Answer on Question #71944 – Math – Statistics and Probability

Question

A soft- drink vending machine is set to dispense 6 ounces per cup. If the machine is tested nine times, yielding a mean cup fill of 6.2 ounces with a standard deviation of 0.15 ounce, is this evidence at the level of significance 0.05 that the machine is overfilling cups?

Solution

$H_0: \mu = 6$.
$H_a: \mu > 6$.
Test statistic: $t = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{6.2 - 6}{0.15/\sqrt{9}} = 4$.
Degrees of freedom: $df = n - 1 = 9 - 1 = 8$.
P-value: $p < 0.05$.
Since P-value is less than 0.05 we should reject the null hypothesis.
There is sufficient evidence that the machine is overfilling cups.

Answer: There is sufficient evidence that the machine is overfilling cups.