```python
# Z-test
# A manufacturer claims that the average weight of packets is 50 g.A random sample of 36 packets has
# an average weight of 51.2 g with a known σ = 3 g.At a 5% significance
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import numpy as np
from math import sqrt
from scipy.stats import norm
# Given data
x_bar = 51.2   # sample mean
mu_0 = 50      # population mean
sigma = 3      # population standard deviation
n = 36         # sample size
# Calculate Z-statistic
z_stat = (x_bar - mu_0) / (sigma / sqrt(n))
# Two-tailed p-value
p_value = 2 * (1 - norm.cdf(abs(z_stat)))
print(f"Z-statistic: {z_stat:.3f}")
print(f"P-value: {p_value:.4f}")
alpha = 0.05
if p_value < alpha:
    print("Reject Null Hypothesis → Mean is significantly different from 50 g.")
else:
    print("Fail to Reject Null Hypothesis → No significant difference.")
```

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Z-statistic: 2.400
P-value: 0.0164
Reject Null Hypothesis → Mean is significantly different from 50 g.
```