

$$\frac{4}{2} \overset{\text{1}}{\nearrow} \frac{6}{3} = \frac{\overset{\text{This is important!}}{\textcircled{(3 \times 4)}} + \cancel{(2 \times 6)}}{\underset{\uparrow}{\cancel{2 \times 3}}} = \boxed{\frac{12 + 12}{6}} = \frac{24}{6} = \textcircled{4} \leftarrow \text{RESULT}$$

The diagram illustrates a common mistake in simplifying fractions. It shows the fraction $\frac{4}{2}$ being simplified to $\frac{6}{3}$ by dividing both numerator and denominator by 2. The next step shows the fraction $\frac{6}{3}$ being simplified to $\frac{24}{6}$ by multiplying both numerator and denominator by 4. The final result is 4. The diagram uses various annotations to highlight the correct and incorrect steps:

- A red arrow points from the 2 in the denominator of $\frac{4}{2}$ to the 1 in the numerator of $\frac{6}{3}$, indicating the simplification step.
- The expression (3×4) is circled in red, with the text "This is important!" above it.
- The expression (2×6) is crossed out with a red line.
- The denominator 2×3 is crossed out with a green line, with a green arrow pointing to it from below.
- The text "WRONG!" is written in red above the crossed-out denominator.
- The expression $\frac{12 + 12}{6}$ is enclosed in a blue box, with a blue arrow pointing from the box to the final result.
- The final result 4 is enclosed in a yellow circle, with a yellow arrow pointing to it from the word "RESULT" in a yellow box.

This multiplication is not
 necessary Try to simplify.