import numpy as np

# Observed frequencies from the table

observed = np.array([

[112, 94, 130], # Passed

[60, 79, 85] # Failed

])

# Calculate row and column totals

row\_totals = observed.sum(axis=1)

col\_totals = observed.sum(axis=0)

grand\_total = observed.sum()

# Calculate expected frequencies

expected = np.zeros(observed.shape)

print(expected)

for i in range(observed.shape[0]):

for j in range(observed.shape[1]):

expected[i,j] = (row\_totals[i] \* col\_totals[j]) / grand\_total

# Calculate chi-square statistic

chi\_square = np.sum((observed - expected)\*\*2 / expected)

# Calculate degrees of freedom

df = (observed.shape[0] - 1) \* (observed.shape[1] - 1)

# Print results

print("Expected Frequencies:")

print(expected)

print(f"\nChi-Square Value: {chi\_square:.4f}")

print(f"Degrees of Freedom: {df}")

significant\_value = 5.9915

if (chi\_square > significant\_value):

print("alternate hypothetis both variables are dependent")

else:

print("null hytothesis both variables are not dependent")