

Common Fraction Mistakes

Six slips that cost marks, with the wrong working, the right working and why it goes wrong.

1 Adding the denominators

✗ WRONG

~~$\frac{1}{2} + \frac{1}{3} = \frac{2}{5}$~~

✓ RIGHT

$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

Denominators name the size of the parts. Make the parts the same size first, then add only the numerators. $\frac{2}{5}$ is less than $\frac{1}{2}$, so it cannot be right.

2 Not simplifying

✗ WRONG

~~$\frac{4}{10} + \frac{2}{10} = \frac{6}{10}$, left as it is~~

✓ RIGHT

$\frac{6}{10} = \frac{3}{5}$ (divide top and bottom by 2)

$\frac{6}{10}$ is correct but not finished. Answers are expected in their simplest form: divide by the highest common factor.

3 Flipping the wrong fraction

✗ WRONG

~~$\frac{2}{3} \div \frac{4}{5} = \frac{3}{2} \times \frac{4}{5} = \frac{6}{5}$~~

✓ RIGHT

$\frac{2}{3} \div \frac{4}{5} = \frac{2}{3} \times \frac{5}{4} = \frac{10}{12} = \frac{5}{6}$

Only the second fraction, the divisor, is flipped. Check: $\frac{2}{3}$ is less than $\frac{4}{5}$, so the answer must be less than 1.

4 Multiplying mixed numbers in pieces

✗ WRONG

~~$2\frac{1}{2} \times 2\frac{1}{2} = 4\frac{1}{4}$~~

✓ RIGHT

$\frac{5}{2} \times \frac{5}{2} = \frac{25}{4} = 6\frac{1}{4}$

$2\frac{1}{2}$ means $2 + \frac{1}{2}$, so splitting it misses $2 \times \frac{1}{2}$ and $\frac{1}{2} \times 2$. Convert to improper fractions first. Check: $2.5 \times 2.5 = 6.25$.

5 Comparing by denominator size

✗ WRONG

~~$\frac{5}{8} > \frac{2}{3}$ because $8 > 3$~~

✓ RIGHT

$\frac{5}{8} = \frac{15}{24}$ and $\frac{2}{3} = \frac{16}{24}$, so $\frac{2}{3}$ is bigger

A bigger denominator means smaller pieces, not a bigger fraction. Use a common denominator or decimals (0.625 and 0.666...).

6 Adding to top and bottom

✗ WRONG

~~$\frac{2}{3} = \frac{3}{4}$ (add 1 to both)~~

✓ RIGHT

$\frac{2}{3} = \frac{4}{6}$ (multiply both by 2)

Only multiplying or dividing top and bottom by the same number keeps the value. $\frac{2}{3} \approx 0.667$ but $\frac{3}{4} = 0.75$.

💡 Estimate, then check

Most of these slips give an answer of the wrong size. Before you calculate, decide roughly how big the answer should be. Afterwards, check it with decimals.

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