Transcript of video Fractions as Operators: Modelling the Operators

http://topdrawer.aamt.edu.au/Fractions/Big-ideas/Fractions-as-operators/Using-the-operator-model

The two operations needed to find two-thirds of twelve can be modelled using twelve counters.

(Twelve blue counters)

The first step is to divide the twelve into three equal groups. Each group has four, so one-third of twelve is four.

(Twelve counters divided into three equal groups of four)

The second step is to identify the number in two groups. That's eight, so two-thirds of twelve is eight.

(Two groups of four coloured red)

Moving the twelve counters into an array provides a more structured model. The factors of twelve are more obvious.

(Twelve dots made into a three by four array)

Constructing a grid provides a link between using a discrete model and using an area model.

(Three by four grid constructed showing twelve squares)

The area model supports the multiplicative thinking needed for using fractions as operators.

(Eight of the twelve squares coloured blue)

The area model is helpful for representing the operation of a fraction on another fraction.

(Fraction problem shown)

First, represent three-quarters. Then divide the same area in half, going the opposite direction across the rectangle.

(Grid divided into quarters vertically and three quarters coloured blue. Grid divided into two horizontally and one half coloured red)

The grid has created the unit of one-eighth, which allows the problem to be solved.

(Grid showing one-eight fraction)

Locating the intersection of three-quarters and one-half identifies three-eighths as the answer to half of three-quarters.

(Overlap of red and blue squares coloured purple)

The process modelled was: create a four by two grid to create eight units, that is eighths, then multiply by three to get the required number of units.

(Explaining the solution to the fraction problem)