Cartesian Practice Case Interview

Multimedia Tablets
In this practice case, we will give you an opportunity to see the types of questions we ask in case interviews and what we’re looking for. Today, we’re going to talk about multimedia tablets, such as the iPad.

### Examples of Multimedia Tablets

<table>
<thead>
<tr>
<th>Apple iPad</th>
<th>Google Nexus</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Apple iPad" /></td>
<td><img src="image2" alt="Google Nexus" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Samsung Galaxy Tab</th>
<th>Amazon Kindle Fire</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="Samsung Galaxy Tab" /></td>
<td><img src="image4" alt="Amazon Kindle Fire" /></td>
</tr>
</tbody>
</table>

### Multimedia Tablet Overview

**Basic Features & Functionality**
- 7-10” display
- Capacitive touchscreen interface
- Wireless connectivity through WiFi and/or 3G/4G cellular

**Applications**
- Browsing the Internet and checking email
- Consuming content, such as eBooks, music, user-generated content (e.g. YouTube), movies (e.g. Netflix), and photos
- Playing online and app-based games
- Other specialized applications

This online case is not intended to mirror precisely a 30-45 minute in-person case interview, but rather is meant to probe the same type of thinking and analysis we expect from you. So please, don’t worry if this takes you longer. Take your time thinking through the questions. We hope you find the exercise helpful.
Question 1

How many tablets will be sold in the U.S. this year?

Turn to the next page for Cartesian answers and explanation
There are many approaches that can be used to come up with a sales estimate.

### Cartesian Answer

<table>
<thead>
<tr>
<th>Approach</th>
<th>Component</th>
<th>Data</th>
<th>Explanation</th>
<th>Assumption/Fact-Based</th>
<th>Unit Sales Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>U.S. Population</td>
<td>300m</td>
<td>The U.S. population is ~314m, but 300m is a reasonable estimate</td>
<td>Assumption</td>
<td>20m</td>
</tr>
<tr>
<td>A</td>
<td>People Age 20-40</td>
<td>33%</td>
<td>Early buyers are likely to be in the 20-40 age group</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>% of 20-40 Year Olds Buying Tablet</td>
<td>20%</td>
<td>Up for debate. 1 in 5 seems like a reasonable estimate +/- 10%</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>U.S. Households</td>
<td>120m</td>
<td>There are approximately 2.5 persons per household</td>
<td>Assumption</td>
<td>17m</td>
</tr>
<tr>
<td>B</td>
<td>% of U.S. HHs w/Broadband Internet</td>
<td>70%</td>
<td>Unlikely that households without broadband Internet will purchase a tablet</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>% of Internet HHs Buying Tablet</td>
<td>20%</td>
<td>Up for debate. 1 in 5 seems like a reasonable estimate +/- 10%</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>U.S. Population</td>
<td>300m</td>
<td>The U.S. population is ~314m, but 300m is a reasonable estimate</td>
<td>Assumption</td>
<td>25m</td>
</tr>
<tr>
<td>C</td>
<td>Wireless Penetration</td>
<td>95%</td>
<td>Approximately 95% of Americans have a mobile phone</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Smartphone Penetration</td>
<td>35%</td>
<td>35% of mobile phone users have smartphones</td>
<td>Assumption</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>% Buying Tablet</td>
<td>25%</td>
<td>Up for debate. % likely higher than %s in A and B above due to technology affinity</td>
<td>Assumption</td>
<td></td>
</tr>
</tbody>
</table>

- Consulting deals with many issues and markets that can be difficult to size/estimate, so forecasts often come down to underlying assumptions.
- Being able to quickly size an opportunity using a “back of the envelope” approach is an essential skill.
- Using multiple approaches helps triangulate on and increases confidence in an estimate.

Unit Sales Estimate: 17-25m
Question 2

How much tablet-associated revenue could Verizon Wireless earn this year?

Turn to the next page for Cartesian answers and explanation.
Verizon Wireless would generate revenue from both the upfront sale of the tablet and the monthly data plan revenue.

### Cartesian Answer

<table>
<thead>
<tr>
<th></th>
<th>U.S. Tablet Sales</th>
<th>% 3G Enabled</th>
<th>Verizon Wireless Market Share</th>
<th># of 3G Tablets Sold by Verizon Wireless</th>
<th>Average Selling Price</th>
<th>Device Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20m</td>
<td>60%</td>
<td></td>
<td></td>
<td></td>
<td>$2.0B</td>
</tr>
<tr>
<td>An estimate based on our unit sales range from question 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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- AppleInsider estimates that ~40% of iPad 2 devices are WiFi-only
- Verizon Wireless has approximately 1/3 share of the wireless market
- Assumes that Verizon Wireless’s wireless share applies to tablets, as well
- According to Yankee Group, the average selling price of a tablet is ~$500

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<th>U.S. Tablet Sales</th>
<th>% 3G Enabled</th>
<th>Verizon Wireless Market Share</th>
<th># of 3G Tablets Sold by Verizon Wireless</th>
<th>Data Plan Revenue</th>
<th>Data Plan Revenue</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>20m</td>
<td>60%</td>
<td></td>
<td></td>
<td>$300</td>
<td>$1.2B</td>
</tr>
<tr>
<td>An estimate based on our unit sales range from question 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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- AppleInsider estimates that ~40% of iPad 2 devices are WiFi-only
- Verizon Wireless has approximately 1/3 share of the wireless market
- Assumes that Verizon Wireless’s wireless share applies to tablets, as well
- Assume an average data plan is $25 per month times 12 months

### Calculations

- **Device Revenue**
  - Average Selling Price: $500
  - Number of 3G Tablets Sold: 4m
  - Device Revenue: $2.0B

- **Data Plan Revenue**
  - Average Data Plan: $300
  - Number of 3G Tablets Sold: 4m
  - Data Plan Revenue: $1.2B

**Total Revenue**

- Verizon Wireless Revenue: $3.2B

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- On case interviews, being precise is less important than having sound reasoning and rationale for your assumptions and approach.
- Once you arrive at an answer, it may be helpful to take a step back and evaluate your answer in a broader context (Tip: doing so verbally can further demonstrate logical aptitude, and if your answer is off you may get credit for recognizing that).
- For example, to self-check the Verizon Wireless tablet revenue estimate, you might ask your interviewer about Verizon Wireless’s total annual revenue to determine whether $3B is a large percentage of Verizon Wireless business. If it is (it’s not), you might raise the point that it is unlikely that Verizon Wireless will significantly grow its overall business in a single year from a new product.

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= Assumption  = Fact-Based
Question 3

Mobile operators often reduce the price of mobile phones (subsidize) when a subscriber signs a two-year contract. Operators do the same for tablets. For example, an operator might sell a $400 tablet for $200.

a) Why do they offer these subsidies?

b) What are the economic tradeoffs for Verizon Wireless?

Turn to the next page for Cartesian answers and explanation
The economic tradeoffs of offering subsidies for Verizon Wireless involve a combination of factors: a) boosting sales, b) capturing recurring (service) revenue, and c) increased upfront cost / loss

**Cartesian Answer**

**Boost Sales:** Mobile operators understand that consumers are conditioned to receiving subsidies, or discounts, on handsets and may expect them for tablets that are on a data plan. Furthermore, a consumer may only be willing to pay less than the retail price of an item, so by lowering the effective price via subsidies, a mobile operator can help generate increased sales.

**Recurring Revenue from Data Plans:** The revenue from a device sale is a one-time sale, but the monthly revenue associated with a data plan is *recurring* and persists for the lifetime of a customer.

**Upfront Cost:** When a mobile operator subsidizes the cost of a tablet, it incurs an upfront loss on the customer, knowing that it will make up the subsidized amount over the course of the customer’s contract. For example, when a mobile operator sells a $400 tablet for $200, the value of the customer account is -$200 on day one. If the customer is on a $25 per month data plan, it will take 8 months to reach *breakeven* on the subsidy alone (though there are also other costs in providing service and support).

**What We’re Looking For**

- **Business Rationale:** Can you infer why a business makes certain decisions? Are you able to make the connection between the behaviors of consumers and the incentives of business?

- **Understanding of Economics:** Can you derive the economic implications of business strategies?
Question 4

In what other ways could mobile operators gain revenue or other benefits from selling tablets?

Turn to the next page for Cartesian answers and explanation
There are a variety of potential answers to this question. We suggest tapping your own experience in trying to identify options.

<table>
<thead>
<tr>
<th>Cartesian Answer</th>
<th>What We’re Looking For</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Share of App Revenue</strong> – Mobile operators could negotiate deals with tablet suppliers, where in exchange for access to the operator’s channel, the tablet supplier would give the operator a cut of the revenue generated through sales of apps in app stores.</td>
<td><strong>Issue Identification &amp; Synthesis:</strong> How well can you quickly understand business drivers and think more broadly about strategic implications?</td>
</tr>
<tr>
<td><strong>Accessory Sales</strong> – Mobile operators may lose money on the sale of the tablet itself, but margins on tablet accessories, such as cases, skins, keyboards, stands, and extra chargers are typically much larger, so operators can encourage consumers to buy add-on accessories while in the store purchasing the tablet.</td>
<td></td>
</tr>
<tr>
<td><strong>Bundling / Cross-Selling</strong> – Being able to offer tablets and tablet data plans gives salespeople the ability to sell more products/services to customers. For example, a customer may go into a store with the intention of buying a smartphone. While there, a salesperson can convince that customer to also buy a tablet, and may be able to create an attractively priced bundle, combining the smartphone, tablet, voice and data plans.</td>
<td><strong>Creativity:</strong> Are you a creative thinker? Consultants are often asked to estimate demand for a product or size a market. Consultants are also asked to think tangentially to the core problem to identify unique, creative solutions.</td>
</tr>
<tr>
<td><strong>Churn Reduction</strong> – Churn refers to the loss of customers. By deepening the customer relationship through additional products and services, the mobile operator can raise the switching costs for a customer. This means that a customer who wants to change to another provider would have to switch multiple plans and multiple devices to the new provider. The cost and hassle of doing so could prevent the customer from churning.</td>
<td></td>
</tr>
</tbody>
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Next Steps

Practice

Practice

Practice