

General directions for lesson

Place original ticket on the overhead for students to view.



Menu Math

Transparency 1

1. $h + f =$
2. $c + f + s =$
3. $7f =$
4. $3h + c + f + 3x =$
5. $4c + 3f + s + m + l =$
6. $3c + 5f + 6s =$
7. $6f + 4s =$
8. $8h + 4f + 6x =$
9. $5c + 2h + m + 2s =$

Approximately 5 minutes

Put a bill on the overhead and say; I went to a restaurant with friends and got a bill and I don't understand it. They said I owed this much and all I had was all these letter on the bill with the amount I owed. Today you are going to help me figure out this bill and break it down to see how much every individual owes.

In order to do this we are going to work with menus and ordering food in a restaurant.

- ◆ Ask students how often they go to a restaurant
 - When you go to a burger restaurant, what do you order? Write your order down.
 - Discuss a couple orders with the class.
- ◆ Handout a copy of the menu to each student

Place the menu on the overhead and pass out individual copies to each student. Go over.

Approximately 25 minutes for solving and discussion.

1. Display the transparency master at the left on the overhead projector as the students get out paper. Use a paper to cover the formulas, revealing only one at a time.

2. Slide the paper down to reveal the first variable. Have the students

- ▶ Copy the problem
- ▶ Write the problems in words
- ▶ Substitute in the value and solve

Questions to ask:

- Why did you decide that the h stands for hamburger?
- How are you doing this problem?
- Why did you solve it this way?
- Why do you multiply before you add?
- What operation would you use for $7f$?
- Does anyone have a different answer?
- Is there any other way to write this question?

Handout to each group.

1. I'd like four hamburgers, six orders of French fries, a large soda, two medium sodas, and an extra large soda.
2. I want three cheeseburgers, one hamburger, a small soda, and another hamburger.
3. I want a cheeseburger and an order of fries with a medium soda, my son wants two hamburgers an order of fries, and a medium soda, my daughter wants a cheeseburger, an order of fries and a large soda. Oh yes, my husband wants two orders of fries, a cheeseburger and a large soda.
4. Let's see.... I think I'd like three hamburgers and a cheeseburger, three fries, a large soda, two medium sodas, and an extra large soda. Add another order of fries to that, and make one of those hamburgers another cheeseburger.

Example:

$$\begin{aligned} h + f &= \\ \text{hamburger plus fries equals} \\ \$1.85 + \$ 1.05 &= \$ 2.90 \end{aligned}$$

3. After discussing the first problem, uncover the rest of the problems and pass out the handout to the students. for the students to complete in groups.

4. Choose a student or draw popsicle sticks to assign students to put the equations on the chalkboard.

5. As equations are placed on the chalkboard or on the overhead by students, have class discussion.

- ▶ Ask students if they agree with the answers placed on the board or if they disagree.
- ▶ Ask if they solved in a different way, if so why?

Approximately 15 minutes for solving and discussion.

1. Tell the students the following are orders place by people at a restaurant. The students are taking the orders.
 - ▶ Write the order in equation form
 - ▶ Solve
 - ▶ Questions:
 - Why did you write it the way that you did?
 - Why did you choose to use that variable?
2. Have groups put problems on overheads.
3. Discussion: Why are some of your orders the same and some are different?

Approximately 10 minutes for solving and

Transparency 5

Write out the restaurant order in words for each of the following algebraic expressions.

1. $3x + h + c$
2. $(h + 2f) + (2c + x)$
3. $(h + f + m) + (h + f + m) + (h + f + m)$
4. $(2c + f + x) + (2h + f + x)$

Different members of the same family placed the following orders. Simplify the orders for the cook and solve.

1. $(2h + f) + (c + f + s) + (h + m + f) =$
2. $(x + c) + (2f + c + x) + (m + 2f + c) =$
3. $(h + x + f) + (h + x + f) + (h + x + f) =$
4. $(3h + m) + (2c + f + m) + (c + m + 2f) =$
5. $(4c + f + m) + (3h + f + m) - h + c =$
6. $(3h + 2f + x) + (c + f + m) - (h + m + f) =$
7. $(5h + 3f + 2m) - (h + f + m) + (c + 2x) =$
8. $(3h + f + x) + (h + f + m) - (h + f) + c =$

discussion.

1. Groups will be handed a large piece with two numbers at the top, either 1 and 3 or 2 and 4.
2. Place transparency on the overhead.
3. Have groups write orders in words for each algebraic expression.
4. Post answers around the room and go over.

Now that you know how the orders are written up, I want you to look at the following orders and simplify them for the cook.

The cook does not cook one hamburger at a time but cooks many.

Then solve the equation for the cashier.

Example:

$$\begin{aligned}(2c + f) + (h + 2f + m) + (c + h + f + l) &= \\ 3c + 2h + 4f + l + m &= \\ 3(\$2.15) + 2(\$1.85) + \$1.55 + \$1.25 &= \\ \$6.45 + \$3.70 + \$1.55 + \$1.25 &= \$12.95\end{aligned}$$

1. After discussing the problem, uncover the rest of the problems for the students to complete in groups.
2. Have the students begin working on these problems in their groups.
3. Choose a student or draw popsicle sticks to assign students to put the equations on the chalkboard.
4. As equations are placed on the chalkboard by students, have class discussion.
 - ▶ Ask students if they agree with the answers placed on the board or if they disagree.
 - ▶ Ask if they solved in a different way, if so why?

Place original handout of ticket on the overhead for the students to solve.

Approximately 7 minutes

Closure:

- ▶ Put the original ticket back on the overhead. Have each group copy and solve.
- ▶ Discuss, make sure all students agree on final answer.