### **Step-by-Step Solution:**

1. **Organize the Data**: We have three detergents (A, B, C) and three water temperatures (Cold, Warm, Hot) with corresponding whiteness readings.

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| --- | --- | --- | --- |
| **Water Temp** | **Detergent A** | **Detergent B** | **Detergent C** |
| Cold | 57 | 55 | 67 |
| Warm | 49 | 52 | 68 |
| Hot | 54 | 46 | 58 |

1. **State the Hypotheses**:
   * **For Water Temperature**:
     + Null Hypothesis (H0): There is no significant difference in whiteness readings between different water temperatures.
     + Alternative Hypothesis (H1): There is a significant difference in whiteness readings between different water temperatures.
   * **For Detergent**:
     + Null Hypothesis (H0): There is no significant difference in whiteness readings between different detergents.
     + Alternative Hypothesis (H1): There is a significant difference in whiteness readings between different detergents.
2. **Conduct the One-Way ANOVA Test**: Given the data, we performed separate one-way ANOVA tests for water temperature and detergent.

### **Results:**

1. **ANOVA for Water Temperature**:
   * F-statistic: 0.60
   * p-value: 0.577

Since the p-value (0.577) is greater than the significance level (typically 0.05), we fail to reject the null hypothesis. This indicates that there is no significant difference in whiteness readings based on water temperature.

1. **ANOVA for Detergent**:
   * F-statistic: 6.74
   * p-value: 0.029

Since the p-value (0.029) is less than the significance level (0.05), we reject the null hypothesis. This indicates that there is a significant difference in whiteness readings based on the detergent used.