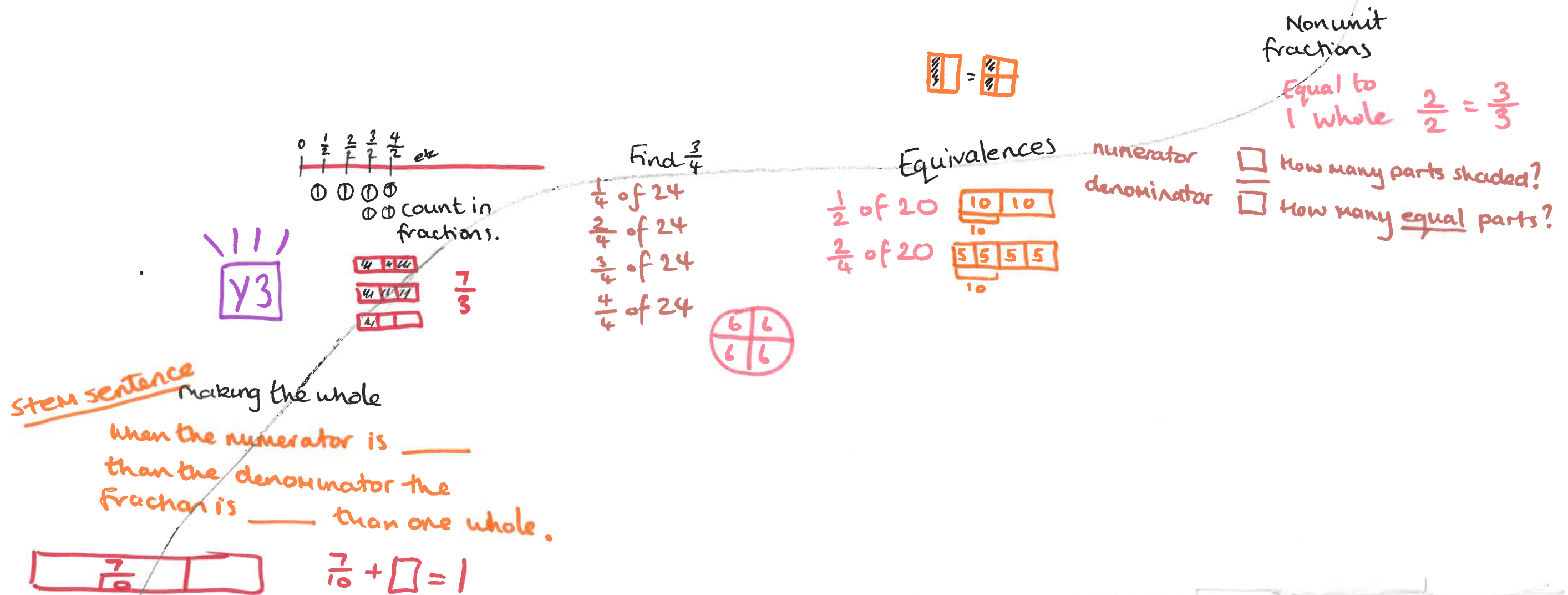
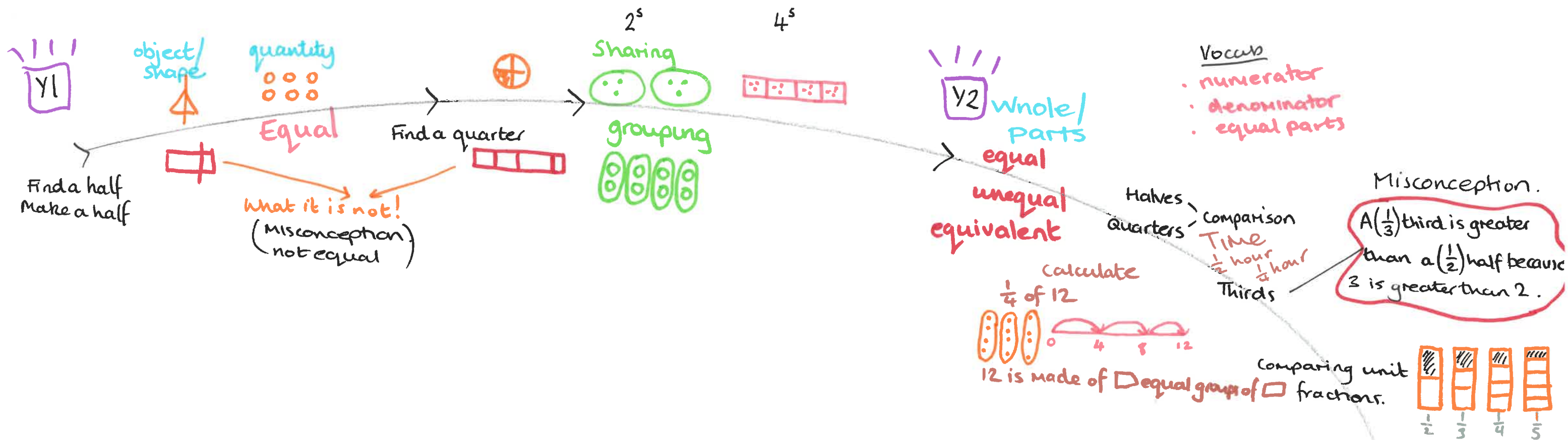
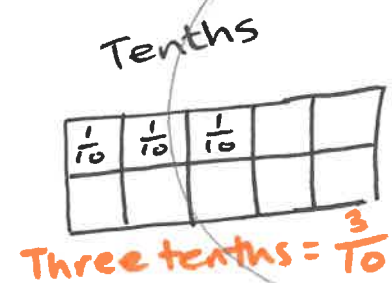


Compare and order fractions, including fractions > 1 .



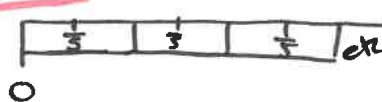


Small introduction to decimals

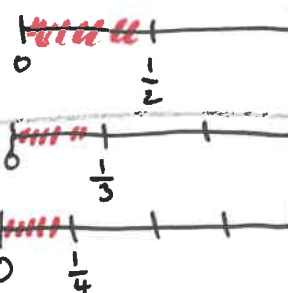
Numberlines



Fractions on a number line



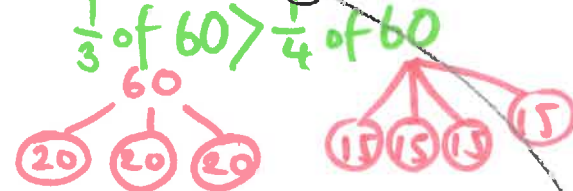
Comparison



$$\frac{1}{2} > \frac{1}{3}$$

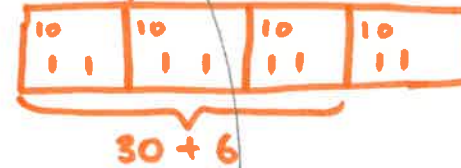
When the numerators are the same the larger the denominator the smaller the fraction.

Fractions of an amount (comparing)



What is the same and what is different about two thirds and two fifths?

$\frac{3}{4}$ of 48



Misconception $\frac{1}{8}$ is greater than $\frac{1}{4}$

Order fractions

Ascending
Descending

Different denominators

connect to $< \frac{1}{2}$ $> \frac{1}{2}$

Same denominator

Compare fractions
same numerator

Equivalent fractions



Fraction walls

When a fraction is equivalent to a half the denominator is double the numerator.

Misconception

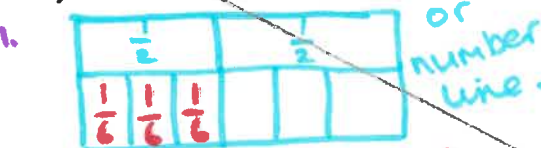
$$\frac{4}{7} + \frac{2}{7} = \frac{6}{14}$$

Add.
Same denominator

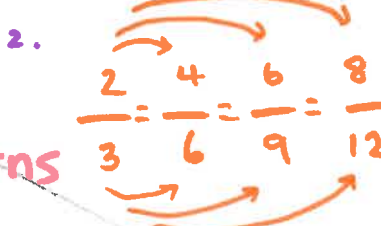
Y4

What is a fraction?
shapes, quantities
number lines.
Numerator denominator
unit non unit.

Equivalent fractions



or number line.



Families: 'multiples'

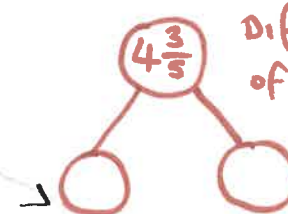
Patterns

Link $\times 3$ $\left(\frac{1}{3}\right) \div 3 = \times 3 \left(\frac{8}{24}\right) \div 3$

Improper fractions > 1



Different ways of partitioning.



Misconception.

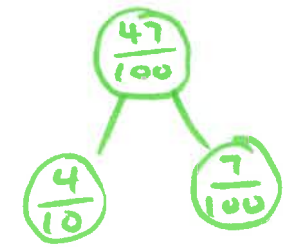
$$\frac{16}{4} \text{ is greater than } \frac{8}{2} \text{ because 16 is greater than 8}$$

Y5

Decimals
 • tenths / hundredths
 • $\div 10 \div 100$
 - hundred square

Equivalences with fractions
 $\frac{3}{4} = \frac{75}{100} = 0.75$
 $0.15 \quad 0.5 \quad 0.75$

'Different denominators' $\frac{7}{10} + \frac{3}{100}$



Find the whole
 $\frac{1}{4}$ of $\square = 4$

Fractions of quantities
 $\frac{1}{4}$ of 56

Subtract
 $\frac{4}{5} - \frac{2}{5}$

Add
 Same denominator,
 > 1 whole numbers and parts.
 $\frac{6}{8} + \frac{3}{8} = \frac{9}{8} = 1\frac{1}{8}$

Equivalent fractions.
 $\frac{1}{2} \div 2 = \frac{2}{4}$
 $\frac{1}{4} \div 2 = \frac{2}{8}$
 $\frac{1}{4} \div 4 = \frac{1}{16}$
 $\frac{3}{4} \div 4 = \frac{12}{16}$

Families - Connections
 Lower terms
 Higher terms

Common factors
 $\frac{5}{20} = \frac{1}{4}$

IMPROPER
 MIXED NUMBERS
 $\frac{8}{5}$

$2\frac{3}{4}$
 $\frac{4}{4} + \frac{4}{4} + \frac{3}{4} = \frac{11}{4}$

Do we always have to find a common denominator?
 - common numerator
 - less than $\frac{1}{2}$
 - greater than $\frac{1}{2}$
 Compare and order less than

Compare and order more than one.
 $\frac{14}{10} > \frac{7}{5} > \frac{13}{10}$

$2 > \frac{6}{4} < \frac{89}{44} > 2$ other strategies

$3\frac{3}{5} - 1\frac{8}{15}$
 $\frac{18}{5} - \frac{23}{15}$
 $\frac{54}{15} - \frac{23}{15} =$

Subtract 2 mixed numbers

$3\frac{3}{5} - 1\frac{8}{15}$
 $2\frac{9}{15} - \frac{8}{15} =$

$2\frac{3}{12} - \frac{5}{12} = \frac{27}{12} - \frac{5}{12} =$

$2\frac{3}{12} - \frac{3}{12}$
 $2 - \frac{2}{12} = 1\frac{12}{12} - \frac{2}{12} =$

Count on
 $\frac{5}{12} \xrightarrow{+7/12} 1 \xrightarrow{+1} 2 \xrightarrow{+3/12} 2\frac{3}{12}$

Subtract mixed numbers

Subtract fractions (common denominators)

Add mixed numbers.

Add fractions (common denominators)

denominators are multiples of the same number.

Misconceptions
 $\frac{3}{4} + \frac{3}{16} = \frac{6}{20}$

Multiply unit fractions by an integer

Repeat addition.
 $3 \times \frac{1}{8} = 3$ lots of $\frac{1}{8}$
 $\frac{1}{8} + \frac{1}{8} + \frac{1}{8}$

Multiply non-unit fraction by integers

$2 \times \frac{4}{9} = \frac{4}{9} + \frac{4}{9} =$

Mixed number answers

multiply mixed numbers by integers

Partition $4 \times 2\frac{2}{5}$

$4 \times 2 = 8$

$4 \times \frac{2}{5} = \frac{8}{5} = 1\frac{3}{5}$

$8 + 1\frac{3}{5} = 9\frac{3}{5}$

Fractions of an amount

$\frac{3}{5}$ of 45

$\frac{3}{5} \times 45 = 27$

Fractions as operators

$\times$ or of

Good choices

$\frac{1}{6} \times 7$ or $\frac{1}{5}$ of 7

$\frac{3}{5} \times 10$ or $\frac{3}{5}$ of 10

FDP

Simplifying fractions

$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$

Factors

Common factors

Compare and order

Use common multiples

"LCM"

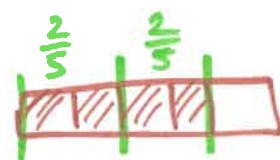
24? $\frac{3}{8} \square \frac{5}{12}$

96?

Add and subtract including mixed numbers.

Misconception

$$\frac{2}{4} \div 2 = \frac{1}{2}$$



Divide fractions by integers.

$$\frac{4}{5} \div 2 = \frac{2}{5}$$

Numerator is a multiple of the divisor

$$\frac{1}{3} = \frac{2}{6}$$

$$\frac{2}{6} \div 2 = \frac{1}{6}$$

Fraction of an amount

Fraction of an amount - find the whole

$\frac{2}{3}$ of 60 is ...

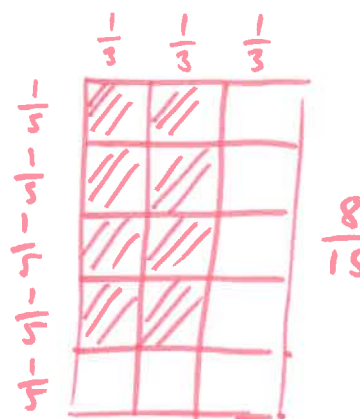
$\frac{2}{3}$ of ... is 60



Fractions $\times$ Fractions

non unit

$$\frac{4}{5} \times \frac{2}{3} = \frac{4 \times 2}{5 \times 3} = \frac{8}{15}$$



Varied fluency

$$2\frac{2}{5} \times 6$$

$2 \times 6 = 12$

$\frac{2}{5} \times 6 = \frac{12}{5} = 2\frac{2}{5}$

$12 + 2\frac{2}{5} = 14\frac{2}{5}$

$$\frac{12}{5} \times \frac{6}{1} = \frac{72}{5} = 14\frac{2}{5}$$

Multiply fractions by integers

$$\frac{2}{7} \times 2 = \frac{2 \times 2}{7 \times 1} = \frac{4}{7}$$

Misconception

$$\frac{2}{7} \times 2 = \frac{4}{14}$$

Misconception

$$\frac{4}{5} \times \frac{2}{3}$$

$$\frac{12}{15} \times \frac{10}{15} = \frac{120}{225} = \frac{24}{45} = \frac{8}{15}$$

Don't have to find common denominators!