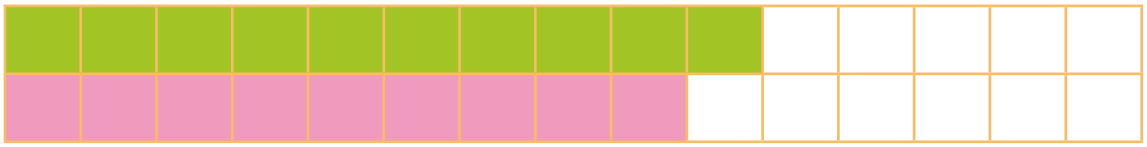
MathsBites by Clifford the Dog

It's just another ❑❑❑ in the wall

Fraction bits and pieces

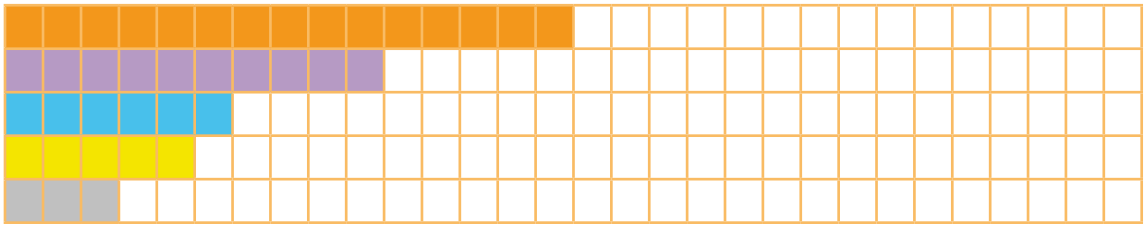
Fractions have been around since antiquity – whenever and wherever people have needed to refer to parts of some unit, often in a measurement context. The word fraction comes from the Latin frangere – meaning 'to break' - as in the word fracture. The English word 'frangible' means 'breakable'. The way a fraction is written with numerator vertically above the denominator, and horizontal line segment separating them, for example 'two-thirds' as $\frac{2}{3}$, evolved in Hindu-Arabic mathematics from the 7th to 12th centuries CE. The horizontal line segment is called a vinculum (Latin for rod or tie). The alternative 'diagonal slash' notation, as in $2/3$, called a virgule (Latin for little twig) or solidus, was introduced in the 1700s for convenience in type-setting on a printing press where it was set 'single-line' as 2/3. So a fraction can be thought of as a broken or fractured part of some unit.

The following diagram shows a 'fraction wall' comprising two copies of a 'unit strip' sub-divided into fifteen equal parts. Explain how this could be used to decide which of $\frac{2}{3}$ and $\frac{3}{5}$ is largest and find the difference between them.



Walls for fractions

Consider {1, 2, 3, 4 … 10} the corresponding unit fractions $\left\{\frac{1}{1},\frac{1}{2},\frac{1}{3},\frac{1}{4}\ldots\frac{1}{10}\right\}$ and multiples of these up to 1, such as $\frac{5}{9}$. What would be a suitable fraction wall, for example, to model, compare, add and subtract fractions involving halves, quarters and eighths? One based on unit strips divided into eight equal parts would be suitable. For halves, thirds, quarters and sixths, a fractions wall with unit strips divided into twelve equal parts would be suitable. The following fraction wall is suitable for working with halves, thirds, fifths, sixths and tenths, and the unit fraction for each of these is shown. Use the fraction wall to determine which of $\frac{1}{2}+\frac{1}{5}$ and $\frac{1}{3}+\frac{1}{6}+\frac{1}{10}$ is larger, and by how much.



What would be a suitable fraction wall when working with $\left\{\frac{1}{1},\frac{1}{2},\frac{1}{3},\frac{1}{4},\frac{1}{5},\frac{1}{6},\frac{1}{8},\frac{1}{9},\frac{1}{10}\right\}$ and multiples of these fractions? What could be used as an alternative model? Why is $\frac{1}{7}$ not convenient for fraction walls?