Are you rational?

The perfectly rational person of economics against a real brain: fast answers, predictable mistakes, and the rule to check them.

1 Two people

model · reality

- **Homo economicus** (Latin “economic man”) = person of the Micro course → compares **costs** and **benefits** · never forgets · never tires
- **You** → busy, hurried → often takes the **first answer** that comes
- **Daniel Kahneman** (Israeli-American psychologist, Nobel 2002) + **Amos Tversky** (Israeli psychologist) → we think in two ways ↓

2 Fast · slow

thinking · the check

- FAST instant, automatic (System 1) → first answer **feels right** · SLOW deliberate check (System 2) → takes effort ⇒ often **skipped**
- **Bat + ball** = $1.10, bat $1 more → quick **10¢** × · right **5¢** (bat $1.05)
- **Sanity check** = put the answer back into the story → does it give the total?
- Same trap: banana + bagel 37¢, 13¢ more → bagel **12¢** (not 24¢) · pen + notebook $2.40, $2.00 more → pen **20¢** (not 40¢): `(total − extra) ÷ 2`
- More quick answers: 5 machines, 5 cases, 5 min → 100 machines, 100 cases = **5 min** (not 100) · weeds double daily, pond full day 48 → half on day **47** (not 24)

BALL	BAT	TOTAL	$1.10?
10¢	$1.10	$1.20	no
5¢	$1.05	$1.10	yes

3 Bias

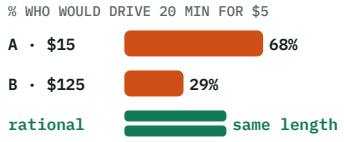
a mistake with a direction

- **Bias**: “a mistake most people make in the same direction, so it can be predicted”
- Predictable → **measurable** → **usable** by sellers · ≠ random slip (one tired person, 37 + 13 = 51)
- **Behavioral economics** = economics of predictable mistakes · **Richard Thaler** (American economist, Nobel 2017)

4 The two trips

% over $ · 1981

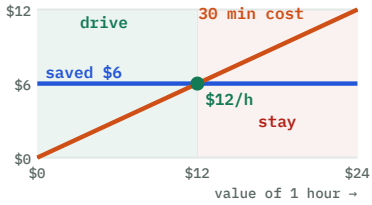
- Tversky + Kahneman, ≈ 180 students · drive **20 min** to save **$5**?
- Trip A: $5 off a **$15** calculator (**33%**) → **68%** yes · Trip B: $5 off **$125** (**4%**) → **29%** yes
- Same $5, same 20 min ⇒ rational: **same** answer (both trips or neither) · gap = 68 − 29 = **39** in 100
- **% over $** = judging a saving by its percent, not its dollars · Sam: $10 off $30 shoes yes, off $900 laptop no



5 Rational rule

gain vs give up

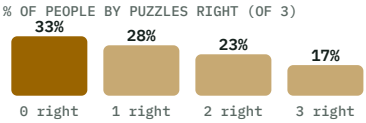
- **Opportunity cost** = what you give up (Micro Lesson 1) → here: your **time**
- `drive if $ saved > value of your time` → the item’s **price** appears nowhere
- 20 min worth $8, save $5 → **stay** (−$3) · $15 or $125 item: same answer
- **Break-even** (gain = give up): save $6, trip 30 min → **$12 an hour** · below: drive · above: stay · $24 lamp or $300 bed: same
- Rational ≠ one answer for all: Leo ($15/h) drives 30 min for $20 ✓ · Ana ($12/h) skips 1 h for $5 ✓



6 Evidence

Frederick 2005

- **Shane Frederick** (American researcher): 3 puzzles (bat + ball among them) · **3,428** people, mostly university students
- Average **1.24** right out of 3 · none **33%** · one 28% · two 23% · all three only **17%**
- ≈ half at top US universities (Harvard, MIT, Princeton) said 10¢ ⇒ fast thinking = the **default**, not a flaw of a few



7 So what

who uses it · defense

- **Who uses it**: sellers → pick the version that **sounds bigger** · “33% off” on cheap items, “$ off” on expensive ones
- Bike shop, $10 off: **$20 light** (50%) vs $400 bike (2.5%) → light ad ≈ **2×** shoppers (68 vs 29)
- Chain: sign “Save 33%!” → fast thinking grabs the % → saving feels big → more shoppers → seller repeats
- **Your defense**: say the **dollars** out loud (“is $5 worth my 20 min?”) → then check the answer · breaks the chain at step 2

Watch out: a percent buys nothing → 33% of $15 = 4% of $125 = **$5** · and a quick answer is not a checked answer