

How to use *Images of Fractions*

This ITP offers an alternative way of presenting the sequence of images outlined in detail on pages 14 - 17 of the *Year 7 Fractions and ratio* mini-pack. Refer to these pages as you explore the ITP.

Stage 1 builds up the sequence of diagrams outlined in the prompts (pages 14 -16). Stage 2 builds up the double stack (pages 16 - 17 in the prompts). The ITP allows for different numbers of strips in each stack and for fractions other than $\frac{1}{3}$.

Stage 1: Images of thirds – making the connection between seven thirds and one third of seven (pages 14 to 16)

$7 \times \frac{1}{3} = \frac{7}{3} = 2\frac{1}{3}$
 $7 \div 3 = \frac{1}{3} \text{ of } 7 = \frac{7}{3}$



Move the cursor just above and below the first button. Selecting the arrows which appear changes the number of rectangular strips (initially 1 strip, up to a maximum of 8 strips in the stack).



Selecting the arrows on the fraction button changes the size of each fractional part into which the stack of strips is to be divided (defaults to $\frac{1}{3}$, with $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{2}$ also available).



This button draws lines to divide the stack into the chosen number of fractional parts.

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

$$4 \times \frac{1}{3} = \frac{4}{3} = 1\frac{1}{3}$$

$$4 \times \frac{1}{3} = \frac{4}{3} =$$

Marking up the left hand diagram

You can label parts of the stack with the chosen fraction in one of two ways:

- by selecting cell by cell, starting at the top left and proceeding row by row;
- by selecting any cell - this labels all preceding cells.

When the cells have been labelled, they can be shaded by selecting them for a second time. You need to work across the rows (steps can be undone in order).

Equations are displayed to correspond with shaded parts.

- Selecting the second equals sign hides (or reveals) the mixed number form of the fraction.



This button is the pop-up menu. When you have completed the left-hand diagram you can start the right-hand diagram by selecting this button. This hides and 'freezes' the left hand diagram.

Right hand diagram

- As before, using the first button creates the stack. The second button is now fixed to match the left hand diagram. You can put on the dividing lines and labelling as before.
- When you have done this you can shade the left hand column of cells by selecting the arrow.
- Selecting the arrow at the side highlights strip by strip (steps can be undone in order by selecting the cell last shaded). Equations are displayed to correspond with shaded parts.

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

$$4 \div 3 = \frac{1}{3} \text{ of } 4 = \frac{4}{3}$$



This is another option on the pop-up menu. Selecting the left-hand and right-hand diagrams together presents a 'freeze frame' of the final state of the left hand diagram but will allow shading and unshading of the right hand diagram.



Clears the screen and restarts the program.



Closes the program.



Opens the help panel which gives information about the control elements on the screen as the mouse is moved over them. Closing the help panel clears the screen and restarts the program.

Stage 2: Images of thirds – extending beyond unit fractions to thirds of seven (pages 16 to 17)



Select the double stack option on the pop-up menu. The double stack can be selected after completing stage 1 or on a separate occasion.



Again, this button changes the number of rectangular strips in each stack.

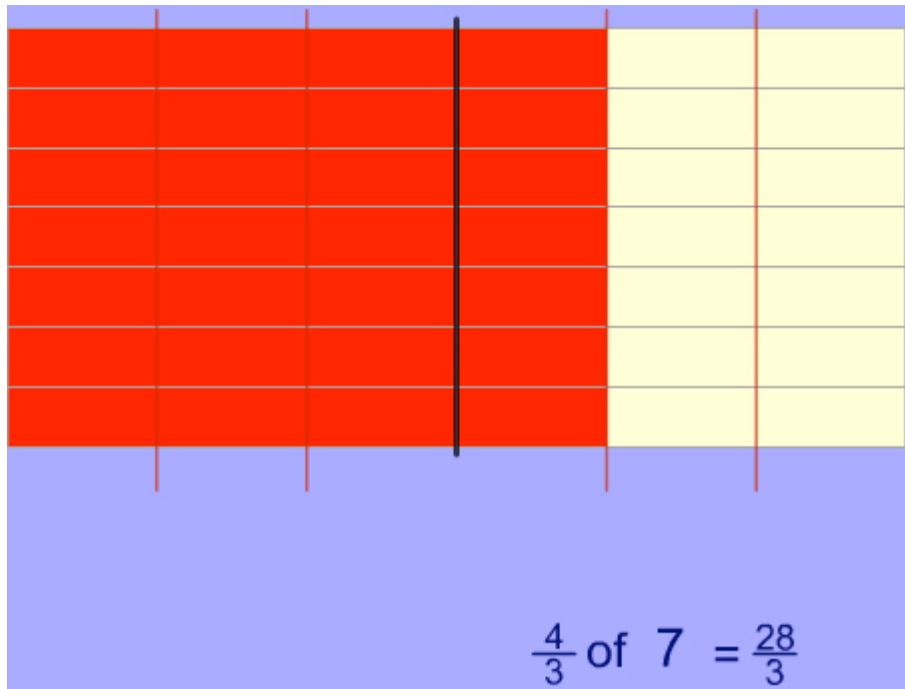


This button changes the size of fractional parts into which each of the two stacks of strips is to be divided. (Pupils should note that each stack is divided into the required number of parts, not the double stack.)



This button divides each stack simultaneously into the chosen number of fractional parts.

Marking up the double stack



Selecting column by column from left to right shades the columns (steps can be undone in order). Equations are displayed to correspond with the shaded parts.

$$\frac{4}{3} \times 7 = \frac{28}{3}$$

- Selecting the word 'of' in the equation replaces it with 'x'.