How greasy are different brands of crisps?

Research Information

Crisp science is big business! In America the FDA (Food and Drug Administration) does some very important tests so that the food people eat-including crisps- is accurately labelled. We may not have access to the FDA's expensive machines, but we can still do some pretty cool tests without them. For this science fair project, let's assume you're a scientist working for the FDA and that you need to double-check the fat content (or "greasiness") of several brands of crisps. If you don't have any specialised machines, then how do you find out how much grease your crisps have? One thing we could try is to simply mash up a crisp and look at how much grease comes out. Paper absorbs grease really well, so we can use it as our "instrument" to help us quantify-or find a number that describes—how much grease is in an individual crisp. But wait a minute. Not all crisps are the same size! Even crisps from the same bag come in different sizes, and of course, different brands usually make differently sized crisps. If we were to test a really big crisp, we would get more grease than if we tested a small one, and this certainly wouldn't describe how much grease is in a single serving of chips very well. So what's a good way to determine how much grease is in your crisps? We can calculate a useful number known as an average to describe how much grease we have in our chips. We can find the average by adding together all of the grease we find divided by the number of crips we used to get that much grease.

Materials

- Several bags of crisps (different brands)
- Something to write with
- Rolling Pin
- Wax Paper, plastic wrap, or large sandwich bag
- Graph paper
- Tape
- Window
- Sunlight

Method

- Find the serving size listed in the nutrition facts for each brand of crisps.
- Write down the serving size for each brand. If we're trying to determine if a serving of one brand of crisps is greasier than another, why do you think recording the serving size for each brand of crisp is important?
- Find the total fat per serving for each brand of crisps, in grams. Record this number.
- Pick a brand of crisps. Count out a number of crisps equal to the serving size for that brand. Make sure to pull crisps randomly from the bag. Don't pick big or small ones, specifically. If we want to take an accurate average, why do you think this is important?
- Place the crisps on a sheet of graph paper. Record the amount of crisps you pulled out for this brand of crisps.
- Lay the wax paper, plastic wrap, or large sandwich bag over the crisps.
- Use this time to formulate your hypothesis. Which brand of crisps do you think will be the greasiest?
- Roll over the crisps several times with the rolling pin, making sure they're totally pulverized.
- Remove the graph paper and throw away the crisps. Tape the graph paper to a window.
- Count the number of squares that are translucent from the grease. (Hint: make a check mark in each square you're counting. You can use a pencil, pen, or grease pencil if you're marking the graph paper itself. Only count squares that are ½ full or more. Record the number of squares you count for this brand.
- Repeat steps 4-10 for each brand.
- The average grease per serving size is simply the amount of squares you counted for each brand. To calculate the average grease per crisp, divide squares counted by the number of crisps tested. Record this number for all brands in your data chart.
- Draw a graph like the one below comparing the listed fat value per serving for each brand of crisps and the number of squares you counted when you did the experiment. Does the data surprise you, or is it what you expected? What does it suggest about the accuracy of your measurements?

A square should be greater than 1/2 filled with grease to count.

Disregard

/Count