DAY 03 · Part 1 · What AI Is

Why does AI answer differently every time?

Five-Minute AI Lessons · Sep 9, 2026 · Probability and temperature — what the boldness knob really is

Today's answer

Draw from the odds — and reshape them with a knob

1. AI gives each candidate for the next piece a **probability**, then does a **lucky draw** with those odds. It doesn't always pick #1.

2. **Temperature** is the knob that decides how **flat** that table gets. It **doesn't change the ranking.**

3. Turn it down and the answers stay similar; turn it up and they get **more varied, but the risk of going off the rails** grows too.

One picture

Ask the same question three times

Temperature 0.3	Timidly	**good · good · good** Run it three times and you get almost the same answer
Temperature 1.0	Normal (near the default)	**good · bad · good** Mostly #1, with a different answer now and then
Temperature 1.6	Boldly	**okay · amazing · salty** Different every time, and awkward answers start creeping in

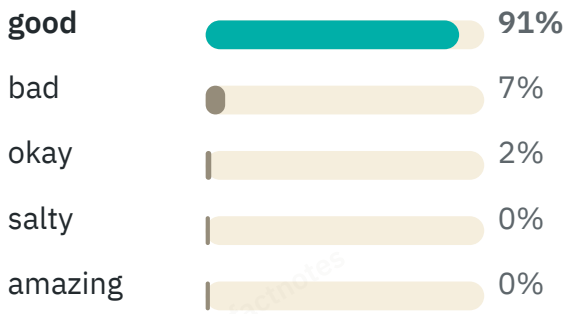
Same candidates, same ranking. Only one knob changed.

Try it

The same table, with only the temperature changed

0.3

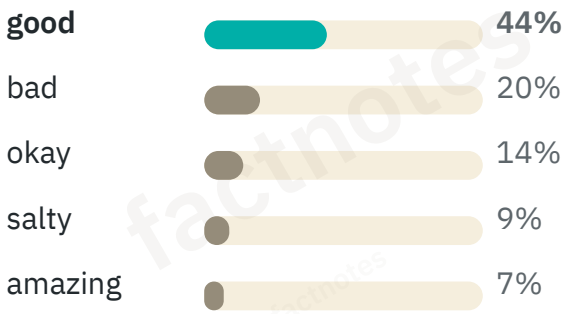
Timid — #1 runs away with it



#1 is at 91%. You basically only get the one answer.

1.0

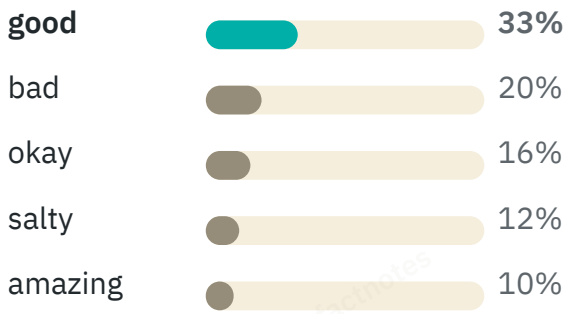
Normal — the original odds



AI defaults are usually around here.

1.6

Bold — spread out evenly



Even #5 is at 10%. It gets drawn fairly often.

Same ranking, only the gaps change — temperature doesn't change #1

The odds are made-up example numbers. A real AI does the same math, but with tens of thousands of candidates.

Quick check

Three questions

Q1

What happens if you turn the temperature down very close to 0?

① The ranking of the candidates flips
② Almost always only #1 gets drawn
③ There are more candidates
④ The AI gets smarter

Q2

When you raise the temperature, what grows along with it?

① More variety — and more risk of weird answers
② Computing gets faster
③ Accuracy always goes up
④ The number of tokens goes down

Q3

(True / False) Set the temperature to 0, and the same question always gets exactly the same answer.

Why it works that way

Q1

② Temperature doesn't change the ranking. It only changes how far ahead #1 is. Near 0, #1's chance gets close to 100%, so you always get the same answer.

Q2

① Lower candidates get drawn often, so there's more variety — but the risk of awkward or wrong answers grows too. That's why people turn the temperature down for jobs that must be exact, like code and math.

Q3

F False. In a 2026 experiment with 4,705 runs, even at temperature 0 the bigger the model, the less often it gave the same answer — models over 120 billion parameters were under 20% reproducible.

Temperature isn't a knob that makes AI smarter — it's a knob for how bold it gets.

Tomorrow — training: where did this probability table come from in the first place?