

# Who Loses in the Sandwich Wars?



**You do.** Make a box-and-whisker plot to see how much fat is in the fast food teens love.

Last spring, KFC introduced the Double Down: bacon, cheese, and sauce between two pieces of fried chicken instead of bread. Also in there: 32 grams of fat. Then Friendly's announced the Grilled Cheese Burgermelt—two grilled-cheese sandwiches with a burger between them (79 grams of fat, about a full day's worth for a teen). Before summer was done, Denny's unveiled the Fried Cheese Melt (34 grams of fat), a grilled-cheese sandwich stuffed with fried mozzarella sticks. Restaurants keep trying to top each other to win your business, but at what cost to your health?

fast-food eating," Dr. Madelyn Fernstrom, a nutritionist at the University of Pittsburgh, told *MATH*. "It's promoting high fat-and-calorie combinations."

What if you really, really want to try one of these crazy creations? "Share it with someone else," Fernstrom suggested. She also noted that many fast-food chains now offer more healthful meals, such as grilled chicken and salads.

Now make a *box-and-whisker plot* to compare grams of fat in different restaurants' quarter-pound cheeseburgers, a fast-food favorite. Unboxing the facts may help you make smart decisions when it's time to eat.

"These are the extremes of

—by Carli Entin

**Grams of Fat in Fast-Food Restaurants' ¼-Pound Cheeseburgers**

BURGER	GRAMS OF FAT
Wendy's Classic Single With Cheese	19
McDonald's Quarter Pounder With Cheese	36
Burger King Whopper With Cheese	43
Burger King Double Cheeseburger	26
Hardee's Little Thickburger	39
Jack in the Box Jumbo Jack	38
Dairy Queen ¼-Pound Grillburger With Cheese	28

## Box-and-Whisker Plots

A box-and-whisker plot is a graph that allows you to quickly examine a set of data: Are most of the numbers high or low? How far is it from the least value to the greatest? Here's how to make one:

→ First, collect your data.

**EXAMPLE:** Here are the number of fast-food meals eaten by each of our friends in one month: 3, 25, 13, 14, 11, 7, 17, 9, 10, 5, 16

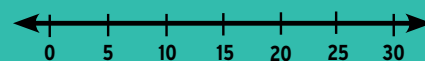
→ Write the data set in order from least to greatest. Find the *median* (middle number): 3, 5, 7, 9, 10, 11, 13, 14, 16, 17, 25

→ Label the median **Q2**. Next find the median of the numbers less than **Q2** and label that **Q1**. Find the median of the numbers greater than **Q2** and label that **Q3**.

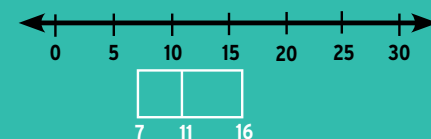
3, 5, **7**, 9, 10, **11**, 13, 14, **16**, 17, 25  
Q1 Q2 Q3

→ The Qs stand for the four *quartiles* (sections) into which the data is divided.

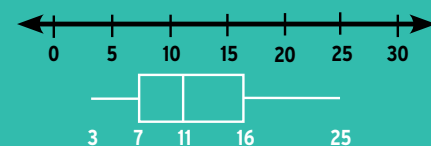
→ Now we can make our plot. Make a number line that extends beyond both the least and greatest values of your data set:



→ Draw a box with ends that line up with Q1 and Q3. Draw a line through the box to show Q2.



→ Next, draw "whiskers" out to the least and greatest values of your data set.



### WHAT TO DO

Read "Box-and-Whisker Plots" above. Use that information and the data in the chart on page 6 to make a box-and-whisker plot. We'll help you in our questions.

**1a.** Order the data set from least to greatest:

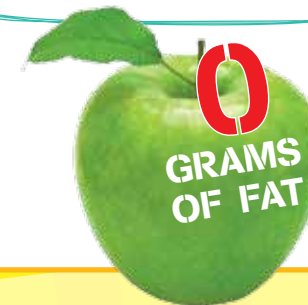
**b.** What is the median (**Q2**) of the data set?

**c.** What is the median of the numbers less than **Q2** (**Q1**)?

**d.** What is the median of the numbers greater than **Q2** (**Q3**)?

**2** Use your answers to #1 to make a box-and-whisker plot on separate paper.

**3** On these graphs, we see that most of the data is grouped in the box. We also see the *range* of data, from whisker to whisker. To find the range, subtract the least value from the greatest:



**4** What can you conclude from your box-and-whisker plot?

- Ⓐ Cheeseburgers are a healthful alternative to the Double Down.
- Ⓑ Many ¼-pound cheeseburgers have similar amounts of fat.
- Ⓒ Cheeseburgers are fattier now than they were 10 years ago.

➔ **WRITE NOW:** On separate paper, write a letter to a favorite restaurant with any suggestions you have that would make its menu more healthful.