

Name:

The BIG Baking Theory Final Report

You helped Bobby's Bread Bakery business grow by keeping cost of materials low, deliveries on time, and quality high. In fact, the bakery is doing so well, it will start making muffins for retail sale in grocery stores nationwide. The first type of muffin they will produce is blueberry. You are in charge of finding the raw materials needed for the first wave of muffins.

Sugar

Question 1

One of the most important ingredients for Bobby's blueberry muffins is sugar. Sugar Wholesale sells 25-pound bags of sugar for \$12.50 and charges \$10 shipping per order. Write an expression to show the cost. Define your variable and explain how you found the expression.

Question 2

Sugar Warehouse's competitor is Sugar Seller. Sugar Seller charges shipping for each bag of sugar. This expression shows the cost to buy and ship sugar from Sugar Seller.

$$10.90x + 3x$$

In a sentence, describe what the expression means in terms of dollars, bags of sugar, and shipping.

Question 3

Simplify Sugar Seller's expression. Explain how you found the answer.

- a. With the gratuity and no generous donor, how much will the event cost per person?

Question 4

Sugar comes in different grades, based on weight. Sugar Sellers uses the following expression to determine the grade of sugar.

x^2+4 , where x represents the weight, in ounces, of 1 cup of sugar

If 1 cup of sugar weighs 7 ounces, what is the grade? Explain or show how you found the answer.

Question 5

Sugar Warehouse, ships from one warehouse. The following statement describes how long it takes to receive an order from Sugar Warehouse.

Divide the total miles by 500 miles per day and add 4 days to prepare and pack the order.

- a. Write an expression to determine the time for delivery.

- b. Explain what the variable in your expression represents.

- c. A co-worker asks you for the numerical value of the variable in the expression. Write an answer to your co-worker's question.

Blueberries

Question 6

Provider	Cost to Purchase and Ship
Blueberry Farms	$2(3x + 1)$
Berry Land	$2(x + 2.5x)$
Sunshine Blues	$3x + 1.5x$

You must also find fresh blueberries for Bobby's blueberry muffins. Three farms provide expressions about the cost to purchase and ship their blueberries. In each expression, x represents the quantity of blueberries in quarts.

Simplify each expression. Explain which property you used to simplify each expression.

Question 7

Provider	Cost to Purchase and Ship
Blueberry Farms	$2(3x + 1)$
Berry Land	$2(x + 2.5x)$
Sunshine Blues	$3x + 1.5x$

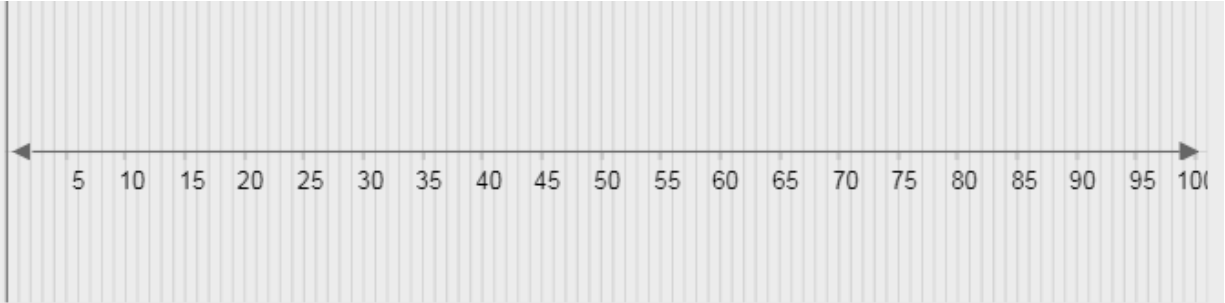
A fourth company, Blueberry Lane, offers their berries at the rate of $2(2x + 1.5x)$. Which vendor offers the same rate? Show or explain how you found the answer.

Question 8

You finished your research, but Bobby (your boss) has some additional requirements to save money and time. Bobby says you can spend \$12 for each 25-pound bag of sugar and \$10 for shipping and your total bill should be less than or equal to \$610.

- Write an inequality to represent this requirement, where x represents the number of bags of sugar.

- b. On the number line, show the number of bags of sugar you can buy. (Draw the beginning and end points to make a ray that shows the range of bags you can buy.)



Question 9

You select Blueberry Farms as the vendor for blueberries. You previously discussed the cost to be \$6 per quart plus a flat shipping rate of \$2 per order. Blueberry Farms is willing to waive the shipping charges if you will pay \$6.50 per quart. If you order 30 quarts, which rate is the better deal? Show or explain how you found the answer.

Packaging

Question 10

Sugar Seller has promised to meet the following schedule for packing and delivering an order.

$$\frac{x}{500 \text{ miles/day}} + 4 \text{ days} = y$$

where x equals the total miles between the Sugar Seller and the bakery and y equals the total number of days from the day the order is placed to the day it arrives at the bakery.

At what distance will it take 8 days to get the sugar? Show or explain how you found the answer.

Question 11

A new buyer wants to know approximately how many blueberries are in each muffin.

Bobby makes muffins of different sizes. The size of the muffin is measured by its diameter. The number of blueberries is 1 less than the diameter (in inches) of the muffin multiplied by 5.

- a. Write an equation for the number of blueberries in the muffins, where y is the dependent variable and x is the independent variable. Tell what each variable represents.

- b. Complete the table to show the number of blueberries in 5 different sized muffins.

Diameter (Inches)	Number of Blueberries
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<input type="text"/>	<input type="text"/>
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c. Graph the information from your table.

