How much do buyers react?

Two cafés, one price change, two very different reactions.

1 The ratio

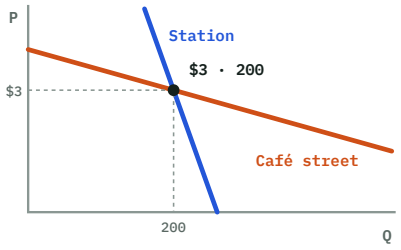
elasticity

- **Price elasticity of demand** → `%ΔQ ÷ %ΔP` (Δ = change in · Q = quantity · P = price) — how many % of sales move for every 1% on the price
- `% change = (new − old) ÷ old` · economists drop the minus sign
- Station: price +20% ($3→$3.60), cups −6% (200→188) → `6 ÷ 20 = 0.3`
- The same idea works for sellers → **price elasticity of supply** = `%ΔQ_S ÷ %ΔP` (Q_S = quantity supplied; wheat farmers: 30% ÷ 10% = 3)

2 Two curves, two reactions

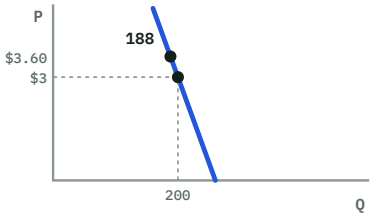
same price, different shops

- Both cafés sell **200 cups** a day at **$3**
- **Station café** — only shop in the train station → few substitutes → **steep** curve
- **Café street** — five other cafés next door → many substitutes → **flat** curve
- Watch out: elasticity ≠ slope · one straight line, a different ratio at each price (street: `3` at $3, `1` at $2) → compare curves from the same point

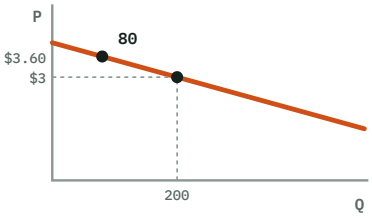


3 Elastic or inelastic?

compare with 1, not 0



Inelastic · below 1
Station: ratio `0.3`
price +20% → cups −6%

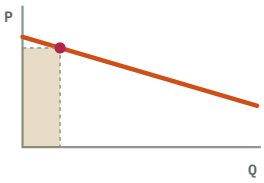


Elastic · above 1
Café street: ratio `3`
price +20% → cups −60%

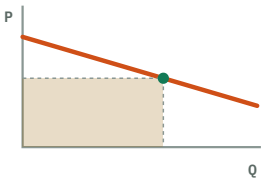
Unit elastic = ratio exactly 1: cups move by the same % as the price

4 The revenue rule

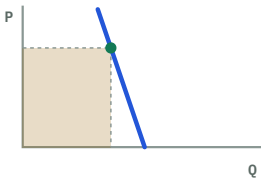
takings = total revenue = price × quantity



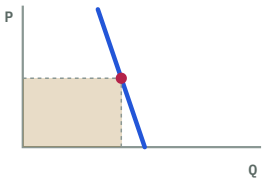
Elastic, price ↑
street $3→$3.60
$600 → $288 ↓



Elastic, price ↓
street $3→$2.50
$600 → $750 ↑



Inelastic, price ↑
station $3→$3.60
$600 → $676.80 ↑



Inelastic, price ↓
station $3→$2.50
$600 → $525 ↓

Total revenue test → price and takings move opposite ways: elastic. Same way: inelastic. On a straight demand line, revenue peaks where the ratio equals 1 (street: $2, 400 cups, $800).

5 What makes demand elastic?

four reasons

`SUBSTITUTES` more/closer alternatives → more elastic (one gas station vs. gasoline overall)

`NEED OR TREAT` needs (insulin) are inelastic · treats (a movie) are elastic

`SHARE OF BUDGET` a bigger expense → people look harder → more elastic

`TIME` demand gets more elastic over months, as buyers find alternatives

6 The math, step by step

concert tickets

- 1,000-seat hall: all sell at $20. At $25, only 600 would come.
- `(600−1,000)÷1,000 = −40%` → `(25−20)÷20 = +25%` → `40÷25 = 1.6` → elastic
- **Midpoint method** (AP exam = US high-school economics exam) → divide each change by the average of old and new → same answer up or down
- Takings: $20 × 1,000 = $20,000 → $25 × 600 = $15,000 — the higher price loses money
- Superstar, one night only: $80→$100 (+25%), 120,000→114,000 fans (−5%) → ratio `0.2`, very inelastic: no substitute for this night → **dynamic pricing** raises prices as fans rush in