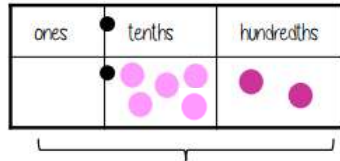


# Y10 FOUNDATION HT1 DECIMALS AND FRACTIONS

## Decimals

We say "nought point five two"

Five tenths and two hundredths



0 ones, 5 tenth and 2 hundredths  
 $0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01$   
 $= 0 + 0.5 + 0.02$   
 $= 0.52$

**The reciprocal** When you multiply a number by its reciprocal the answer is always 1

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

$$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$$

The reciprocal of 3 is  $\frac{1}{3}$  and vice versa

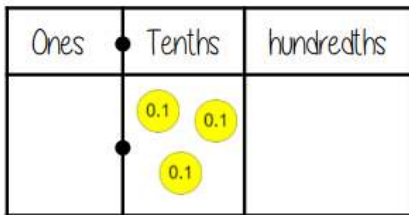
**Reciprocals for division**

eg  $5 \div \frac{1}{4} = 20$   
 $5 \times 4 = 20$

Multiplying by a reciprocal gives the same outcome

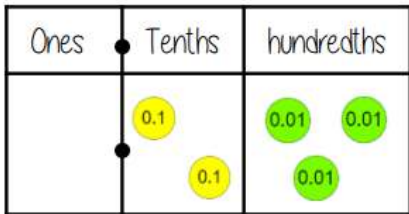
## Comparing decimals

Which the largest of 0.3 and 0.23?



$$0.3 > 0.23$$

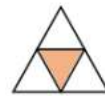
"There are more counters in the furthest column to the left"



0.30  
0.23

Comparing the values both with the same number of decimal places is another way to compare the number of tenths and hundredths

## Representing Fractions

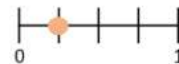


$$\frac{1}{4}$$

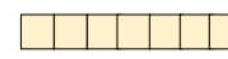
is represented in all the images



$$1 \div 4$$

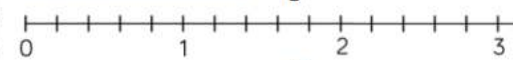


## Mixed numbers and fractions



$$\frac{7}{5}$$

Improper fraction



$$1\frac{2}{5}$$

Mixed number

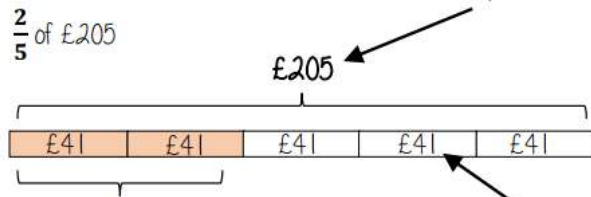
In this model 5 parts make up a whole

Fractions can be bigger than a whole

## Fraction of a given amount

Find  $\frac{2}{5}$  of £205

The bar represents the whole amount

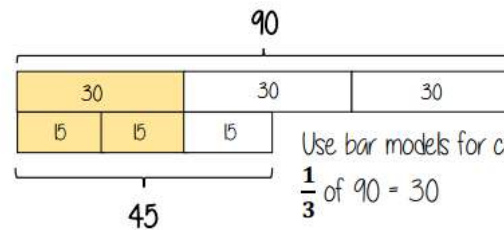


2 out of the 5 equal parts

$$2 \times £41 = \underline{£82}$$

$$£205 \div 5 = £41$$

Each part of the bar model represents £41



Use bar models for comparisons

$$\frac{1}{3} \text{ of } 90 = 30$$

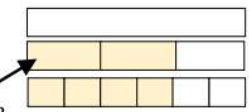
$$\frac{2}{3} \text{ of } 45 = 30$$

$$\therefore \frac{1}{3} \text{ of } 90 = \frac{2}{3} \text{ of } 45$$

## Equivalent fractions

Numerator and denominator have the same multiplier

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



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

## Add/Subtraction any fractions

$$\frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$$

Use equivalent fractions to find a common multiple for both denominators

## Add/Subtraction fractions (improper and mixed)

$$2\frac{1}{5} - 1\frac{3}{10} = 2\frac{2}{10} - 1\frac{3}{10} = \frac{22}{10} - \frac{13}{10} = \frac{9}{10}$$

- Convert to an improper fraction
- Calculate with common denominator

## Dividing any fractions *Remember to use reciprocals*

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

Multiplying by a reciprocal gives the same outcome

Represented

## Partitioning method

$$2\frac{1}{5} - 1\frac{3}{10} = 2\frac{2}{10} - 1\frac{3}{10} = 2\frac{2}{10} - 1 - \frac{3}{10} = 1\frac{2}{10} - \frac{3}{10} = \frac{9}{10}$$

## Keywords

Integer: a whole number that is positive or negative

Fraction: how many parts of a whole we have

Equivalent: of equal value

Numerator: the number above the line on a fraction. The top number. Represents how many parts are taken

Denominator: the number below the line on a fraction. The number represent the total number of parts

Equivalent: of equal value

Mixed numbers: a number with an integer and a proper fraction

Improper fractions: a fraction with a bigger numerator than denominator

## Multiplying non-unit fractions

$$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$$

Shade in 3 parts

Repeat it on this many rows

This many columns

This many rows

Modelled:

Parts shaded

Total number of parts in the diagram