

# Microeconomics Made Easy



Which statements about cost are true?  
(Select each correct answer.)

☒ Total cost is the product of average total cost and the quantity produced

☐ Total cost is the sum of each short run marginal cost of all units produced

☒ Average total cost is the sum of average fixed cost and average variable cost

☒ Average fixed cost is always declining with quantity produced in the short run

☐ Total cost is always declining with quantity produced

✓

Explanation  
Total cost is the product of average total cost and the quantity produced, because the average total cost is simply total cost divided by quantity produced.  
Total cost is the sum of each short run marginal cost of all units produced plus the fixed cost.  
Average total cost is the sum of average fixed cost and average variable cost, by definition.  
Average fixed cost is always declining with quantity produced. As more units are produced, the average fixed cost is spread among all of them.  
Total cost is always increasing with quantity produced. Total cost will never drop by producing an additional unit.

You are an expert in microeconomics. I have a problem with the solution as shown in the picture. However, I feel the solution explanation is difficult. I feel unfamiliar with the core concepts behind it and with some terms. Please help to re-explain it in beginner-friendly style and include some humor.



Let's break this down in a beginner-friendly way—no jargon, no stress, and maybe a little fun!

## Statement 1: Total cost is the product of average total cost and the quantity produced.

Think of it like buying donuts. If each donut (average total cost) costs \$2 and you buy 5 donuts (quantity), your total cost is  $\$2 \times 5 = \$10$ .

So yes, this is true. Total cost = Average total cost  $\times$  Quantity. Simple, right?

## Statement 2: Total cost is the sum of each short-run marginal cost of all units produced.

Here's where it gets a bit tricky. Marginal cost is like the "extra cost" to make one more unit, like how much it costs to bake one more donut. This statement says, "Just add up all those extra costs to get the total cost."

But... this ignores fixed costs (the cost of things like the oven or the rent for your bakery that don't change no matter how many donuts you make). So, this one is **false** because total cost is **not just** the sum of marginal costs.

## Statement 3: Average total cost is the sum of average fixed cost and average variable cost.

Okay, let's slice this like pizza. Imagine:

- Average Fixed Cost: The cost of the pizza oven shared by all slices.
- Average Variable Cost: The cost of toppings and cheese per slice.

When you add these two up, you get the cost of a single slice (average total cost).

So yes, this is true. 🎉

### Statement 4: Average fixed cost is always declining with quantity produced in the short run.

Picture this: You've bought a fancy oven for \$100, but whether you bake 1 donut or 100 donuts, the oven cost stays the same. If you spread that \$100 across more and more donuts, the cost per donut (average fixed cost) keeps shrinking. Like magic, but with math. ✨

So yes, this is also true. Fixed costs spread thinner as you make more. 😊

### Statement 5: Total cost is always declining with quantity produced.

This is **not true**—total cost is like a teenager's appetite: always growing, never shrinking. As you make more donuts, you spend more on ingredients, labor, and electricity, so your total cost just keeps climbing. 🔪

### Why all the fuss about these concepts?

- Fixed Costs: Costs that don't change no matter how much you produce (like rent or your oven).
- Variable Costs: Costs that grow with production (like sugar for donuts).
- Total Costs: The grand total = Fixed Costs + Variable Costs.
- Average Costs: Total cost divided by how many donuts you made.
- Marginal Cost: The cost of making **one more donut**.

It's like baking economics into a recipe! 🍪



When is the average total cost minimized?

- ☐ At the first unit produced
- ☒ When the average total cost is equal to the marginal cost
- ☐ When the average fixed cost is equal to the average variable cost
- ☐ When the average variable cost is minimized
- ☐ When the marginal cost is minimized
- ☐ None of the above



Explanation

The average total cost is minimized when the average total cost is equal to the marginal cost. When the marginal cost is below the average total cost, producing one more unit will lower the average total cost. When the marginal cost is above the average total cost, producing one more unit will raise the average total cost. So to minimize average total cost, produce additional units until the marginal cost of the unit stops decreasing the average total cost.

Now please help to explain this problem.



Let's make this problem simple and approachable with a touch of fun!

## The Question: When is the average total cost (ATC) minimized?

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### The Correct Answer: When the average total cost is equal to the marginal cost (MC).

Now, let's break this down:

#### 1. What is Average Total Cost (ATC)?

- $ATC = \text{Total Cost} \div \text{Quantity}$
- It's like figuring out the average cost per unit when you produce a certain number of items. Imagine making cookies: if you spend \$100 to make 50 cookies, the ATC is \$2 per cookie.

#### 2. What is Marginal Cost (MC)?

- $MC$  = The cost of making **one more unit**.
- Sticking to cookies: If you've made 50 cookies already, the marginal cost tells you how much extra money you need to make cookie #51.

#### 3. How do ATC and MC interact?

- Picture MC as a little troublemaker that either pulls the ATC up or pushes it down:
  - If  $MC < ATC$ : It's like adding a cheaper cookie to the batch, lowering the average.
  - If  $MC > ATC$ : It's like adding a super-expensive cookie to the batch, raising the average.

#### 4. When is ATC minimized?

- **When  $MC = ATC$ !**
  - Think of this as the sweet spot where the cost of adding one more cookie exactly matches the current average cost. Before this point, MC pulls the ATC down. After this point, MC starts pushing ATC up.
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## Why Not the Other Options?

- **At the first unit produced:** ATC is not minimized here because fixed costs (like buying the oven) are still high when you're just starting out.
  - **When average fixed cost equals average variable cost:** These two don't need to "match" for ATC to hit its minimum.
  - **When the average variable cost is minimized:** Minimizing one piece of the cost puzzle (variable costs) doesn't guarantee that the ATC is minimized.
  - **When the marginal cost is minimized:** Nope! The ATC minimum happens when  **$MC = ATC$** , not when MC is at its lowest.
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## A Fun Analogy:

Imagine you're at an all-you-can-eat buffet 🍕:

- ATC is like your average cost per plate of food.
  - MC is the cost of adding **one more plate** to your stomach.
  - At first, piling on another plate (MC) lowers your average cost per plate (ATC) because you're eating more for the same price. But after you're full, adding another plate might be "too costly" for your stomach, and the average starts to rise.
  - The moment you hit the perfect balance? That's when  **$MC = ATC$** . You've optimized your buffet strategy!
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**TL;DR:**

ATC is minimized when  $MC = ATC$ . Before that point, making more is cheaper ( $MC < ATC$ ). After that point, making more is expensive ( $MC > ATC$ ). It's all about balance! 🎯