## Contest Problem Set 12213 Target Round Problem 7

## **David Sun**

Math League, LLC





Identify the objective.

At a certain restaurant, if a customer tips x percent, the bill is supposed to be increased by (x+8)% to account for tip and sales tax. However, it was found that the automatic tipping system used by the restaurant was using a faulty method: it first increased the bill by x percent, and then increased the resulting amount by 8 percent. For a bill of \$60 before the tip and the tax, the final cost was 72 cents more than it should have been. How much did the customer tip, in percent?



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Now we can solve for x.





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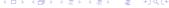
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$$x = 0.72 \cdot \frac{1}{0.08} \cdot \frac{5}{3} = \frac{0.72}{0.24} \cdot 5 = 3 \cdot 5 = \boxed{15}$$



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## Concepts

- percents
- single variable equations



