

Fractions – Lesson 8

Today we consider how we can add fractions which have different denominators (bottom numbers).

We have started to learn how to add fractions, for example: -

$$\frac{2}{9} + \frac{5}{9} = \frac{7}{9}$$

Sometimes we need to simplify our answer, for example.

$$\frac{3}{10} + \frac{1}{10} = \frac{4}{10} = \frac{2}{5}$$

Sometimes our answer is an improper fraction which we re-write as a mixed number, for example: -

$$\frac{5}{7} + \frac{6}{7} = \frac{13}{7} = 1\frac{6}{7}$$

Sometimes we can simplify our answer and the re-write it as a mixed number, for example: -

$$\frac{7}{10} + \frac{8}{10} = \frac{15}{10} = \frac{3}{2} = 1\frac{1}{2}$$

Now try these examples: -

1) $\frac{2}{7} + \frac{3}{7}$

2) $\frac{3}{10} + \frac{5}{10}$

3) $\frac{9}{10} + \frac{2}{10}$

4) $\frac{7}{10} + \frac{9}{10}$

5) $\frac{2}{8} + \frac{5}{8}$

6) $\frac{3}{10} + \frac{5}{10}$

7) $\frac{7}{9} + \frac{6}{9}$

8) $\frac{7}{10} + \frac{5}{10}$

9) $\frac{7}{9} + \frac{8}{9}$

10) $\frac{3}{8} + \frac{7}{8}$

What happens when the denominators (bottom numbers) are different, for example $\frac{2}{7} + \frac{1}{3}$?

We need to use our knowledge of equivalent fractions to re-write both fractions as equivalent fractions with the same denominator (bottom number).

For the example above, both 3 and 7 go into 21 so both fractions are re-written with 21 as a denominator (bottom number).

$$\frac{2}{7} + \frac{1}{3} = \frac{6}{21} + \frac{7}{21} = \frac{13}{21}$$


Another example: -

$$\frac{3}{5} + \frac{1}{4} \leftarrow \text{Turn both into fractions with 20 as a denominator (bottom number)}$$


$$\begin{array}{c} \times 4 \quad \times 5 \\ \text{---} \quad \text{---} \\ \frac{3}{5} + \frac{1}{4} = \frac{12}{20} + \frac{5}{20} = \frac{17}{20} \\ \text{---} \quad \text{---} \\ \times 4 \quad \times 5 \end{array}$$

Click for a video of this explanation <https://youtu.be/IloBLfnxZak>

An alternative way of adding fractions is known as “kiss and smile”. The advantage of this method is that you start immediately, without making any decisions about what to multiply by. The disadvantage is that you may have to work with larger numbers and simplify your answer at the end.

$$\frac{2}{7} + \frac{1}{3} = \frac{2 \times 3 + 1 \times 7}{7 \times 3} = \frac{6 + 7}{21} = \frac{13}{21}$$


The blue lines indicate which numbers are multiplied.

$$\frac{3}{5} + \frac{1}{4} = \frac{3 \times 4 + 5 \times 1}{5 \times 4} = \frac{12 + 5}{20} = \frac{17}{20}$$


The red lines indicate which numbers are multiplied.

Click for a video of this explanation <https://youtu.be/yrP-0ymytog>

Now try these examples, using whichever method you feel most confident with.

11) $\frac{1}{2} + \frac{2}{9}$

12) $\frac{2}{5} + \frac{3}{10}$

13) $\frac{2}{3} + \frac{1}{7}$

14) $\frac{1}{5} + \frac{2}{7}$

15) $\frac{3}{4} + \frac{1}{9}$

16) $\frac{4}{9} + \frac{1}{2}$

17) $\frac{3}{5} + \frac{1}{9}$

18) $\frac{1}{3} + \frac{4}{7}$

19) $\frac{3}{5} + \frac{1}{7}$

20) $\frac{1}{4} + \frac{5}{9}$