to the correct solution as it further reduces the number of elements in the set and produces a new number. Reasoning step 3: This step is a logical inference of the previous step as it follows the rule of selecting two numbers and performing an operation to obtain a new number. In this case, 16 and 40 are selected, and the operation is subtraction (-). The computed new number is 24, and there are no remaining numbers. This reasoning step is beneficial to the correct solution as it produces the final result of 24, which is the target number. Confidence score: 1.0