

Common Denominators

We can only add fractions together (or take them away) if they have the same denominator.

eg. 3 fifths + 1 fifth = 4 fifths
 $\frac{3}{5}$ + $\frac{1}{5}$ = $\frac{4}{5}$

 5 sixths - 4 sixths = 1 sixth
 $\frac{5}{6}$ + $\frac{4}{6}$ = $\frac{1}{6}$

If we are dealing with different kinds of fractions we have to change them to the same sort before we can add or subtract them. We have to find a denominator which will fit them both. It is common to them both so is called a **common denominator**.

eg. $\frac{1}{2}$ + $\frac{1}{4}$ (different denominators)

We can change $\frac{1}{2}$ into quarters: $\frac{1}{2} = \frac{2}{4}$

so, $\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4}$

4 is the common denominator. Each denominator will divide exactly into the common denominator.

For $\frac{1}{3} + \frac{2}{9}$ 9 could be the common denominator.

3 will divide into 9 exactly.

9 will divide into 9 exactly.

Both fractions can therefore be changed to ninths:

$$\frac{1}{3} + \frac{2}{9} = \frac{3}{9} + \frac{2}{9} = \frac{5}{9}$$

For the following fractions, find the common denominator and complete the sum:

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

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

$$2) \frac{1}{4} + \frac{1}{3} =$$

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

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

$$7) \frac{2}{3} + \frac{5}{8} =$$

$$4) \frac{1}{6} + \frac{2}{5} =$$

$$8) \frac{1}{2} + \frac{7}{9} =$$

Place the following numbers in order, smallest first. (Hint: to do this you will first need to convert them from mixed numbers to improper fractions. Then you need to convert them all to a common denominator):

$$9) 2\frac{1}{10}, 1\frac{3}{10}, 2\frac{1}{2}, 1\frac{1}{5}, 1\frac{3}{4}$$

$$10) 1\frac{4}{5}, 2\frac{3}{4}, 2\frac{1}{2}, 1\frac{3}{10}, 2\frac{4}{10}$$

11) In the same way, suggest a fraction that is greater than one quarter and smaller than one third.

12) What number is half way between $5\frac{1}{4}$ and $5\frac{1}{2}$?

13) What number is half way between $5\frac{1}{3}$ and $5\frac{2}{3}$?