

HIGH SCHOOL ENTREPRENEURSHIP OLYMPIAD

Round I Complete Preparation Guide

Everything you need to master the 30-question
entrepreneurship assessment

What's Inside

- Core vocabulary & definitions
- 7 major topic modules
- 30+ practice problems with full explanations
- Formulas, frameworks, and mental models
- Full mock exam (30 questions)
- Strategy tips for test day

Aligned to HSEO 2026 Competition Format · 60-Minute Timed Assessment

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How to Use This Guide

This guide is built around the exact skills tested in Round I: entrepreneurial judgment, strategic reasoning, and applied innovation. Each module below covers one major topic area you can expect to see on the 30-question multiple-choice assessment.

Suggested Study Plan:

Days Before Test	Focus	Time
7+ days out	Modules 1–3 (foundations)	45 min each
5–6 days out	Modules 4–5 (market & finance)	45 min each
3–4 days out	Modules 6–7 (strategy & innovation)	45 min each
2 days out	Full mock exam + review wrong answers	75 min
1 day out	Light review of vocabulary only	20 min
Test day	Skim key formulas, rest well	10 min

Each module follows the same structure: vocabulary first, then core concepts, then practice problems with full explanations. Don't skip the explanations — understanding *why* an answer is correct is what separates top scorers from average ones.

1 Module 1: Entrepreneurship Fundamentals

1.1. Vocabulary

Entrepreneur

A person who identifies a problem or opportunity, organizes resources (people, money, ideas), and bears the risk of starting and operating a business venture. Entrepreneurs are distinct from employees because they absorb uncertainty rather than receive a fixed wage.

Opportunity Cost

The value of the best alternative you give up when you make a choice. If you spend \$10,000 launching a business, and you could have instead invested that money at 8% annual return, your opportunity cost is \$800/year — even if you never “spend” it on anything visible.

Value Proposition

A clear, concise statement explaining what problem your product or service solves, who it solves it for, and why your solution is better than existing alternatives. A strong value proposition is specific and customer-focused — not a list of features.

Risk vs. Uncertainty

Risk is measurable — you can assign a probability to outcomes (e.g., a 30% chance of losing \$5,000). **Uncertainty** is unmeasurable — you genuinely don’t know the probability distribution of outcomes. Startups mostly operate under uncertainty, not calculable risk.

Bootstrapping

Starting and growing a business using only personal savings and revenue generated by the business itself, without outside investment. Bootstrapping preserves founder equity but limits the speed of growth.

Scalability

The ability of a business to grow revenue substantially without a proportional increase in costs. A software company that serves 1,000 or 1,000,000 users on the same code base is highly scalable. A law firm that needs to hire one new lawyer per new client is not.

Pivot

A deliberate, structured change in business strategy — often in response to customer feedback or market signals — while retaining the core team and some original assets. A pivot is not failure; it is informed course-correction. (Famous example: Instagram started as a location check-in app.)

1.2. Core Concepts**The Entrepreneurial Mindset**

HSEO questions often test whether you understand how entrepreneurs *think*, not just what they do. Entrepreneurs:

- See problems as opportunities rather than obstacles
- Make decisions under uncertainty with incomplete information
- Take **calculated** risks — not reckless ones
- Learn from failure quickly and iterate
- Think in systems: customers, costs, competition, and timing all interact

A calculated risk means you have honestly analyzed the downside (what's the worst realistic outcome?), the upside (what's the best realistic outcome?), and the probability of each, and you've decided the expected value justifies the action. This is different from gambling, where you ignore the downside, or paralysis, where you ignore the upside.

Types of Entrepreneurship

Type	Description	Example
Startup	High-growth, often tech-enabled, seeks outside funding	Airbnb in 2008
Small Business	Local or niche focus, steady income, owner-operated	Neighborhood bakery
Social Enterprise	Mission-driven, solves social/environmental problems	TOMS Shoes
Intrapreneurship	Innovation inside an existing large company	Gmail (created inside Google)
Solopreneur	One-person business, no employees	Freelance designer

1.3. Practice Problems

Maria has a full-time job paying \$60,000 per year. She is considering quitting to start a bakery. Her startup costs would be \$15,000 (savings she currently has). What is the **opportunity cost** of starting the bakery?

- A. \$15,000 in startup costs
- B. \$60,000 in foregone salary per year
- C. The total of \$15,000 startup cost plus \$60,000 foregone salary
- D. Zero, because she is using her own savings

Correct Answer: C

Opportunity cost accounts for *all* the best alternatives foregone. Maria gives up both her \$60,000 salary (the income she'd earn by staying employed) AND the alternative use of her \$15,000 (which could be invested or saved). Option B is partially right but misses the startup capital piece. Option D is a classic wrong-answer trap — using your own money absolutely has an opportunity cost (it could have been used elsewhere).

A software startup serves 500 paying customers and earns \$250,000 in annual revenue. Its hosting and server costs are \$5,000/year regardless of users. If it grows to 5,000 customers, what can we most reasonably conclude about its cost structure?

- A. Costs will grow 10x to \$50,000
- B. Costs will stay near \$5,000, making the business highly scalable
- C. Revenue will fall because more customers create more support costs
- D. The startup should avoid growing to protect margins

Correct Answer: B

Fixed infrastructure costs (\$5,000 in hosting) don't scale with users — this is the definition of a scalable business. Revenue grows 10x while costs stay roughly flat, dramatically improving margins. Option A confuses fixed costs with variable costs. Option C may be partially true (support costs can rise) but is not the “most reasonable” conclusion from the information given.

Don't confuse a business being *profitable* with a business being *scalable*. A profitable business generates more revenue than costs. A scalable business can grow revenue much faster than costs. A local yoga studio can be profitable but is not scalable in the same way a meditation app is.

2 Module 2: Market Research & Customer Understanding

2.1. Vocabulary

Target Market

The specific group of people most likely to buy your product or service. Defined by shared characteristics: demographics (age, income, location), psychographics (values, lifestyle, interests), and behavior (how they currently solve the problem you address).

TAM / SAM / SOM

Three nested market size estimates:

- **TAM** (Total Addressable Market): Everyone who *could* ever buy your product globally.
- **SAM** (Serviceable Addressable Market): The portion of TAM you can realistically reach given your geography, language, and distribution.
- **SOM** (Serviceable Obtainable Market): The slice of SAM you can realistically win in the near term, given competitors and resources.

Investors care most about a realistic SOM — not a giant TAM.

Customer Persona (Buyer Persona)

A semi-fictional profile of your ideal customer, built from real data and research. Includes demographics, goals, frustrations, daily routines, and decision-making habits. Personas prevent founders from building for themselves instead of their actual users.

Primary vs. Secondary Research

Primary research is data you collect directly (interviews, surveys, observation). It's specific to your question but time-consuming. **Secondary research** uses existing published sources (industry reports, census data, competitor reviews). It's faster but may not fit your exact question.

Customer Pain Point

A specific problem, frustration, or unmet need that a customer experiences. Strong businesses solve *acute* pain points (things people urgently need fixed) rather than *latent* ones (things people don't yet know they want). Acute pain leads to faster adoption.

Willingness to Pay (WTP)

The maximum price a customer would pay for your product before preferring the alternative (including doing nothing). WTP is determined by the value you deliver relative to substitutes — not by your costs.

2.2. Core Concepts**The Problem-First Framework**

Successful entrepreneurs start with a real problem, not a cool technology. The sequence should be:

Problem → Customer who has problem → Solution → Business model

Flipping this order (starting with a solution looking for a problem) is one of the most common startup failure modes.

Market Sizing: Bottom-Up vs. Top-Down

Approach	Method	Use When
Top-Down	Start from total market size, apply % estimates	Quick estimates, early stage
Bottom-Up	Count realistic customers × price × frequency	Investor pitches, more credible

Example of bottom-up sizing: A tutoring app targets high school students in U.S. metro areas studying for standardized tests. There are roughly 3.7 million high school juniors/seniors. About 30% use test prep services = 1.1 million. If your app can realistically capture 2% in Year 1 = 22,000 users at \$20/month = \$5.3M annual revenue potential.

On HSEO questions about market sizing, bottom-up estimates are almost always viewed as more rigorous and credible than top-down ones. If an answer choice says “take 1% of a \$1 trillion market,” that’s a red flag for lazy thinking.

Jobs to Be Done (JTBD)

A powerful framework: customers don’t buy products — they “hire” products to do a *job*. When people buy a milkshake on their morning commute, the job isn’t “eat something sweet” — it’s “keep me occupied and not hungry during a boring drive.” Understanding the real job leads to better product design and marketing.

2.3. Practice Problems

A startup is building a mobile app for dog owners. Their research shows there are 90 million dog-owning households in the U.S. They estimate 20% are interested in dog health tracking, and they believe they can capture 5% of that group in Year 1. Their subscription is \$8/month. What is their Year 1 SOM revenue estimate?

- A. \$8,640,000
- B. \$43,200,000
- C. \$86,400,000
- D. \$720,000

Correct Answer: A

Step by step: $90\text{M} \times 20\% = 18\text{M}$ (SAM). $18\text{M} \times 5\% = 900,000$ users (SOM). $900,000 \times \$8/\text{month} \times 12 \text{ months} = \mathbf{\$86,400,000}$... wait, that's C.

Actually: $90\text{M} \times 0.20 = 18\text{M}$. $18\text{M} \times 0.05 = 900,000$ users. $900,000 \times \$8 \times 12 = \86.4M .

Revised: Correct Answer: C — \$86,400,000. Work through the arithmetic carefully on test day. The trap here is forgetting to multiply monthly revenue by 12 to get annual, or miscalculating the percentages.

A founder interviews 50 potential customers and finds that 48 of them already solve their problem using a free workaround (a combination of spreadsheets and email). What should the founder conclude?

- A. There is no market because people already have a solution
- B. The workaround proves people care about this problem, but the current solution is painful enough to displace
- C. The founder should immediately pivot to a different problem
- D. Customers will not pay because they are accustomed to free solutions

Correct Answer: B

The fact that people invest time and effort in a clunky workaround is actually a *positive* signal — it confirms the problem is real and worth solving. The question becomes whether your solution is meaningfully better than the workaround. Option A is classic over-pessimism. Option C is premature. Option D may be a real challenge, but it's not the most important conclusion from this data.

3 Module 3: Business Models & Revenue Logic

3.1. Vocabulary

Business Model

The logic of how a company creates, delivers, and captures value. It answers three questions: (1) What do we offer and to whom? (2) How do we deliver it? (3) How do we make money doing it?

Revenue Model

The specific mechanism by which a business earns money. Different from business model (which is broader). Common revenue models include subscription, transaction fee, licensing, advertising, freemium, and marketplace.

Freemium

A pricing strategy where a basic version is free and users pay for premium features. Effective when the free version creates enough value to attract users AND the premium features are compelling enough to convert a meaningful percentage. Spotify and Dropbox use this model.

Unit Economics

Financial analysis focused on one single unit of a business — typically one customer or one transaction. Key unit economics include revenue per customer, cost to serve one customer, and profit per customer. If the unit economics don't work, scaling makes the problem worse, not better.

Customer Acquisition Cost (CAC)

The total cost (marketing, sales, advertising) of acquiring one new paying customer. $CAC = \frac{\text{Total Sales \& Marketing}}{\text{Number of New Customers}}$

Customer Lifetime Value (LTV or CLV)

The total net revenue a business expects to earn from a single customer over the entire relationship. $LTV = (\text{Avg. Revenue per Customer per Month}) \times (\text{Avg. Customer Lifespan in Months})$

LTV:CAC Ratio

The ratio of Lifetime Value to Customer Acquisition Cost. A key health metric. **Rule of thumb: LTV should be at least 3× CAC** for a healthy SaaS or subscription business. If LTV:CAC is below 1, the business loses money on every customer.

Gross Margin

$$\text{Gross Margin} = (\text{Revenue} - \text{Cost of Goods Sold}) / \text{Revenue} \times 100\%$$

Represents what percentage of revenue remains after paying the direct cost of delivering the product or service. Software companies often have 70–90% gross margins. Restaurants often have 30–50%.

3.2. Core Concepts

Common Business Model Types

Model	How It Works	Example
Subscription	Recurring fee for ongoing access	Netflix, Spotify
Marketplace	Platform connecting buyers & sellers, takes a cut	Airbnb, eBay
SaaS	Software sold as a subscription, hosted in cloud	Slack, Notion
E-commerce	Sell physical goods online directly	Warby Parker
Advertising	Free to users, brands pay for access to users	Instagram, Google
Licensing	Charge others to use your IP or technology	Qualcomm chips
Razor & Blade	Cheap hardware, expensive consumables	Printers & ink

The Burn Rate and Runway Concept

Startups that haven't reached profitability lose money every month. Understanding how long they can survive is critical.

$$\text{Burn Rate} = \text{Monthly Cash Outflows} - \text{Monthly Revenue}$$

$$\text{Runway} = \frac{\text{Cash in Bank}}{\text{Monthly Burn Rate}}$$

A startup with \$500,000 in the bank and a \$50,000/month burn rate has 10 months of runway. They need to raise more funding or reach profitability before then.

3.3. Practice Problems

A SaaS startup spends \$120,000 per year on sales and marketing and acquires 400 new customers per year. Each customer pays \$50/month and stays for an average of 18 months. What is the LTV:CAC ratio?

- A. 2:1
- B. 3:1
- C. 4.5:1
- D. 6:1

Correct Answer: B

Step 1 — CAC: $\$120,000 / 400 \text{ customers} = \300 per customer.

Step 2 — LTV: $\$50/\text{month} \times 18 \text{ months} = \900 .

Step 3 — Ratio: $\$900 / \$300 = \mathbf{3:1}$.

This meets the industry-standard minimum of 3:1, meaning the business is viable but not exceptional. A 5:1 or higher ratio suggests very strong unit economics.

A startup has \$300,000 in the bank. Monthly operating expenses are \$45,000 and monthly revenue is \$15,000. How many months of runway does the startup have?

- A. 6.7 months
- B. 10 months
- C. 20 months
- D. 6 months

Correct Answer: B

Burn rate = $\$45,000$ (expenses) – $\$15,000$ (revenue) = $\$30,000/\text{month}$ net cash consumed.

Runway = $\$300,000 / \$30,000 = \mathbf{10 \text{ months}}$.

Option A ($\$300k / \$45k = 6.7$) is the common wrong answer — it ignores that revenue partially offsets expenses. Always subtract revenue from expenses to get *net* burn.

On LTV calculations, the question may give you monthly revenue and annual churn rate or lifespan in different units. Always convert to the same time unit before calculating. If average lifespan is given in years, convert to months or vice versa.

4 Module 4: Strategy & Competitive Advantage

4.1. Vocabulary

Competitive Advantage

A set of qualities or capabilities that allow a business to outperform competitors consistently. Advantages that are *durable* (hard for competitors to copy) are the most valuable. Temporary advantages erode quickly.

Moat (Economic Moat)

Warren Buffett's term for a durable competitive advantage that protects a business from competitors like a moat protects a castle. Types of moats include: network effects, switching costs, brand, cost advantages, and proprietary technology.

Network Effects

When a product or service becomes *more valuable* as more people use it. A phone is useless if only one person has it — but more valuable to everyone as the network grows. Network effects are one of the most powerful moats. Examples: WhatsApp, LinkedIn, Uber.

Switching Costs

The time, money, effort, or risk a customer incurs when moving from one product to a competitor's. High switching costs lock in customers. Example: enterprise software that requires months of data migration to switch.

First-Mover Advantage

The benefit of being the first company to enter a market. Can include brand recognition, customer lock-in, and learning curve advantages. However, first-mover advantage is *not* guaranteed — many second-movers win by learning from the first-mover's mistakes.

Porter's Five Forces

A framework for analyzing industry competitiveness developed by Michael Porter. The five forces are: (1) Threat of new entrants, (2) Bargaining power of suppliers, (3) Bargaining power of buyers, (4) Threat of substitute products, (5) Rivalry among existing competitors.

SWOT Analysis

A strategic planning framework examining: **S**trengths (internal advantages), **W**eaknesses (internal disadvantages), **O**pportunities (external favorable conditions), **T**hreats (external unfavorable conditions). Used to match internal capabilities to market opportunities.

Differentiation vs. Cost Leadership

Two of Porter’s three generic strategies. **Differentiation:** compete by being meaningfully unique (Apple). **Cost Leadership:** compete by being the cheapest (Walmart). The third strategy is **Focus:** serve a narrow niche exceptionally well.

4.2. Core Concepts

Types of Competitive Moats

Moat Type	How It Works	Example
Network Effects	Product gets more valuable with more users	Facebook, Visa
Switching Costs	Painful or expensive to leave	Salesforce CRM
Brand	Emotional premium customers pay	Rolex, Nike
Cost Advantage	Structural ability to produce cheaper than rivals	IKEA, Amazon
Proprietary IP	Patents, trade secrets, unique data	Pfizer drugs
Regulatory License	Government permits to operate	Utilities, banks

Go-to-Market (GTM) Strategy

A go-to-market strategy is the plan for how you will reach customers and deliver your value proposition. Key components:

- **Sales channel:** Direct (your own sales team), indirect (resellers/distributors), or self-serve (customers buy without talking to anyone)
- **Pricing strategy:** How you price (premium, competitive, penetration)
- **Marketing channels:** Where you reach customers (social media, SEO, events, partnerships)
- **Ideal customer profile (ICP):** Who to target first

A common HSEO question type: given a description of a startup, which GTM strategy makes most sense? Key reasoning: B2B companies with expensive products usually need direct sales. Consumer apps usually need paid or organic digital marketing. Marketplaces need to solve the “chicken and egg” problem of getting both supply and demand sides.

4.3. Practice Problems

A new ride-sharing app launches in a small city. It has 200 drivers but only 50 regular riders. The drivers are frustrated because they sit idle most of the time. Which concept best describes the core challenge this startup faces?

- A. Lack of a moat
- B. The chicken-and-egg problem of a two-sided marketplace
- C. Poor product-market fit
- D. Insufficient capital to scale

Correct Answer: B

A two-sided marketplace needs both supply (drivers) and demand (riders) to be valuable. Having too many drivers and too few riders (or vice versa) is the classic “chicken and egg” problem: riders don’t use the app because there are no drivers nearby *quickly*, and drivers stop signing up because there are no riders. Options A and C may also be true, but B most precisely names the structural challenge described.

A software company’s customers store five years of financial data, customize their dashboards, and train their teams on the platform. A cheaper competitor enters the market. Which factor most likely protects the original company from losing customers?

- A. Network effects
- B. Brand loyalty
- C. High switching costs
- D. First-mover advantage

Correct Answer: C

The clue is in the scenario: data stored, customizations built, and staff trained. Migrating all of that to a competitor would be expensive, time-consuming, and risky — those are high switching costs. Network effects would apply if the value came from *other users* on the same platform. Brand loyalty is weaker when a competitor is significantly cheaper. First-mover advantage alone doesn’t keep customers if a competitor is dramatically better or cheaper.

5 Module 5: Financial Literacy for Entrepreneurs

5.1. Vocabulary

Revenue vs. Profit

Revenue (or “top line”) is the total money earned from sales before any costs are deducted. **Profit** (or “bottom line”) is what remains after all costs. A company can have large revenue and negative profit — many fast-growing startups do intentionally.

Fixed Costs vs. Variable Costs

Fixed costs stay constant regardless of output (rent, salaries, insurance). **Variable costs** increase with each unit produced or sold (raw materials, shipping, transaction fees). Understanding this distinction is essential for pricing and break-even analysis.

Break-Even Point

The level of sales at which total revenue exactly equals total costs — no profit, no loss.

$$\text{Break-Even Units} = \frac{\text{Fixed Costs}}{\text{Selling Price} - \text{Variable Cost per Unit}}$$

The denominator (Price – Variable Cost) is called the **contribution margin per unit**.

Equity vs. Debt Financing

Equity: Selling ownership stakes (shares) to investors in exchange for capital. No repayment required, but founders give up control and future profits. **Debt**: Borrowing money that must be repaid with interest. Founders keep ownership but face repayment obligations.

Venture Capital (VC)

Investment firms that provide large amounts of capital to high-growth startups in exchange for equity (ownership). VCs expect most investments to fail but count on a few massive successes to generate returns for their fund.

Angel Investor

A high-net-worth individual who invests their own personal money in early-stage startups, usually in exchange for equity. Typically invest smaller amounts (\$25K–\$500K) than VCs, and often before the company has significant revenue.

Valuation

The estimated monetary worth of a company. **Pre-money valuation** is the company's value before a new investment. **Post-money valuation** is the value after the investment is made.
 $\text{Post-money} = \text{Pre-money} + \text{Investment Amount}$

Dilution

When a company issues new shares (to raise money or pay employees), existing shareholders own a smaller *percentage* of the company. Their shares don't disappear — they just represent a smaller slice of a (hopefully) bigger pie.

5.2. Core Concepts**Startup Funding Stages**

Stage	What It Funds	Source	Typical Size
Pre-seed	Idea validation, MVP	Founders, family, angels	\$10K–\$500K
Seed	Product launch, early customers	Angels, seed funds	\$500K–\$3M
Series A	Growth, team building	Venture capital	\$3M–\$15M
Series B+	Scaling, market expansion	Venture capital	\$15M+
IPO	Public offering	Public market investors	Varies

Break-Even Analysis Walk-Through

A food truck sells burritos for \$10 each. Ingredients and packaging cost \$4 per burrito (variable cost). Monthly fixed costs (truck rental, permits, labor) are \$3,000.

$$\text{Break-Even} = \frac{\$3,000}{\$10 - \$4} = \frac{\$3,000}{\$6} = 500 \text{ burritos per month}$$

At 500 burritos sold, the truck neither profits nor loses. Every burrito beyond 500 generates \$6 of pure profit.

5.3. Practice Problems

A startup raises \$2,000,000 at a \$8,000,000 pre-money valuation. What percentage of the company do the new investors own after the investment?

- A. 20%
- B. 25%
- C. 80%
- D. 10%

Correct Answer: A

Post-money valuation = Pre-money + Investment = \$8M + \$2M = \$10M.

Investor ownership = \$2M invested / \$10M post-money = **20%**.

Option B (25%) is wrong because it divides \$2M by \$8M (the pre-money) rather than the post-money. Always use post-money for ownership percentage.

A candle company has fixed monthly costs of \$2,400. Each candle sells for \$20 and costs \$8 in materials to make. How many candles must it sell each month to break even?

- A. 120 candles
- B. 200 candles
- C. 300 candles
- D. 180 candles

Correct Answer: B

Contribution margin = \$20 - \$8 = \$12 per candle.

Break-even = \$2,400 / \$12 = **200 candles**.

Option A (\$2,400/\$20 = 120) is wrong because it ignores variable costs — you can't count all of the selling price as contribution because \$8 goes to materials. Option C divides by the wrong margin.

6 Module 6: Innovation & Product Development

6.1. Vocabulary

Minimum Viable Product (MVP)

The simplest version of a product that delivers enough value to attract early customers and generate *real* feedback. The MVP is not a broken product — it is a deliberate reduction to the core value. Popularized by Eric Ries in *The Lean Startup*.

Product-Market Fit (PMF)

The degree to which a product satisfies strong market demand. Marc Andreessen’s definition: “you can always feel when product/market fit is happening — customers are buying the product just as fast as you can make it, or usage is growing as fast as you can add more servers.” Before PMF, most metrics are unreliable.

Disruptive Innovation

Clayton Christensen’s concept: a product that starts by serving an overlooked, low-end, or non-consumer market (often with a simpler, cheaper solution) and gradually improves until it displaces established players. Netflix disrupted Blockbuster by starting with a niche (no late fees, mail delivery) before streaming overtook everything.

Design Thinking

A human-centered innovation methodology with five stages: **Empathize** (understand the user), **Define** (frame the problem), **Ideate** (generate solutions), **Prototype** (build quickly), **Test** (learn from real users). Emphasizes iteration over perfection.

Iteration

Repeatedly refining a product based on feedback and data. In entrepreneurship, faster iteration is almost always better — you want to learn what doesn’t work before spending significant resources on it.

Intellectual Property (IP)

Legal protections for creations of the mind. Types include: **Patent** (inventions), **Trademark** (brand names/logos), **Copyright** (creative works), **Trade Secret** (confidential business information like Coca-Cola’s formula).

6.2. Core Concepts

The Lean Startup Framework

Build → **Measure** → **Learn** → (*repeat*)

The goal of each cycle is to test one specific assumption as cheaply and quickly as possible.

The key insight: every startup is built on a set of *assumptions* about what customers want, how much they'll pay, and how the market works. The lean startup method treats building a company as a scientific experiment — you test assumptions, get data, and update your model.

Sustaining vs. Disruptive Innovation

	Sustaining Innovation	Disruptive Innovation
Target customer	Existing, demanding customers	Overlooked or non-consumers
Direction	Better performance on existing dimensions	Different performance dimensions
Risk to incumbents	Low initially	High — they often don't see it coming
Example	Faster iPhone camera	Early iPhone vs. Nokia

6.3. Practice Problems

A startup building an app for restaurant reservations launches a simple version that only supports text-message confirmations and no in-app browsing. They charge real restaurants a small fee and get 10 paying customers in the first month. This approach best illustrates:

- A. An over-engineered product that ignores customer needs
- B. An MVP strategy designed to test core assumptions with minimal resources
- C. A pivot away from the original business model
- D. Disruptive innovation targeting a new market

Correct Answer: B

The description is a textbook MVP: stripped-down functionality (text only, no browsing), but delivering core value (confirmed reservations), and generating *real revenue* from real customers. The fact that 10 restaurants pay is a key signal — it validates the core value proposition. A is wrong because the simplicity is deliberate, not negligent. C requires an actual change in strategy. D is possible but not what the question is describing.

A company produces the world's fastest, most feature-rich film cameras just as smartphones with increasingly capable cameras become ubiquitous. Which concept best explains why the film camera company is at risk?

- A. Insufficient product-market fit
- B. Disruptive innovation from a product serving a different dimension of value
- C. Poor intellectual property protection
- D. High switching costs protecting incumbents

Correct Answer: B

Smartphones didn't compete on the same dimension as film cameras (resolution, optical quality). They competed on convenience, portability, and instant sharing — dimensions film cameras can't easily match. This is the pattern of disruptive innovation: the disruptor first looks inferior on the traditional metric but is superior on a new dimension customers increasingly value. Over time, smartphone cameras improved enough to displace film cameras entirely.

7 Module 7: Leadership, Ethics & Entrepreneurial Decision-Making

7.1. Vocabulary

Stakeholder

Any person or group that has an interest in a company's actions and outcomes. Includes: founders, employees, customers, investors, suppliers, communities, and government. Entrepreneurs must balance the sometimes-competing interests of multiple stakeholders.

Ethical Business Practices

Conduct that is not only legal but also honest, fair, and responsible. In entrepreneurship, this includes: transparent communication with investors, honest product claims, fair treatment of employees, and considering community impact.

Sunk Cost Fallacy

Continuing to invest in a failing project because of resources already spent, rather than evaluating the future potential objectively. In entrepreneurship: "We've already spent \$200,000 on this product — we can't stop now" is sunk cost thinking. The correct question is: "Given where we are today, is continuing the best use of future resources?"

Confirmation Bias

The tendency to search for and favor information that confirms your existing beliefs. One of the most dangerous cognitive biases for entrepreneurs, who can fall in love with their own idea and ignore contrary evidence from customers or the market.

Expected Value

A decision-making tool that weights outcomes by their probability.

$$EV = \sum (\text{Probability of outcome} \times \text{Value of outcome})$$

Example: 60% chance of winning \$1,000 and 40% chance of losing \$400: $EV = (0.6 \times \$1,000) + (0.4 \times -\$400) = \$600 - \$160 = \$440$.

Corporate Social Responsibility (CSR)

A company's commitment to operating ethically and contributing positively to society beyond its legal obligations. Increasingly seen not just as ethics but as good business — companies with strong CSR often attract better employees and more loyal customers.

7.2. Core Concepts

Decision-Making Under Uncertainty

Entrepreneurs rarely have complete information. Good entrepreneurial decision-making involves:

1. **Define the decision clearly** — What are you actually deciding?
2. **Identify your assumptions** — What would have to be true for each option to work?
3. **Estimate probabilities honestly** — What are the realistic odds of each outcome?
4. **Consider reversibility** — Is this a one-way door (hard to undo) or a two-way door (easy to reverse)? Spend more time on one-way doors.
5. **Act and learn** — Make the decision, watch the outcome, update your beliefs.

Common Cognitive Biases in Entrepreneurship

Bias	What It Causes	Antidote
Sunk Cost Fallacy	Sticking with bad projects too long	Evaluate future potential only
Confirmation Bias	Ignoring negative market feedback	Actively seek disconfirmation
Overconfidence	Underestimating competition / costs	Pre-mortem analysis
Availability Bias	Overweighting vivid recent examples	Use systematic data
Loss Aversion	Refusing good risks to avoid any loss	Calculate expected value

7.3. Practice Problems

A startup founder has spent \$80,000 developing a software product. User testing reveals almost no interest — only 3 of 100 beta users said they would pay for it. The founder’s co-founder suggests pivoting to a related but different problem that early research suggests is more promising. The founder responds: “We’ve already put \$80,000 into this. We can’t just walk away.” The founder is exhibiting:

- A. Sound financial judgment
- B. Confirmation bias
- C. The sunk cost fallacy
- D. Risk aversion

Correct Answer: C

The \$80,000 is gone regardless of what the founder decides next. The rational question is: “Given current evidence (3/100 willing to pay), is continuing to invest the best use of future resources?” The founder is letting past spending distort a forward-looking decision — that’s the sunk cost fallacy. Option D (risk aversion) would describe avoiding a pivot *because it might fail*, which is slightly different. Option B (confirmation bias) would involve seeking data that confirms the product is good — not what’s described here.

An entrepreneur has two options: Option A has a 70% chance of earning \$50,000 and a 30% chance of losing \$20,000. Option B is a guaranteed \$25,000. Based purely on expected value, which should the entrepreneur choose?

- A. Option B, because it is guaranteed
- B. Option A, because its expected value is higher
- C. Both options have equal expected value
- D. Option B, because risk should always be avoided

Correct Answer: B

EV of Option A = $(0.70 \times \$50,000) + (0.30 \times -\$20,000) = \$35,000 - \$6,000 = \mathbf{\$29,000}$.

EV of Option B = \$25,000.

Option A has a higher expected value (\$29,000 vs. \$25,000). Note: in real life, personal risk tolerance, financial situation, and reversibility would also factor in — but the question asks about “expected value” alone, making B the correct methodological answer.

8 Full Mock Exam (30 Questions)

Instructions: This mock exam mirrors the Round I format — 30 multiple-choice questions. Set a 60-minute timer. Choose the single best answer for each question. Answers and explanations begin on the following section.

- Which of the following best defines an entrepreneur?
 - An employee who manages a large corporate team
 - A person who identifies opportunities and organizes resources while bearing risk
 - A government official who regulates business activity
 - An investor who provides capital to existing companies
- A startup that sells 100 units at \$30 each and has \$800 in fixed costs and \$10 variable cost per unit is:
 - Losing money
 - Breaking even
 - Profitable
 - Unable to determine without more information
- Airbnb earns revenue by charging a service fee to both guests and hosts on each booking. This is an example of a:
 - Subscription model
 - Marketplace model
 - Licensing model
 - Freemium model
- A coffee shop has fixed monthly costs of \$6,000 and sells each coffee for \$5 with variable costs of \$2. How many coffees must it sell per month to break even?
 - 1,200
 - 2,000
 - 3,000
 - 1,000
- A tech startup spends \$90,000 on marketing and acquires 300 customers. Each customer generates \$600 in lifetime revenue. What is the LTV:CAC ratio?
 - 1:2
 - 2:1
 - 3:1
 - 6:1
- Which of the following is the best example of a network effect?

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- A. A restaurant that gets better reviews as it serves more customers
 - B. A social media platform that becomes more valuable as more friends join
 - C. A car that improves fuel efficiency with more miles driven
 - D. A law firm that charges higher rates as it gets more prestigious
7. A startup's monthly expenses are \$80,000 and monthly revenue is \$30,000. It has \$500,000 in cash. How many months of runway does it have?
- A. 6.25 months
 - B. 10 months
 - C. 16.7 months
 - D. 12 months
8. The decision to launch a new product line when the company's core product is already profitable is best analyzed using which framework?
- A. Break-even analysis
 - B. SWOT analysis
 - C. LTV:CAC ratio
 - D. Porter's Five Forces
9. Which statement about first-mover advantage is most accurate?
- A. First movers always win because they have the most customers
 - B. First movers have advantages but are not guaranteed to win; second movers can learn from their mistakes
 - C. First-mover advantage is a myth — later entrants always have more information
 - D. Being first to market only matters in technology industries
10. A founder learns that 95% of surveyed customers said they “would definitely buy” the product, but only 5% actually purchased when given the chance. This gap is called:
- A. Market timing failure
 - B. The intention-action gap
 - C. Confirmation bias
 - D. Network effect failure
11. A startup raises \$3M at a \$12M pre-money valuation. What percentage of the company do the new investors own?
- A. 20%
 - B. 25%
 - C. 30%
 - D. 15%
12. A low-cost airline starts by serving routes that premium airlines ignore (small cities, low-income travelers) and gradually expands until it competes with major carriers. This best exemplifies:
- A. Sustaining innovation

- B. First-mover advantage
 - C. Disruptive innovation
 - D. Vertical integration
- 13.** Which of the following represents the *best* early-stage validation method for a new business idea?
- A. Building a fully polished product and launching nationally
 - B. Creating a detailed 50-page business plan
 - C. Conducting customer interviews and testing a simple prototype with real potential customers
 - D. Analyzing industry research reports from major consulting firms
- 14.** A company's gross margin is 70%. If it earns \$500,000 in revenue, what is its gross profit?
- A. \$70,000
 - B. \$150,000
 - C. \$350,000
 - D. \$430,000
- 15.** Which type of investor typically provides the smallest funding amounts at the earliest stage?
- A. Venture capital fund
 - B. Private equity firm
 - C. Angel investor
 - D. Hedge fund
- 16.** An entrepreneur continues investing in a product that has shown consistently poor sales results, saying "we've already come this far." This illustrates:
- A. Strategic patience
 - B. Sunk cost fallacy
 - C. Rational risk assessment
 - D. Confirmation bias
- 17.** What does SAM stand for in market sizing?
- A. Strategic Addressable Market
 - B. Serviceable Addressable Market
 - C. Sustainable Annual Market
 - D. Scaled Acquisition Model
- 18.** A company's value proposition should primarily focus on:
- A. The technical features of the product
 - B. The qualifications of the founding team
 - C. The specific problem it solves and why the solution is better than alternatives
 - D. The size of the total addressable market
- 19.** If a company has 1,000 customers at the start of the year and 900 at the end (no new customers

were added), what is its annual churn rate?

- A. 9%
- B. 10%
- C. 90%
- D. 1%

20. A smartphone that requires a proprietary charger and ecosystem of apps creates which type of competitive moat for the manufacturer?

- A. Network effects
- B. Switching costs
- C. Cost advantage
- D. Regulatory license

21. Under Porter’s Five Forces, the “threat of new entrants” is *lower* when:

- A. The market is growing quickly
- B. Capital requirements to enter are very high
- C. Customer switching costs are low
- D. Existing players have low profit margins

22. A startup uses primary research to validate its assumptions. Which of the following is primary research?

- A. Reading industry reports from consulting firms
- B. Analyzing public government data on demographics
- C. Conducting in-person interviews with 30 potential customers
- D. Studying competitor press releases

23. Which pricing strategy is most appropriate for a startup entering a market with strong existing competitors and wanting to gain market share quickly?

- A. Premium pricing
- B. Penetration pricing
- C. Price skimming
- D. Cost-plus pricing

24. A founder pitches a very large TAM to investors. A sophisticated investor’s most important follow-up question is likely:

- A. How long has this market existed?
- B. What percentage of the TAM can the company realistically capture, and how?
- C. Why isn’t the TAM even larger?
- D. How many competitors are in the space?

25. Which of the following best describes “product-market fit”?

- A. When a product has been fully developed and is technically complete
- B. When a startup has raised sufficient funding to operate for two years

- C. When a product satisfies strong market demand and customers are actively pulling for it
- D. When a company has achieved profitability

26. A startup has a 40% chance of earning \$200,000 and a 60% chance of losing \$50,000. What is the expected value of proceeding?

- A. \$80,000
- B. \$50,000
- C. \$150,000
- D. \$30,000

27. Design thinking is best described as:

- A. A software design methodology for user interface layout
- B. A human-centered innovation process that emphasizes empathy, prototyping, and iteration
- C. A financial model for evaluating design costs
- D. A management style emphasizing top-down creative direction

28. A company sells both a free version and a paid version of its software. The free version attracts millions of users, and a small percentage convert to paid. This model is called:

- A. Licensing
- B. Subscription
- C. Freemium
- D. Razor and blade

29. Which of the following is most consistent with ethical entrepreneurial behavior?

- A. Exaggerating product capabilities to investors to secure funding
- B. Disclosing material risks honestly to investors even when it may reduce valuation
- C. Using confidential competitor information obtained indirectly
- D. Prioritizing short-term profit over product safety concerns

30. A startup notices that early adopters are sharing its product widely with friends without being asked, usage is growing faster than the team can support, and customers are emotionally invested. This most strongly suggests:

- A. A high burn rate
- B. The company has reached product-market fit
- C. The company needs to raise more money immediately
- D. A network effect moat is forming

9 Mock Exam: Answers & Explanations

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	7	B	13	C	19	B	25	C
2	C	8	B	14	C	20	B	26	B
3	B	9	B	15	C	21	B	27	B
4	B	10	B	16	B	22	C	28	C
5	B	11	A	17	B	23	B	29	B
6	B	12	C	18	C	24	B	30	B

Selected Explanations for Tricky Questions:

Q2. Revenue = $100 \times \$30 = \$3,000$. Total costs = $\$800$ fixed + $(100 \times \$10)$ variable = $\$800 + \$1,000 = \$1,800$. Profit = $\$3,000 - \$1,800 = \mathbf{\$1,200}$. The company is profitable. **Answer: C.**

Q4. Contribution margin = $\$5 - \$2 = \$3$ per coffee. Break-even = $\$6,000 / \$3 = \mathbf{2,000}$ coffees. **Answer: B.**

Q5. CAC = $\$90,000 / 300 = \300 . LTV = $\$600$. Ratio = $\$600 / \$300 = \mathbf{2:1}$. This is below the healthy 3:1 benchmark — a warning sign. **Answer: B.**

Q7. Burn = $\$80,000 - \$30,000 = \$50,000/\text{month}$. Runway = $\$500,000 / \$50,000 = \mathbf{10}$ months. **Answer: B.**

Q11. Post-money = $\$12\text{M} + \$3\text{M} = \$15\text{M}$. Investor % = $\$3\text{M} / \$15\text{M} = \mathbf{20\%}$. **Answer: A.**

Q14. Gross profit = Revenue \times Gross Margin = $\$500,000 \times 0.70 = \mathbf{\$350,000}$. **Answer: C.**

Q19. Churn = customers lost / starting customers = $100 / 1,000 = \mathbf{10\%}$. **Answer: B.**

Q26. EV = $(0.40 \times \$200,000) + (0.60 \times -\$50,000) = \$80,000 - \$30,000 = \mathbf{\$50,000}$. **Answer: B.**

10 Quick Reference: Formulas & Frameworks

Break-Even Units	$= \frac{\text{Fixed Costs}}{\text{Price} - \text{Variable Cost}}$
Contribution Margin	$= \text{Price} - \text{Variable Cost per Unit}$
Gross Margin (%)	$= \frac{\text{Revenue} - \text{COGS}}{\text{Revenue}} \times 100$
CAC	$= \frac{\text{Total Sales \& Marketing Spend}}{\text{New Customers Acquired}}$
LTV	$= \text{Avg. Monthly Revenue per Customer} \times \text{Avg. Customer Lifespan (months)}$
LTV:CAC Ratio	$= \frac{\text{LTV}}{\text{CAC}}$ (healthy: $\geq 3:1$)
Burn Rate (net)	$= \text{Monthly Expenses} - \text{Monthly Revenue}$
Runway	$= \frac{\text{Cash in Bank}}{\text{Monthly Burn Rate}}$
Post-Money Valuation	$= \text{Pre-Money Valuation} + \text{Investment Amount}$
Investor Ownership	$= \frac{\text{Investment}}{\text{Post-Money Valuation}}$
Expected Value	$= \sum(\text{Probability} \times \text{Outcome Value})$
Churn Rate	$= \frac{\text{Customers Lost}}{\text{Starting Customers}}$

TAM / SAM / SOM	Total → Serviceable → Obtainable market
SWOT	Strengths, Weaknesses, Opportunities, Threats
Porter's Five Forces	Entrants, Suppliers, Buyers, Substitutes, Rivalry
Lean Startup Loop	Build → Measure → Learn
Design Thinking	Empathize, Define, Ideate, Prototype, Test
Generic Strategies	Cost Leadership, Differentiation, Focus
Moat Types	Network Effects, Switching Costs, Brand, Cost, IP, Regulatory

- Bootstrapping
- Burn Rate / Runway
- Churn Rate
- Confirmation Bias
- Contribution Margin
- Corporate Social Responsibility
- Customer Acquisition Cost
- Customer Lifetime Value
- Design Thinking
- Differentiation
- Dilution
- Disruptive Innovation
- Equity vs. Debt
- Expected Value
- First-Mover Advantage
- Freemium
- Gross Margin
- Intellectual Property
- Iteration
- Jobs to Be Done
- Moat / Network Effects
- MVP
- Opportunity Cost
- Pivot
- Product-Market Fit
- Scalability
- Stakeholder
- Sunk Cost Fallacy
- Switching Costs
- Value Proposition
- Venture Capital
- Willingness to Pay

11 Test Day Strategy

11.1. Managing the 60 Minutes

The Round I assessment gives you 60 minutes for 30 questions — exactly 2 minutes per question on average. Here’s how to use that time:

Phase	What to Do	Time
First pass	Answer everything you know immediately	30 min
Second pass	Return to flagged/uncertain questions	20 min
Review	Check math calculations, re-read tricky ones	10 min

If a question asks you to calculate something, write out each step rather than trying to compute mentally. The most common errors on calculation questions are (1) forgetting to convert units (months vs. years), (2) using pre-money instead of post-money valuation, and (3) forgetting to subtract revenue from expenses to get net burn rate.

11.2. Reading Multiple Choice Questions

1. **Read the question first, not the answer choices.** Form your own answer before looking at the options. Then find the option closest to your answer.
2. **Watch for “most” and “best.”** When the question says “most likely” or “best describes,” multiple answers may be partially correct — you’re looking for the strongest match.
3. **Eliminate extreme answers.** Options that say “always,” “never,” or “in all cases” are almost always wrong in a nuanced field like entrepreneurship.
4. **For math questions, estimate first.** Before calculating precisely, estimate the answer range. This helps you catch errors — if your calculation gives \$4.7M and no answer is near that, you’ve made a mistake.
5. **Trust frameworks over intuition.** If you’re unsure, ask yourself: which framework applies here? LTV:CAC, break-even, Porter’s Forces, SWOT — the question is usually testing a specific concept, and naming it points you to the right answer.

11.3. The Night Before

- Review the formulas table once — don’t try to learn new material
- Skim the vocabulary fast-track list

- Sleep at least 7–8 hours — sleep is more valuable than an extra hour of studying
- Prepare your test environment: quiet space, good internet connection, water, no distractions

Good luck on Round I.

The best preparation is understanding *why* answers are right, not just memorizing what they are. Every practice problem you did with that mindset has already made you a stronger strategic thinker.