Adding the denominators — a card for the teacher

One question that shows the cause, three minutes that fix it, and sentences to say instead of others.

The diagnostic question: “Hala painted $\frac{1}{2}$ of the classroom wall and Sami painted $\frac{1}{3}$ of the same wall, and neither painted any part the other had painted. (a) Together, did they paint more than half the wall or less? Explain. (b) Work out what they painted together.”

1 **Minute one: is the answer more than a half?**

A half and a third end to end under the whole, then the wrong answer's strip beside them. “Can we add something to a half and end up with less than a half?”

2 **Minute two: pieces of the same size**

“Which piece fits exactly into a half, and exactly into a third?” A half is three sixths; a third is two sixths.

3 **Minute three: count the pieces**

Three sixths and two sixths. “Why did the denominator stay 6?” Compare with the estimate, then name the rule.

Instead of	Say
“The top number and the bottom number.”	“The denominator tells you the size of the piece; the numerator counts the pieces.”
“You can't add fractions with different denominators.”	“Let's cut them into equal pieces first.”
“Find the least common multiple.”	“Which piece fits exactly into both fractions?”
“Wrong, the answer is …”	“Is your answer more or less than $\frac{1}{2}$?”
“In multiplication we multiply the denominators; in addition we don't.”	“Half of a third is a sixth. A half plus a third is more than a half.”
“Add the numerators and keep the denominator.”	“Three sixths and two sixths: how many sixths?”

In the following days: one line of estimate before every addition problem: more or less than $\frac{1}{2}$? More or less than 1?

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