Mathematics for Work and Everyday Life

Minds On: Gross Profit Calculation

Cosimo Dilorio, Mathematics Teacher: The course is a grade 11 math course. Where we are today is towards the end of the semester. We've covered most of the curriculum, which has to do with math essentials for them to be effective in the workplace, and at home. The goal today is, to calculate this right here, gross profit. And believe it or not, so far you're able to do half of this calculation. Today we're going to extend that a little further and we're going to be able to calculate gross profit. We're going to talk about it, find out what it means, why it's important.

Student: Well, math is a major thing, because it's everywhere, we need it for everything, and if you don't know math, it's hard to work in our society.

Cosimo Dilorio: On the left side here should be information that you should already know that we've talked about early on in the semester. Talked about how individuals get paid. How they're able to bring home their net pay. What are the two main components of calculating how much money you earn?

Student: Numbers of hours.

Cosimo Dilorio: Number of hours you?

Student: Work.

Cosimo Dilorio: Work in a week, and you multiply it by the?

Student: The rate of the work.

Cosimo Dilorio: How much you get paid, usually per hour. The things that the students have been learning in this course relating to finances are, to name but a few, how to earn pay, different ways of calculating pay, calculating net pay, calculating interest expense, or the whole borrowing and financing aspect. So if you are over 18 and you're at minimum wage and you work 40 hours a week, you have?

Student: $400.00.

Cosimo Dilorio: $400.00. Now, is this how much the pay cheque is going to be?

Student: No.
Cosimo Dilorio: No. Because we know that there are?

Student: Taxes.

Cosimo Dilorio: Those deductions. What's the biggest one? Let's do the biggest one. Enrique?

Student: Federal and Provincial taxes.

Cosimo Dilorio: Federal and Provincial taxes, I'm just going to say taxes.

Student: How the gross pay, how a cheque works out, deductions, that's all stuff I learned.

Cosimo Dilorio: And that's what we call, what kind of pay? Not gross pay, but?

Student: Net pay.

Cosimo Dilorio: Net pay. And that's what we also call your purchasing power. That's the amount of pay you have, maybe at your age to pay off your cell phone bill, or buy some downloaded tunes, or whatever. But in your future, your purchasing power will be to pay your rent, or your mortgage, your clothing, food, insurance, stuff like that. We have been operating this store for a few months now, haven't we? My question to you is, does the store get paid?

Student: No.

Cosimo Dilorio: No. So how do businesses get paid?

Student: They get paid for how much products they sell.

Cosimo Dilorio: That's right. The more a business sells…

Student: The more they make.

Cosimo Dilorio: …the more they make. So what is gross profit? For a business, gross profit is almost the same thing as gross pay for people. It is the amount of money they earn doing what they do. This is what you earn doing what you do, whatever it is. This is what the store earns. If you're a business operating a store, what do you think is the biggest expense?

Student: Wouldn't the products they buy be one of them?

Student: Yes, products selling, I think, is also part of it.
Student: There's rent. There's food. And there's mortgage.

Student: So there could be candies and stuff.

Cosimo Dilorio: Most, if not all, of the students in the class have different learning styles, 14 students with probably 14 learning styles. My strategy is to get to know them as well as you can in the first week of the semester, have quick one on ones with them, ask them what interests them, what doesn't interest them, and try to incorporate some of their likes, or avoid their dislikes, when you're teaching any lesson. What do you think is probably the biggest expense for most businesses operating a location?

Student: Rent.

Cosimo Dilorio: Rent is probably one of the biggest.

Student: The merchandise that you sell.

Cosimo Dilorio: This is the cost of the merchandise they sold. But excellent, maybe you did answer the question, what is a business' biggest expense? Their biggest expense is the stuff that they buy, I would agree with you. Denise, go ahead.

Student: I think one is damage fees, if something gets damaged, they can't re-sell it.

Cosimo Dilorio: Very good. It wasn't one of the three, but you're absolutely right. We call it inventory shrinkage, or inventory damage, and that is an expense. You know what, why not, let's include it. Put it on number three, inventory damage. I like it. The one I had in my mind, and again, hey guys, when you went to the store and you finished your shift, did I have to cut you a pay cheque? You would have liked that, wouldn't you? So what do you think I was getting at? The two main ones in any business are rent and?

Student: The cheque.

Cosimo Dilorio: Wages, pay cheques, yes. Now, that's what we call net profit, and here's your thinking question. Is net profit always less than gross profit? Yes. Always. Is net pay always less than gross pay? Yes. We are subtracting. And finally, what is the purchasing power of the store that week if they want to, I don't know, buy a new cash register, or if they want to buy something to spruce up the store, how much money do they have left over?

Student: $20.00.
Cosimo Dilorio: $20.00, that is the purchasing power of the store.

**Action: Inventory Count**

Cosimo Dilorio: I think learning any kind of Financial Literacy concept is important, because no matter what pathway a student chooses in life, I think they're going to be confronted with the money issue. They have to manage their finances, and at any grade level you can teach them things that will help them be more comfortable with that later on in their lives. And here's the question we're going to try to answer today. If we were to sell everything on that table in the back, how much would the gross profit be for the school store? If we're going to calculate the gross profit of every product if we were to sell all of it, and then we'll arrive at the total by adding up all these boxes. Remember, why is it important that you be 100 percent accurate for an inventory count?

Student: So you can keep everything in order.

Cosimo Dilorio: Well, yes, that's what I'm getting at. If you make a mistake with inventory, let's say, instead of putting 10 binders, on your count sheet you put 100 binders, how is that going to affect your calculation? Are you going to show more gross profit, or less gross profit?

Student: Less.

Student: More.

Student: More.

Cosimo Dilorio: More. And you're going to be giving wrong information. The most important thing is to be accurate, stay focused. That's why most inventory counts are done in teams. Do you remember? Teams of two, one person recording another person counting, just to keep the focus going. There might be something on here, does that mean it's on the table? No. So what are you going to put for quantity? Zero. Could there be something on the table that's not here?

Student: Yes.

Cosimo Dilorio: Yes. That's why, in real life, when you're given a count sheet, you don't treat it as, oh, it must be this. If you're given a count sheet,
you have to ask yourself, oh, could there be more, or could there be less than what's on the sheet, right? How much will the store make if we sold everything? Okay? And I think that's it. We'll get into teams now.

(Student discussion.)

Cosimo Dilorio: Good, you checked the box. As the students are doing their inventory, I'm also doing it as just a benchmark to make sure that their numbers are accurate.

Student: Are we adding over here with these two, or we're times-ing?

Cosimo Dilorio: This course is part of an initiative called the Fast Forward Program, and for this school, we're designated as having concentration in the retail experience. So part of this course gives the student an exposure to retail skills that they might need upon graduation.

Tony Augello, Principal: The Fast Forward Program is an excellent program where students, basically, have a goal in mind that once they are to graduate and where they'd like to be, and working backwards in terms of the different components, different courses they would have to take to get them to that point. So it's a package, and it's, basically, like a GPS for them to get to their end result, where they want to go once they do leave high school.

Cosimo Dilorio: And lastly, was there other hygiene product there? You have to be thorough, class, if you find something, okay, that's important. How many of you caught that? Yes, remember, you have to add on anything that's new. There's two of them, class, you have to add 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 numbers. I want four different people doing that, and maybe we'll have the same answer. It'll be the total gross profit of everything we sell on that table.

Student: What I liked about counting the products is, it gives you more of a hands-on way of doing inventory checks, and how much there is there, and how much you need.

Student: I've got $20.09.

Cosimo Dilorio: Guess what? I got that, as well, $20.09. So class, altogether, what is the gross profit if we sell everything on that table?

Student: (In unison) $20.09.

Cosimo Dilorio: Is that the business' purchasing power, though?
Student: No.

Cosimo Dilorio: No. Because there are other expenses that the Baron's Den might have that we might have to take away from this number to arrive not at gross profit, but at net profit. So do we have a better understanding of how businesses pay themselves? They don't get net pay, but they get net profit, and to get to net profit, the critical piece is to calculate gross profit. Any questions? Understood?

Student: Yes, sir.

Cosimo Dilorio: Okay, thank you very much.

Consolidation: Application of Learning in the School Store

Cosimo Dilorio: The students apply what they learn in class in the store primarily because they're touching real money, and they're touching real products, and they can see a connection between, I need to provide change, what should I charge? They make those little connections because they're actually touching something, and looking at something. So they have to act like they're business people, and that includes the combination of knowing your math, and knowing how to deal with people.

Student: I think I'm going to use this information because it maybe will help me learn how to sell stuff. How to run a business, and stuff like that. The cash registers, I think they're more easy to learn how to do, like how to type in the numbers and stuff.

Student: Hey, how are you? We have some sesame seeds, they're really good.

Student: Those are really good stuff. And that will be…

Cosimo Dilorio: No, I'll clear that, now you've got to do $1.00 code two…

Student: $1.00 code two.

Cosimo Dilorio: …for the drink, right, and then $1.00 code one.

Student: Code one, yes.

Cosimo Dilorio: And then subtotal.
Student: Subtotal, $2.00, please.

Tony Augello: And they're seeing what they learned on the board and they're translating that and applying that in the tuck shop. I feel it's a perfect marriage between the curriculum and the practical component.

Student: Three dollars in change.

Student: Thank you.

Student: Have a nice day, ma'am.

Student: You, too.

Cosimo Dilorio: See you later.

Student: Thank you.

Student: What I've learned working in the store is, the customer is always right, so the customer is the most important person in your store. So you treat them like they're a superstar. You say hello, good morning, smile and just be happy. Make them feel welcome.

Cosimo Dilorio: This semester, we incorporated the course with the operation of the school store. So I would take groups of five students at a time to the store for about 20 minute shifts. Whenever I incorporate anything that is directly related to their lives, their ears seem to perk up even more. So it was a new experience for me, it was the first time I was teaching the course, and I hope to teach it again. I found the course very enjoyable.