

AP MICROECONOMICS

Unit 2: Supply and Demand

Topics 2.1 – 2.4 | Lesson Reference Guide

AP Exam Weight: 20–25% | ~13–15 Class Periods

What This Unit Is About

This unit explains how prices are determined in competitive markets. You will learn how consumers (buyers) and producers (sellers) respond to price changes, what causes prices to change, and how sensitive buyers and sellers are to those changes.

Topics covered:

- 2.1 Demand – how buyers behave
- 2.2 Supply – how sellers behave
- 2.3 Price Elasticity of Demand – how sensitive buyers are to price changes
- 2.4 Price Elasticity of Supply – how sensitive sellers are to price changes

TOPIC 2.1 — DEMAND

What Is Demand?

Demand is the willingness AND ability of consumers to buy various quantities of a good or service at various prices within a given time period.

Two key words: "willingness" means wanting to buy; "ability" means having the money to do so. You need BOTH.



Real-World Example: Smartphones

You might WANT (willingness) the latest iPhone that costs \$1,500, but if you cannot afford it (no ability), that is NOT demand.

Demand = wanting it AND being able to pay for it.

The Law of Demand

The Law of Demand states: when the price of a good increases, the quantity demanded decreases — and vice versa. Price and quantity demanded move in OPPOSITE directions.

Why? Three reasons:

- Income Effect: When price rises, your purchasing power falls — you feel "poorer" and buy less.
- Substitution Effect: When price rises, consumers switch to cheaper alternatives (substitutes).
- Diminishing Marginal Utility: Each additional unit of a good gives you less satisfaction than the previous one, so you are only willing to pay less for more.



Example: Pizza

At \$5 per slice → you buy 3 slices.

At \$10 per slice → you buy 1 slice.

Price went up, quantity demanded went down. This is the Law of Demand.

The Demand Curve

The demand curve is a downward-sloping line on a graph with Price (P) on the vertical axis and Quantity (Q) on the horizontal axis. It shows how quantity demanded changes as price changes.



Important distinction: A change in PRICE causes movement ALONG the demand curve (change in quantity demanded). A change in any other factor causes a SHIFT of the entire curve (change in demand).

What Shifts the Demand Curve? (TRIBE)

Five factors (other than price) can shift the entire demand curve left or right. Use the mnemonic TRIBE:

- T — Tastes & Preferences: If people like a product more, demand increases (shifts right). Example: A celebrity endorses a brand of shoes → demand increases.
- R — Related Goods Prices: Substitutes (Pepsi vs. Coke) and Complements (hot dogs and buns). If the price of a substitute rises, demand for the original good increases. If the price of a complement rises, demand for the other good decreases.
- I — Income: For normal goods (most goods), higher income → more demand. For inferior goods (e.g., instant noodles), higher income → less demand (people can afford better options).
- B — Buyers (Number of consumers): More buyers in the market → higher demand. Example: A city's population grows → housing demand increases.
- E — Expectations: If consumers expect prices to rise in the future, they buy more NOW. Example: News reports that iPhone prices will increase next month → demand for iPhones spikes today.



★ AP Exam Tip: Demand vs. Quantity Demanded

"Change in demand" = the whole curve shifts (caused by a non-price factor).

"Change in quantity demanded" = movement along the existing curve (caused by price change only).

Mixing these up is one of the most common AP exam mistakes!

Key Terms — Topic 2.1

Demand	Willingness and ability of consumers to buy at various prices
Law of Demand	Price $\uparrow \rightarrow$ Quantity Demanded $\downarrow$ (inverse relationship)
Demand Curve	Downward-sloping line showing price-quantity relationship
Normal Good	Demand increases when income increases (e.g., new car)
Inferior Good	Demand decreases when income increases (e.g., bus rides)
Substitute Good	Used in place of another good (e.g., Pepsi for Coke)
Complement Good	Used together with another good (e.g., gas and cars)

TOPIC 2.2 — SUPPLY

What Is Supply?

Supply is the willingness AND ability of producers to sell various quantities of a good or service at various prices within a given time period.

"Willingness" = producers want to sell; "ability" = they can actually produce it. Both are required.



Real-World Example: Coffee Farmers

When coffee prices are high (\$8/kg), farmers are willing and able to grow more coffee → high quantity supplied.

When coffee prices fall (\$2/kg), farmers reduce production because it may not cover their costs → low quantity supplied.

The Law of Supply

The Law of Supply states: when the price of a good increases, the quantity supplied increases — and vice versa. Price and quantity supplied move in the SAME direction.

Why? Higher prices make production more profitable, so producers increase production.

Also, the Law of Increasing Marginal Cost: producing each additional unit costs more (you have to use less efficient resources), so sellers need a higher price to justify producing more.

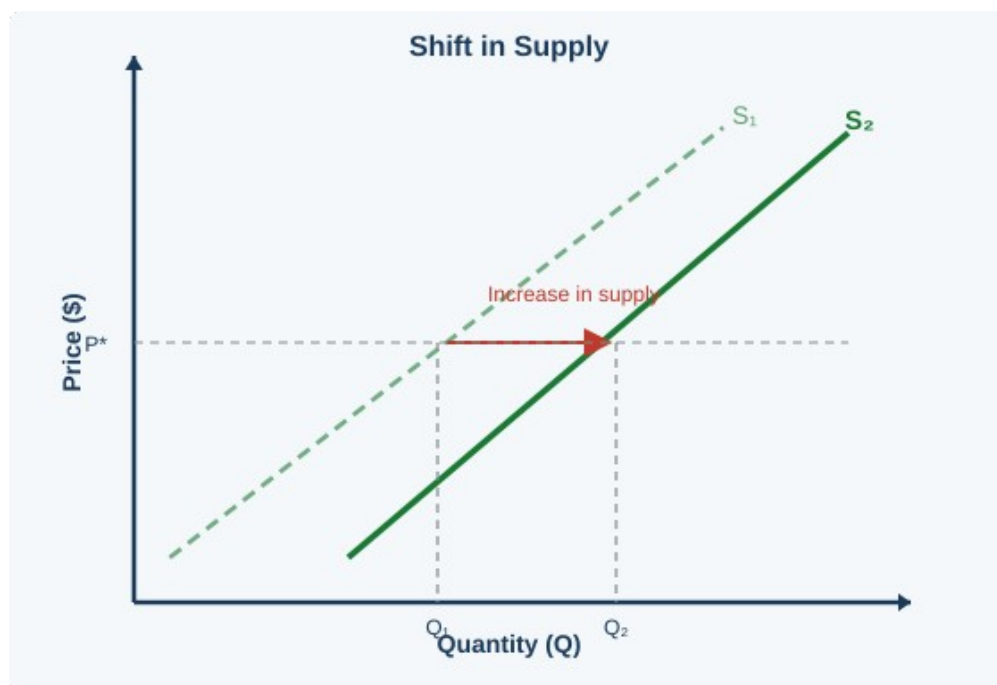


What Shifts the Supply Curve? (TICTEN)

Six factors can shift the entire supply curve. Use TICTEN:

- T — Technology: Better technology reduces production costs → supply increases (shifts right). Example: Robots in car factories increase car supply.
- I — Input Costs (Cost of Resources): If wages, raw materials, or energy costs rise → supply decreases (shifts left). Example: Higher oil prices increase transportation costs → supply of goods decreases.
- C — Competition (Number of Sellers): More firms in the market → supply increases. Example: New smartphone manufacturers enter the market → smartphone supply increases.

- T — Taxes and Subsidies: Taxes on producers increase costs → supply decreases. Government subsidies reduce costs → supply increases. Example: A government subsidy to wheat farmers → wheat supply increases.
- E — Expectations: If producers expect prices to rise in the future, they may withhold supply now. Example: Oil producers expecting higher future prices reduce current output.
- N — Nature/Other Events: Natural disasters, weather, or pandemics disrupt production. Example: A drought destroys crops → food supply decreases.



★ AP Exam Tip: Supply vs. Quantity Supplied

"Change in supply" = the whole curve shifts (non-price factor).

"Change in quantity supplied" = movement along the existing curve (price change only).

★ Remember: Consumer income affects DEMAND, NOT supply! Students often incorrectly say income shifts supply.

Key Terms — Topic 2.2

Supply	Willingness and ability of producers to sell at various prices
Law of Supply	Price $\uparrow$ → Quantity Supplied $\uparrow$ (direct/positive relationship)
Supply Curve	Upward-sloping line showing price-quantity supplied relationship
Input Costs	Costs of resources used in production (labor, materials, energy)
Subsidy	Government payment to producers to lower costs and increase supply

TOPIC 2.3 — PRICE ELASTICITY OF DEMAND (PED)

What Is Price Elasticity of Demand?

Price Elasticity of Demand (PED or Ed) measures how RESPONSIVE (sensitive) consumers are to a change in price. In other words: if price changes, how much does Quantity Demanded (QD) change? Throughout this section, QD = Quantity Demanded.

Think of it like a rubber band: elastic = stretches a lot (big response); inelastic = barely stretches (small response).



Inelastic Example: Insulin for Diabetics

If insulin prices double, diabetics STILL need it. Quantity demanded barely changes.



Elastic Example: Designer Handbags

If designer handbag prices double, many people switch to other bags or decide not to buy. Quantity demanded drops a lot.

The PED Formula

$$Ed = | \% \text{ Change in Quantity Demanded} | \div | \% \text{ Change in Price} |$$

Note: QD stands for Quantity Demanded — the number of units buyers are willing and able to purchase. The absolute value $||$ is used because the result is always negative (price and QD move in opposite directions), but we report it as a positive number.



Worked Example: Coffee at a café

Original price: \$4, New price: \$5 → % change in price = $(5-4)/4 \times 100 = 25\%$

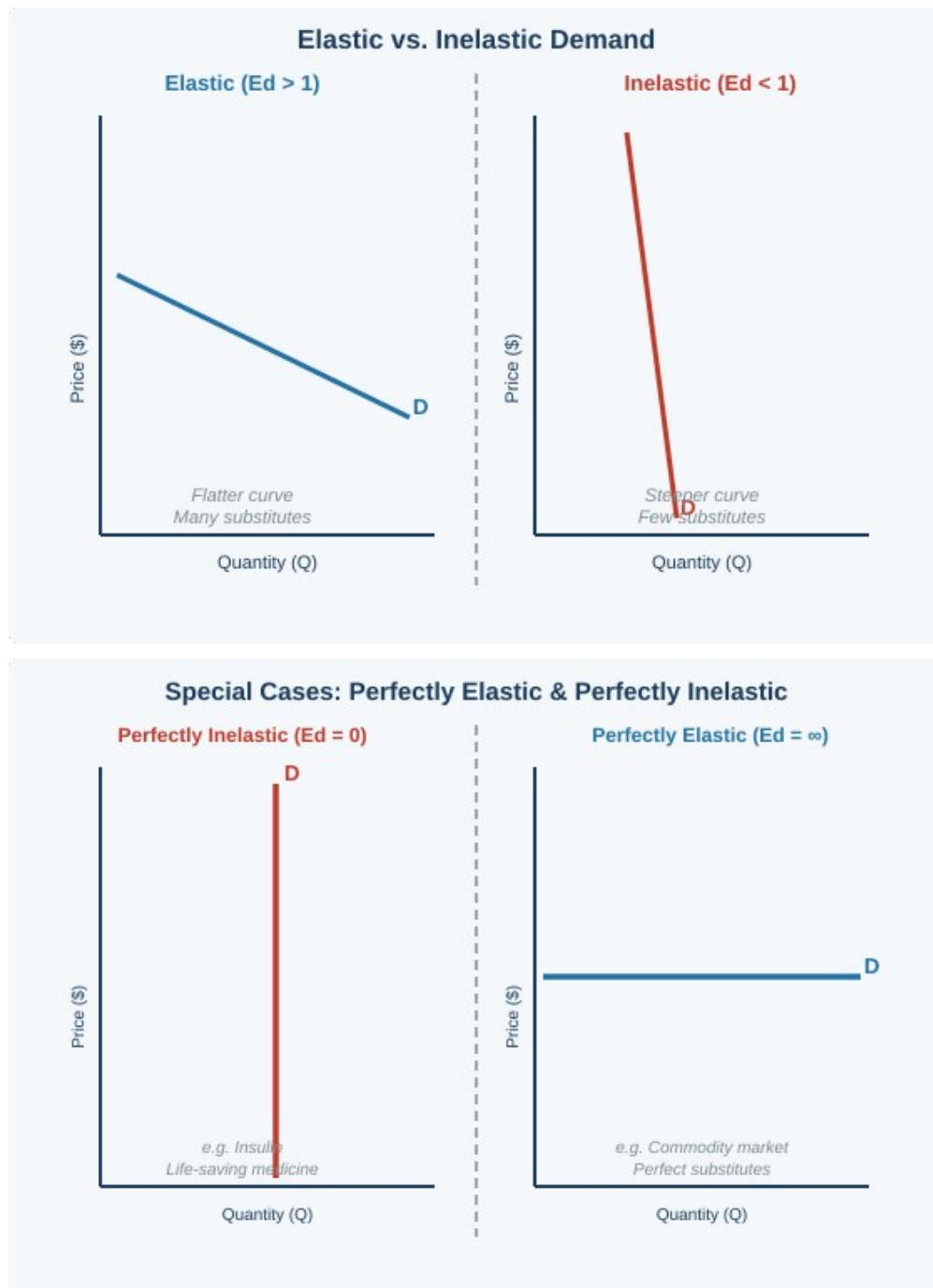
Original QD: 100 cups, New QD: 70 cups → % change in QD = $(70-100)/100 \times 100 = -30\%$

$Ed = |-30\%| \div |25\%| = 30/25 = 1.2$

Since $1.2 > 1$ → Demand is ELASTIC (coffee has substitutes — tea, juice, water)

Interpreting PED Values

Ed Value	Type	Meaning	Example
Ed = 0	Perfectly Inelastic	Price change → no change in QD	<i>Insulin, heroin</i>
Ed < 1	Inelastic	$\% \Delta QD < \% \Delta P$	<i>Gasoline, cigarettes</i>
Ed = 1	Unit Elastic	$\% \Delta QD = \% \Delta P$	<i>TR stays same</i>
Ed > 1	Elastic	$\% \Delta QD > \% \Delta P$	<i>Designer goods, luxury trips</i>
Ed = ∞	Perfectly Elastic	Tiny price ↑ → QD falls to 0	<i>Commodity markets</i>



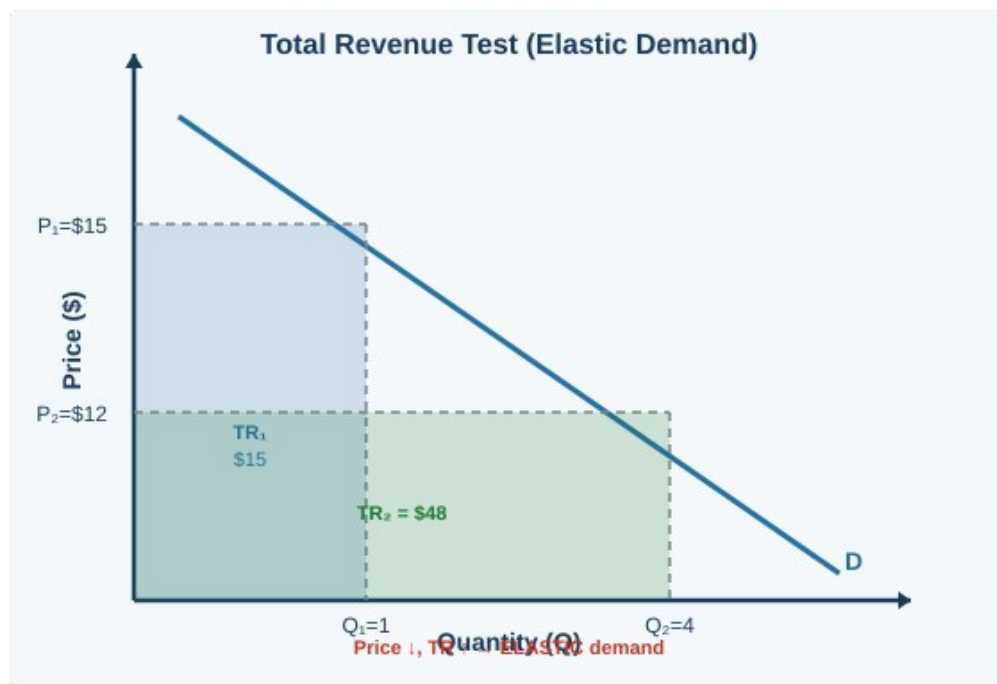
Determinants of PED: What Makes Demand Elastic or Inelastic?

- 1. Necessity vs. Luxury: Necessities (medicines, electricity) tend to be inelastic. Luxuries (vacations, jewelry) tend to be elastic.
- 2. Number of Substitutes: More substitutes = more elastic. Fewer substitutes = more inelastic. Pepsi has many substitutes (other sodas) → elastic. Insulin has no substitutes → inelastic.
- 3. Time Horizon: Over time, consumers find more substitutes → demand becomes more elastic. Short run: inelastic (no time to adjust). Long run: more elastic.
- 4. Share of Income: Goods that take up a large portion of income (houses, cars) tend to be more elastic. Goods with small budget impact (salt, matches) tend to be inelastic.
- 5. Habit-forming/Addictive Goods: Tend to be inelastic (cigarettes, coffee for regular drinkers).

Total Revenue Test

Total Revenue (TR) = Price $\times$ Quantity. The Total Revenue Test helps determine elasticity WITHOUT calculating the formula:

- Price $\uparrow$ and TR $\uparrow$ $\rightarrow$ Inelastic demand (the price effect wins over the quantity effect)
- Price $\uparrow$ and TR $\downarrow$ $\rightarrow$ Elastic demand (the quantity effect wins over the price effect)
- Price $\uparrow$ and TR stays the same $\rightarrow$ Unit elastic demand



Total Revenue Test — Concert Tickets Example

If a concert raises ticket price from \$50 to \$75 and revenue goes UP: inelastic demand (fans will pay more; few substitutes for seeing their favourite artist live).

If a coffee shop raises latte price from \$4 to \$5 and revenue goes DOWN: elastic demand (customers switch to tea, water, or a cheaper competitor).

★ AP Exam Tips — Price Elasticity of Demand

- Always take the ABSOLUTE VALUE of the formula result.
- Elasticity is NOT the same as slope! A steeper curve is more inelastic, but slope $\neq$ elasticity.
- Elasticity changes along a linear demand curve — it is more elastic at the top (higher prices) and more inelastic at the bottom (lower prices).
- The Total Revenue Test is a quick way to determine elasticity on exam questions.

TOPIC 2.4 — PRICE ELASTICITY OF SUPPLY (PES)

What Is Price Elasticity of Supply?

Price Elasticity of Supply (PES or E_s) measures how RESPONSIVE producers are to a change in price. If price changes, how much does the quantity supplied change?

 *Real-World Examples:*

 Concert seats are **PERFECTLY INELASTIC** — no matter how high ticket prices go, there are only a fixed number of seats in the venue. $E_s = 0$.

 Plastic toys are **ELASTIC** — factories can ramp up production quickly when prices rise. $E_s > 1$.

 Fine wine is **INELASTIC** — quality wine takes years to produce. Producers cannot respond quickly to price increases. $E_s < 1$.

The PES Formula

$$E_s = \% \text{ Change in Quantity Supplied} \div \% \text{ Change in Price}$$

Note: Unlike PED, PES does NOT use absolute value because the result is always positive (price and Q_s move in the same direction).

 *Worked Example: T-shirt Manufacturer*

Original price: \$10, New price: \$15 → % change in price = $(15-10)/10 \times 100 = 50\%$

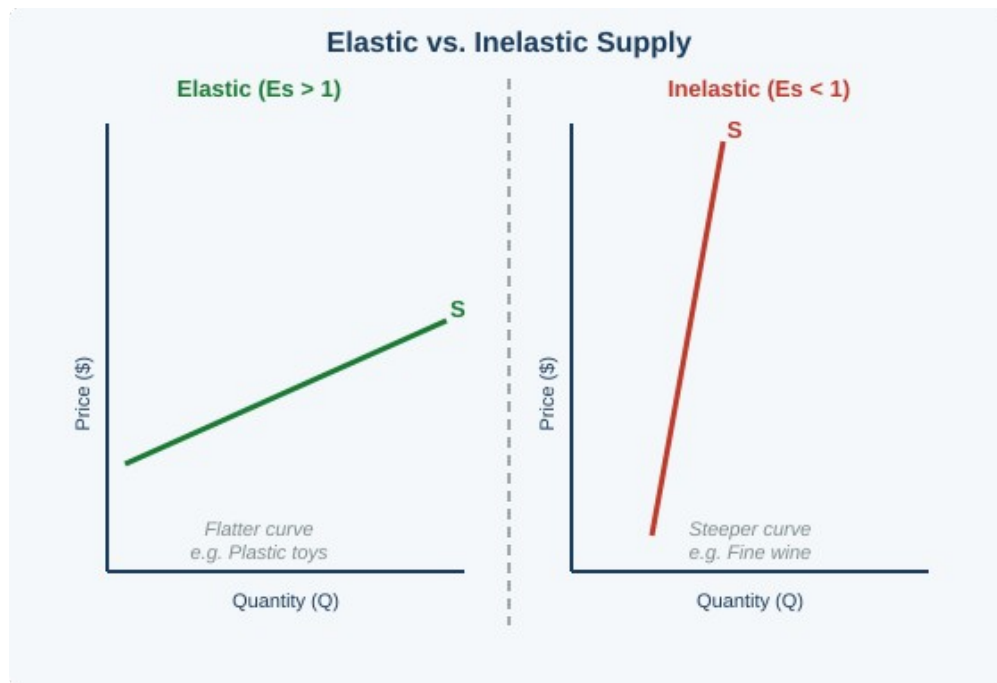
Original Q_s : 100 shirts, New Q_s : 160 shirts → % change in Q_s = $(160-100)/100 \times 100 = 60\%$

$E_s = 60\% \div 50\% = 1.2$

Since $1.2 > 1$ → Supply is **ELASTIC** (factory can increase production relatively easily)

Interpreting PES Values

Es Value	Type	Real-World Example
$E_s = 0$	Perfectly Inelastic	Concert seats (fixed capacity), Picasso paintings, land in a city center
$E_s < 1$	Inelastic	Fine wine, wheat (slow to grow), skilled surgeons
$E_s > 1$	Elastic	Plastic toys, t-shirts, basic electronics (easy to produce more)
$E_s = \infty$	Perfectly Elastic	Seawater, sunshine (free resources with unlimited supply)



The Key Determinant of PES: TIME

The MOST IMPORTANT factor determining price elasticity of supply is the TIME producers have to respond to a price change.

- Very Short Run (Fixed Supply): No time to adjust. Supply is perfectly inelastic. Example: Fish already caught at the market today — the supply is fixed regardless of price.
- Short Run (Partially Adjustable): Producers can adjust labor and raw materials but not capital. Supply is more inelastic. Example: A bakery can bake more bread by working overtime, but cannot build a new oven quickly.
- Long Run (Fully Adjustable): Producers can change ALL factors — build new factories, train new workers, install new equipment. Supply becomes more elastic. Example: Car manufacturers can build new production lines if car prices rise.

Time Analogy: iPhone Supply

Day 1 after launch: Supply is fixed (perfectly inelastic) — Apple cannot produce more overnight.

6 months later: Apple has ramped up production lines (more inelastic → elastic).

2 years later: Competitors enter the market, factories fully optimized. Supply is highly elastic.

★ AP Exam Tips — Price Elasticity of Supply

- The steeper the supply curve, the more INELASTIC the supply.
- The flatter the supply curve, the more ELASTIC the supply.
- A perfectly inelastic supply curve is VERTICAL. A perfectly elastic supply curve is HORIZONTAL.
- TIME is the #1 determinant of supply elasticity — always the key factor to mention in free-response questions.
- Do NOT use absolute value for PES (the answer is already positive).

UNIT 2 QUICK REFERENCE SUMMARY

Topic	Key Law / Formula	Curve Shape	Key Shifters
2.1 Demand	$P \uparrow \rightarrow QD \downarrow$ (Inverse)	Downward sloping 	TRIBE: Tastes, Related goods, Income, Buyers, Expectations
2.2 Supply	$P \uparrow \rightarrow Qs \uparrow$ (Direct)	Upward sloping 	TICTEN: Technology, Input costs, Competition, Taxes, Expectations, Nature
2.3 PED	$Ed = \% \Delta QD \div \% \Delta P $	Flat=elastic; Steep=inelastic; Vertical=perfectly inelastic; Horizontal=perfectly elastic	Necessity, substitutes, time, share of income, habit
2.4 PES	$Es = \% \Delta Qs \div \% \Delta P$	Flat=elastic; Steep=inelastic; Vertical=perfectly inelastic; Horizontal=perfectly elastic	TIME is #1 factor — short run (inelastic) vs long run (elastic)

Good luck on Monday! Remember: economics is about CHOICES and how people respond to incentives.