



Unless you have been living under a rock you have probably heard of the coffee shop Starbucks. Starbucks serves coffee drinks, beverages and treats in locations all over the world. Have you ever been to a Starbucks? Do you have a favorite Starbucks drink? I like many of their drinks, but I never know which drinks are healthier than others. I also wonder if the type of milk I get, or whether or not I include whipped cream, really makes a nutritional difference. In this activity we will take a closer look at these questions, but first let's estimate how many drinks Starbucks sells each year.

Doing some online research I have found the following information:

- Roughly 75% of Starbucks sales are from beverages.
- In 2010 Starbucks had about \$10,700,000,000 in sales.
- A typical drink at Starbucks costs about \$2. I chose \$2 because I am guessing that Starbucks sells more of their cheaper drinks than their more expensive drinks. I also picked it because it is a lot easier to work with than two dollars and change.

1. Using the above information find a rough estimate for the number of drinks that Starbucks sells in one year. Show how you found your estimate below.

Starbucks's retail sales mix, with roughly 75% sales from coffee products and drinks, and annual sales in 2010 of \$10.7 Billion, and a weighted average price of a cup of coffee being around \$2, we can calculate that Starbucks roughly sells 4 Billion drinks every year.

$$10,700,000,000 \times 0.75 / 2 = 4,012,500,000$$

In the table below you will find nutritional information on some popular Starbucks drinks. The nutritional information below represents a 16 oz drink with whole milk.

Drink	Calories	Fat (grams)	Carbs (grams)
Iced Coffee with Milk	50	2.5	3
Hot Chocolate	300	9	47
Caffé Latte	220	11	18
Mocha Frappuccino Blended Beverage	260	3.5	54

2. According to the table, which drink appears to be the healthiest of the four choices? Why?
The iced coffee has the least calories, fat and carbs.

3. According to the table, which drink appears to be the least healthy of the four choices? Why? Is a certain type of beverage the healthiest choice for everyone? For every diet?

The hot choc. and the latte both stand out as being the unhealthiest. If you are restricting your calories then the hot choc. is the unhealthiest. If you are restricting your grams of fat then the latte is worst.

4. I see the fat content in each drink, but I am not really sure if that is a lot of fat or not. After doing some additional research I found that based on a 2000 calorie diet, one should have a maximum of 65 grams of fat per day. About what percent of your day's fat comes from each of the drinks in the table (if you have not yet learned about percent or haven't used them in a while, then try finding a rough estimate or express relationship as a fraction)?

A quick way to find the percent of your day's fat for each item is to take fat grams and divide them by 65. For example $2.5/65 = .03846$ or about 4%. Students can find the percent many other ways, possibly using an equation, proportion or ratio table. Depending on age, ability, prior knowledge kids might just need to estimate the percent.

Drink	Fat (grams)	% of daily
Iced Coffee with Milk	2.5	About 4%
Hot Chocolate	9	About 14%
Caff� Latte	11	About 17%
Mocha Frappuccino Blended Beverage	3.5	About 5%

5. The data in the table gives nutritional information for 16 oz drinks. Starbucks also sells a "tall" 12 oz drink. Assuming that the amount of calories, fat and carbs are proportional to the number of ounces in a drink, about how many calories, grams of fat and grams of carbs should you expect in a 12 oz hot chocolate?

There are many ways to do this. 12 oz happens to be $\frac{3}{4}$ of 16 oz, so we need to find $\frac{3}{4}$ of 9. You can multiply by $\frac{3}{4}$ or 0.75. You can also take $\frac{1}{4}$ (divide by four) to get $\frac{1}{4}$ and then multiply that by three. 9 divided by 4 is 2.25. Then multiply by 3 to get $\frac{3}{4}$ of 9, which is 6.75 or $6\frac{3}{4}$

Besides what type of drink I order, I also wonder if I should worry about the type of dairy products I have added to my drink. Does it really matter what type of milk I have in my Starbucks drink? What about the whipped cream? To get a better idea I have gathered data on two different popular Starbucks beverages.

In the table below you will find the nutritional information for a 16 oz (they call it a “grande”, I call it a medium) Starbucks Caramel Frappuccino.

Dairy:	Calories	Fat (grams)	Carbs (grams)
Nonfat Milk	240	0	56
2% Fat Milk	250	2	56
Whole Milk	260	3	55
Whole Milk with Whipped Cream	390	15	61

In this table you will find the nutritional information for a 16 oz Caffe Mocha.

Dairy:	Calories	Fat (grams)	Carbs (grams)
Nonfat Milk	220	2.5	42
2% Fat Milk	260	8	41
Whole Milk	290	12	40
Whole Milk with Whipped Cream	360	19	42

6. What do you notice? Which dairy item has the greatest impact on the nutritional value of your drink? How many calories, grams of fat and carbs does this dairy item add to the Frappuccino? The Mocha?

The whipped cream is the worst! The whipped cream adds more fat to the frapp than the mocha and we think this is because there is more whipped cream added to a frapp than the mocha, but this is only speculation.

In the Frapp the whipped cream adds 130 calories, 12 grams of fat and 6 carbs.

In the Mocha the whipped cream adds 70 calories, 7 grams of fat and 2 carbs.

7. I recently stopped getting whipped cream and whole milk in my Caffè Mocha. I now get a Caffè Mocha with 2% milk and no whipped cream. I get this drink about three times per week. How many grams of fat have I eliminated from my diet each week by not getting whole milk and whipped cream? How many grams of fat am I eliminating from my diet per year by making this dietary change?

I have eliminated 11 grams per day, 33 per week and 1716 grams of fat per year!

8. One of the unhealthier options on the Starbucks menu is the “venti”, or large, Peppermint White Chocolate Mocha with whole milk and whipped cream. It has 700 calories, 27 grams of fat and 99 carbs. About what percent of a typical daily 2000 calorie, 65 grams of fat and 300 grams of carbs diet does this drink make up?

Calories: $700/2000$ is $350/1000$ which is $35/100$ which is 35%

Fat: $27/65$ is about 42%

Carbs: $99/300$ is $33/100$ or 33%

Avoid this drink if you care about your health! It makes up about $1/3$ of your daily calories, fat and carbs!

9. Now that you have completed this activity what advice would you give a friend who is health conscious and enjoys getting drinks at Starbucks? What should you (or your friends) keep in mind so that you can still enjoy Starbucks while making healthy choices?

Look at nutritional info when selecting drinks. Consider getting a smaller size, maybe getting a coffee or a blended frapp. Avoid the whip cream and the whole milk. Try to use 2% or non fat milk. It can make a huge difference in your fat and calorie intake.

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Sources: http://www.starbucks.com/menu/catalog/nutrition?drink=all#view_control=nutrition&drink_clear=on
<http://www.quora.com/Starbucks-Coffee-How-many-cups-of-coffee-does-Starbucks-sell-each-year>