How Many Piano Tuners?

Getting within a factor of ten of a number nobody looked up

Maths · Mr Okonkwo · 12 March 2026

The question

A number nobody looked up

How many piano tuners work in this city?

Nobody in this room knows. Nobody is going to look it up.

And by the end of the hour we will have a number, and it will be close enough to argue about.

Do not solve it. The point of the next forty minutes is that they solve it, badly, four times over, and that the fourth time is close.

The rule of the game

- Break the question into smaller ones you **can** estimate.
- Every estimate is allowed to be wrong by a factor of two.
- Say your number out loud, even when you think it is silly.

Two minutes. Read it, then we start.

Two minutes, no more. They will want to start guessing; let them, but the rule has to be said out loud first or the whole hour turns into a quiz.

Four goes at it

First go: alone

Write down every smaller question you would need to answer.

Alone. No talking, no looking across. Eight minutes.

Eight minutes, alone, on paper. Walk the room and say nothing. This is the burst where the clock matters most – they will look up at it, and it should be on the slide with the task, not over it.

Second go: in pairs

Compare your lists. Do not agree on one.

- Which questions did you both write down?
- Which did only one of you see?

Five minutes. Pairs, not fours – in a four one person writes and three watch. The instruction to **compare lists** rather than agree on one is the whole difference.

What the room found

Call them out.

Everything worth writing on the board goes on the board.

No clock here: this is the talking part, and it takes as long as it takes. Collect on the board. Expect population, pianos per household, tunings per year, tunings per day.

Third go: put numbers on them

Now guess a number for each one. Ten minutes.

Fours. Wrong by a factor of two is fine. Wrong by a factor of ten is a question worth asking out loud.

Ten minutes, in fours now, because the arithmetic is worth arguing over. This is the longest burst of the hour, and the one where somebody will discover their factor-of-two rule was generous.

What we got

The number

Three groups, three numbers.

within a factor of ten

Which is what the method promises, and all it promises.

Take three answers, write all three, and do not rank them. The interesting thing is the **spread**, and the spread is the lesson.

Last go: what would you check first?

Of all your guesses, which one would you look up first?

One sentence on a slip of paper. Four minutes.

Four minutes, and then the bell. They should leave with the one number they most distrust, not with an answer.