

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

$$\cancel{1/2 + 1/3 = 2/5}$$

✓ RIGHT

$$1/2 + 1/3 = 3/6 + 2/6 = 5/6$$

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

2 Not simplifying

✗ WRONG

$$\cancel{4/10 + 2/10 = 6/10, \text{ left as it is}}$$

✓ RIGHT

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

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

3 Flipping the wrong fraction

✗ WRONG

$$\cancel{2/3 \div 4/5 = 3/2 \times 4/5 = 6/5}$$

✓ RIGHT

$$2/3 \div 4/5 = 2/3 \times 5/4 = 10/12 = 5/6$$

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

4 Multiplying mixed numbers in pieces

✗ WRONG

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

✓ RIGHT

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

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

5 Comparing by denominator size

✗ WRONG

$$\cancel{5/8 > 2/3 \text{ because } 8 > 3}$$

✓ RIGHT

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

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

6 Adding to top and bottom

✗ WRONG

$$\cancel{2/3 = 3/4 \text{ (add 1 to both)}}$$

✓ RIGHT

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

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

💡 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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