

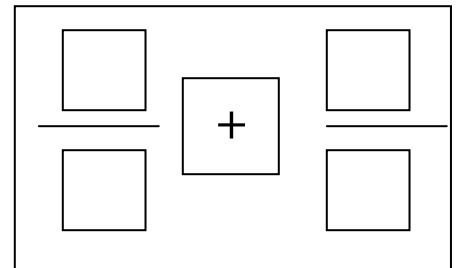
Type 1: Teachers use tasks which involve the introduction to, or use of models, representations, tools, or explanations, which exemplify the mathematics

The teacher commences with an important mathematical idea, and proposes tasks which involve models or representations or tools, which help students to understand the mathematics. There is no attempt to link mathematics to its practical applications. For example, the use of a fraction wall in a chance game can assist in developing an understanding of equivalence, improper fractions, and simple operations with fractions.

It is assumed that the teacher will introduce the model, representation or tool, then pose the task, which may involve a game. Following student work on the task, the teacher leads a discussion on the mathematics which has emerged from the task, and will seek to draw out commonalities and generalisations.

Some examples of such tasks are the following:

1. **Fractions close to 1:** Place number cards (choosing from 1, 3, 4, 5, 6, 7) in the boxes to make fractions so that when you add them the answer is as close to one as possible, but not equal to one. Each card can be used only once.



2. **Sorting equations:** Students are presented with a range of equations in various forms, and asked to sort them into two groups in a way which makes sense to them, justifying their sort (e.g., $x + 7 = 23$; $3x + 2 = 5x - 8$; $x/7 = 3$; $6 - x = x + 11$; $3.3x + 8 = 17$)
3. **Estimation with fractions:** Students estimate a point $2/5^{\text{th}}$ of the way across the board and then discuss how to determine the actual point. A measurement model is used and then extended to further examples. (*RIME activity*)
4. **Matching graphical representations:** Students are provided with Box and Whisker plots, Pie graphs and bar charts of the same data. Students match the cards. (*Malcolm Swan activity*)

5. **Using percentages to increase quantities:** Money cards are placed in a square on the table, so that their values increase in a clockwise direction. Students take in turn to place “percentage” cards between to show correct percentage increase or decrease. (*Malcolm Swan activity*)

6. **Colour in fractions** (see over the page)

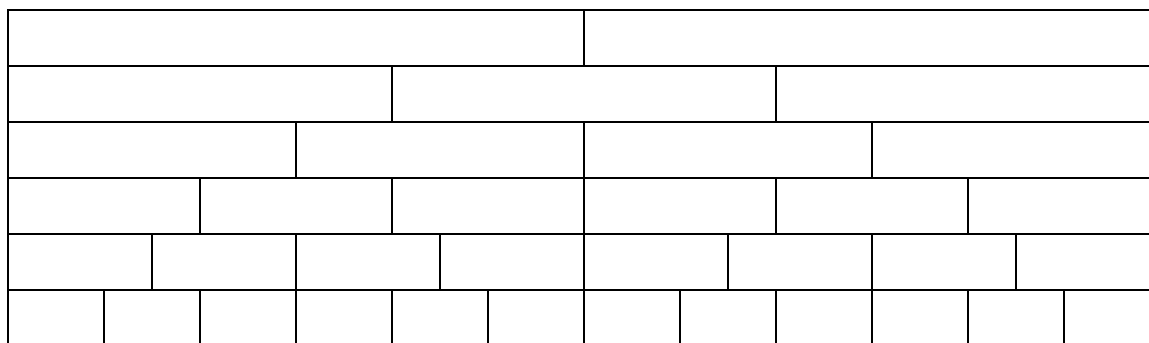
Colour-In Fractions:

Students have dice that create fractions up to twelfths, and a fraction wall. They colour in sections of the wall that correspond to the fractions that they roll with the dice.

one die labelled 1, 1, 2, 2, 3, 4 in one colour

another die labelled $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{12}$ in another colour

This wall is like:



Players in turn throw both dice. They make a fraction, the first die being the numerator. Each line is one whole.

They then colour the equivalent of the fraction shown. For example, if they throw 2 and $\frac{1}{4}$, then they can colour in

$\frac{2}{4}$ of one line **or** $\frac{4}{8}$ of one line **or** $\frac{1}{4}$ of one line and $\frac{2}{8}$ of another

or any other combination that is the same as $\frac{2}{4}$

If a player is unable to use their turn, they “pass.” The first player who colours in their whole wall is the winner.

There can be problems posed based on the game and class discussion of strategies.