



Problem of the Week

Problem B

Sweet Profit

Problem

In addition to making great contests and awesome problems, the CEMC (Centre for Education in Mathematics and Computing) produces amazing POTW cookies. We sell cookies with POW. This year's batch has finally arrived. Each bag contains 20 cookies.

You purchase four bags of cookies for \$20 all together.



- While munching away on these delicious morsels, you wonder what an individual cookie is worth. Find the cost of a single cookie; show each step of your calculation.
- It only costs the CEMC 15 cents to make a single POTW cookie. (Any profits are used to support fun math activities.) How much profit was made from your total purchase?
- Alain, John and Rob work for the CEMC and are able to buy cookies at cost. They want to sell cookies to raise money for an overnight problem solving event. They need to raise \$1440. How many customers (who buy the same amount of cookies as you) do they need in order to reach their goal?

Solution

- Since four bags cost \$20, one bag costs $\$20 \div 4 = \5 .
Since each bag contains 20 cookies, each cookie costs $\$5 \div 20 = \0.25 , i.e., 25 cents.
- If the CEMC pays 15 cents per cookie, they make a profit of $25 - 15 = 10$ cents per cookie, or $20 \times 10 \text{ cents} = 200 \text{ cents}$, or \$2.00 per bag. Thus, if you buy 4 bags, they make a total of \$8.00 profit from your purchase.
- Since each customer will bring a profit of \$8.00, Alain, Rob and John will need a total of $\$1440 \div \$8 = 180$ customers to reach their goal. The cookies are so good that this should be no problem at all.

