



## Problem of the Week

### Problem B and Solution

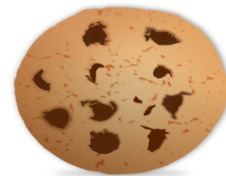
#### Sarah's Bakery

#### Problem

Sarah is opening her own bakery, and she needs help pricing her giant chocolate chip cookies. In order to price her cookies, she first needs to know what the ingredient cost is for each cookie.

The following table provides the list of ingredients used, the cost to purchase the ingredients, and the amount of each ingredient required for a batch of 12 cookies.

Ingredient	Cost of Ingredient	Amount per Batch	Cost per Batch
Brown Sugar	\$2.90 for 5 cups	1 cup	
Eggs	\$3.00 for 12	1	
Chocolate Chips	\$9.48 for 3 cups	$\frac{1}{2}$ cup	
White Sugar	\$2.48 for 10 cups	$\frac{1}{4}$ cup	
Butter	\$4.98 for 2 cups	$\frac{3}{4}$ cup	
Flour	\$9.00 for 40 cups	$2\frac{1}{4}$ cup	



- Complete the information in the table by finding the cost of each ingredient for one batch of 12 giant chocolate chip cookies. Round your answers to the nearest cent.
- Rounded to the nearest cent, what is the cost of the ingredients for one giant chocolate chip cookie?
- What are some of the other costs that Sarah needs to take into consideration when pricing her cookies?

#### Solution

- One way to solve this problem is to find the unit rate for each ingredient, and then multiply the unit rate by the amount per batch for the ingredient to find the cost per batch.

The completed table is below. We have added a column to the table to show the unit rate calculation for each item.



Ingredient	Cost of Ingredient	Unit Rate	Amount per Batch	Cost per Batch
Brown Sugar	\$2.90 for 5 cups	$\frac{2.90}{5} = \$0.58$ per cup	1 cup	\$0.58
Eggs	\$3.00 for 12	$\frac{3.00}{12} = \$0.25$ per egg	1	\$0.25
Chocolate Chips	\$9.48 for 3 cups	$\frac{9.48}{3} = \$3.16$ per cup	$\frac{1}{2}$ cup	\$1.58
White Sugar	\$2.48 for 10 cups	$\frac{2.48}{10} = \$0.248$ per cup	$\frac{1}{4}$ cup	\$0.06
Butter	\$4.98 for 2 cups	$\frac{4.98}{2} = \$2.49$ per cup	$\frac{3}{4}$ cup	\$1.87
Flour	\$9.00 for 40 cups	$\frac{9.00}{40} = \$0.225$ per cup	$2\frac{1}{4}$ cup	\$0.51

NOTE:

To find the cost per batch for the butter, we can use the fact that  $\frac{3}{4}$  is the same as  $3 \times \frac{1}{4}$ . Therefore, the cost per batch is  $\$2.49 \times 3 \times \frac{1}{4} \approx \$1.87$ .

To find the cost per batch of the flour, we can use the fact that  $2\frac{1}{4}$  is the same as  $2 + \frac{1}{4}$ . Now, we can find the cost of 2 cups of flour and the cost of  $\frac{1}{4}$  cup of flour, and then add these costs together.

The cost of 2 cups of flour is  $\$0.225 \times 2 = \$0.45$ , and the cost of  $\frac{1}{4}$  cup of flour is  $\$0.225 \times \frac{1}{4} = \$0.05625$ . Therefore, the total cost of the flour, rounded to the nearest cent, is \$0.51.

- (b) The cost of the ingredients for one giant chocolate chip cookie is equal to the sum of the costs for one batch of 12 cookies, divided by 12. The total cost for one batch of 12 cookies is

$$\$0.58 + \$0.25 + \$1.58 + \$0.06 + \$1.87 + \$0.51 = \$4.85$$

Thus, the cost of the ingredients for one cookie is  $\$4.85 \div 12 \approx \$0.40$ .

- (c) Some of the other costs that Sarah needs to take into consideration include labour (if she has other employees), rent (or mortgage), utilities, and equipment.