

Adding fractions in mixed number form

Carefully read the following methods, and make sure you understand the examples:

- Method 1: Convert all mixed numbers to top-heavy (improper) fractions, then use your usual method for adding (find a common denominator, then add numerators).
- Method 2: Write each mixed number separately as whole number plus fraction, then add the whole numbers separately, add the fractions separately then combine.

Eg:

$$3\frac{2}{5} + 4\frac{7}{10}$$

Using method 1:

Converting to top-heavy fractions:

$$3\frac{2}{5} = \frac{17}{5} \quad \text{and} \quad 4\frac{7}{10} = \frac{47}{10}$$

Finding a common denominator and adding:

$$\frac{17}{5} + \frac{47}{10} = \frac{34}{10} + \frac{47}{10} = \frac{81}{10}$$

Using method 2:

Splitting whole number and fraction parts:

$$3\frac{2}{5} + 4\frac{7}{10} = 3 + \frac{2}{5} + 4 + \frac{7}{10}$$

Adding the whole numbers and the fractions separately:

$$3 + 4 = 7 \quad \text{and} \quad \frac{2}{5} + \frac{7}{10} = \frac{4}{10} + \frac{7}{10} = \frac{11}{10} = 1 + \frac{1}{10}$$

Adding the two parts back together at the end:

$$7 + 1 + \frac{1}{10} = 8 + \frac{1}{10} = 8\frac{1}{10}$$

Note that $\frac{81}{10}$ and $8\frac{1}{10}$ are just different ways of writing the same number (It's also 8.1).

1. Use **method 1** to answer the following questions. You may leave your answer as a top-heavy fraction, but you should *simplify* as far as possible.

$$2\frac{3}{25} + 1\frac{3}{10} =$$

$$2\frac{3}{4} + 3\frac{2}{5} =$$

2. Use **method 2** to answer the following questions. You should leave your answer in mixed number form. The fraction part should be fully simplified.

$$6\frac{1}{4} + 7\frac{2}{7} =$$

$$20\frac{5}{6} + 34\frac{4}{9} =$$

Mixed Numbers

You can use any method you like to answer these.

If the fraction part of your answer is top-heavy, you will need to turn it into a mixed number.

Eg: $5\frac{4}{3}$ is not a sensible form, so convert to $6\frac{1}{3}$.

$$1) \quad 5\frac{3}{25} + 6\frac{3}{10} =$$

$$2) \quad 2\frac{3}{4} + 5\frac{2}{5} =$$

$$3) \quad 1\frac{10}{30} + 5\frac{3}{6} =$$

$$4) \quad 3\frac{3}{4} + 4\frac{10}{14} =$$

$$5) \quad 1\frac{3}{6} + 9\frac{7}{12} =$$

Challenge:

$$4\frac{1}{3} - 2\frac{3}{4} =$$

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1. Use **method 1** to answer the following questions. You may leave your answer as a top-heavy fraction, but you should *simplify* as far as possible.

$$2\frac{3}{25} + 1\frac{3}{10} = \frac{53}{25} + \frac{13}{10} = \frac{212}{100} + \frac{130}{100} = \frac{342}{100} = \frac{171}{50}$$

$$2\frac{3}{4} + 3\frac{2}{5} = \frac{11}{4} + \frac{17}{5} = \frac{55}{20} + \frac{68}{20} = \frac{123}{20}$$

2. Use **method 2** to answer the following questions. You should leave your answer in mixed number form. The fraction part should be fully simplified.

$$6\frac{1}{4} + 7\frac{2}{7} = (6 + 7) + \left(\frac{1}{4} + \frac{2}{7}\right) = (13) + \left(\frac{7}{28} + \frac{8}{28}\right) = (13) + \left(\frac{15}{28}\right) = 13\frac{15}{28}$$

$$\begin{aligned} 20\frac{5}{6} + 34\frac{4}{9} &= (20 + 34) + \left(\frac{5}{6} + \frac{4}{9}\right) = 54 + \left(\frac{15}{18} + \frac{12}{18}\right) = 54 + \left(\frac{27}{18}\right) \\ &= 54 + \left(\frac{3}{2}\right) = 54 + \left(1 + \frac{1}{2}\right) = 55\frac{1}{2} \end{aligned}$$

Mixed Numbers SOLUTIONS

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Eg: $5\frac{4}{3}$ is not a sensible form, so convert to $6\frac{1}{3}$.

$$1) 5\frac{3}{25} + 6\frac{3}{10} = 11 + \frac{6}{50} + \frac{15}{50} = 11\frac{21}{50}$$

$$2) 2\frac{3}{4} + 5\frac{2}{5} = 7 + \frac{15}{20} + \frac{8}{20} = 7 + \frac{23}{20} = 8\frac{3}{20}$$

$$3) 1\frac{10}{30} + 5\frac{3}{6} = 6 + \frac{2}{6} + \frac{3}{6} = 6\frac{5}{6}$$

$$4) 3\frac{3}{4} + 4\frac{10}{14} = 7 + \frac{21}{28} + \frac{20}{28} = 7 + \frac{41}{28} = 8\frac{13}{28}$$

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Challenge:

$$4\frac{1}{3} - 2\frac{3}{4} =$$

$$\begin{aligned} \left(4 + \frac{1}{3}\right) - \left(2 + \frac{3}{4}\right) &= 2 + \left(\frac{1}{3} - \frac{3}{4}\right) \\ &= 2 + \left(\frac{4}{12} - \frac{9}{12}\right) = 2 - \frac{5}{12} = 1\frac{7}{12} \end{aligned}$$

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