Year 4 Mixed Multiplication and Division B

Factor pairs

A factor is a number that divides into another number exactly, without leaving a remainder.

28 × 1

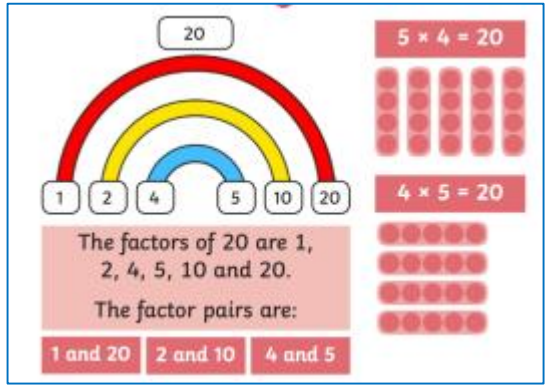
14 × 2

28

4 × 7

28 has 3 factor pairs.

28 has 6 factors altogether.



Multiplying by 10 and 100

Th	H	T	O
		7	8

Th	H	T	O
	7	8	0

78 × 10 = 780

Th	H	T	O
7	8	0	0

78 × 100 = 7,800

1) To multiply a number by 10 each digit moves 1 to the left on a place value grid.

2) To multiply a number by 100 each digit moves 2 to the left on a place value grid.

1) To divide a number by 10 each digit moves 1 to the right on a place value grid.

2) To divide a number by 100 each digit moves 2 to the right on a place value grid.

TTh	Th	H	T	O
4	7	0	0	0

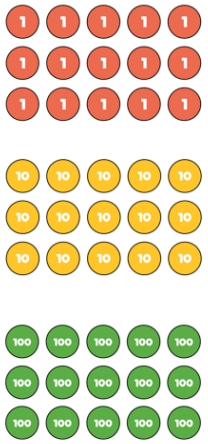
TTh	Th	H	T	O
	4	7	0	0

47,000 ÷ 10 = 4,700

TTh	Th	H	T	O
		4	7	0

47,000 ÷ 100 = 470

Related facts



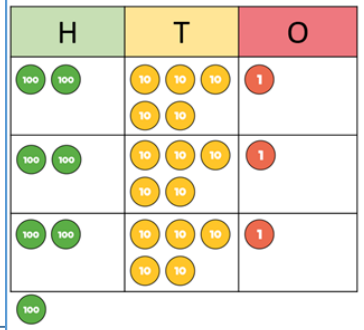
3 × 5 ones = 15 ones
= 15

3 × 5 tens = 15 tens
= 150

3 × 5 hundreds = 15 hundreds
= 1,500

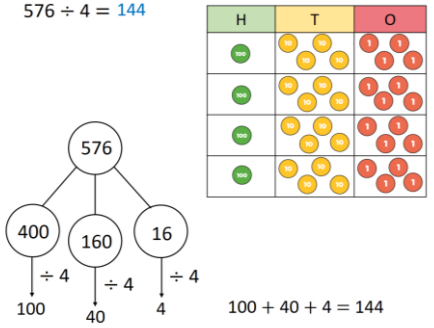
Multiplication and Division

251 × 3 = 753



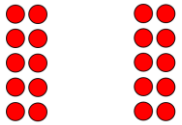
	H	T	O
	2	5	1
×			3
	7	5	3
	1		

576 ÷ 4 = 144



100 + 40 + 4 = 144

Multiply 3 Numbers



2 × 5 = 10 2 × 5 = 10

2 × 2 × 5 = 2 × 10 = 20

There are 69 tennis balls packed in tubes of 3.

There are 23 tubes altogether.

69		
23	23	23

69 ÷ 3 = 23

23
3 | 69

Tens	Ones

Vocabulary

Factors factor pair
multiply product
lots of
divide dividing
share equally
remainder array
10 times the size of
base 10
tenth hundredth
partition
short multiplication
column represent
exchange
efficient
partitioning
flexible partitioning

Walmsley C.E. Primary School
Where getting better never stops

Year 3 Mixed Multiplication and Division B

Factor pairs

A factor is a number that divides into another number exactly, without leaving a remainder.

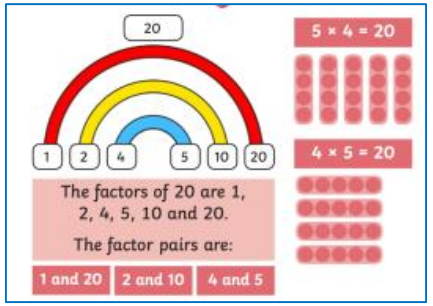
28 × 1 | 14 × 2

28

4 × 7

28 has 3 factor pairs.

28 has 6 factors altogether.



Multiplying by 10 and 100

Th	H	T	O
		7	8

Th	H	T	O
	7	8	0

78 × 10 = 780

Th	H	T	O
7	8	0	0

78 × 100 = 7,800

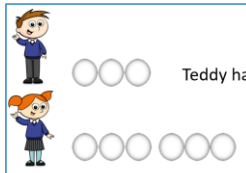
1) To multiply a number by 10 each digit moves 1 to the left on a place value grid.

2) To multiply a number by 100 each digit moves 2 to the left on a place value grid.

1) To divide a number by 10 each digit moves 1 to the right on a place value grid.

2) To divide a number by 100 each digit moves 2 to the right on a place value grid.

Scaling



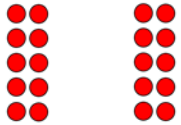
Teddy has 3 snowballs.

Alex has 6 snowballs.

2 × 3 = 6

Alex has 2 times as many snowballs as Teddy.

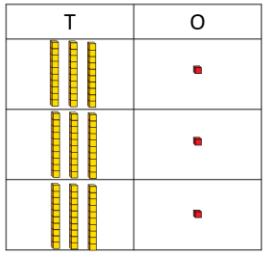
Multiply 3 Numbers



2 × 5 = 10 2 × 5 = 10

2 × 2 × 5 = 2 × 10 = 20

Multiplication No Exchange



31 × 3 = 93

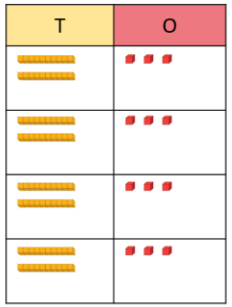
3 tens multiplied by 3 is equal to 90

1 one multiplied by 3 is equal to 3

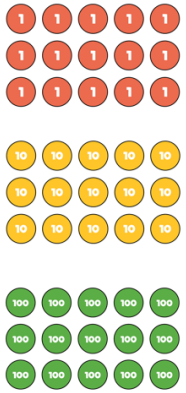
31 multiplied by 3 is equal to 93

Multiplication With Exchange

4 × 23 = 92



Related facts

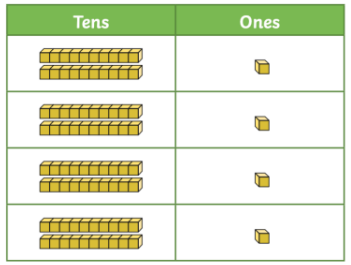


3 × 5 ones = 15 ones
= 15

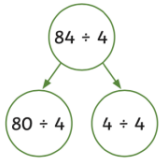
3 × 5 tens = 15 tens
= 150

3 × 5 hundreds = 15 hundreds
= 1,500

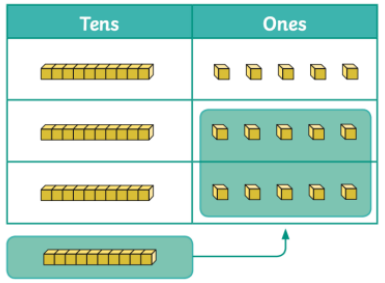
Division – no exchange



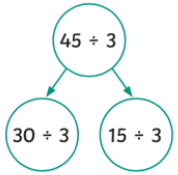
	2	1
4	8	4



Division with exchange



	1	5
3	4	15

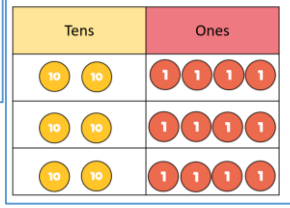


Vocabulary

Factors factor pair
multiply product
lots of
divide dividing
share equally
remainder array
10 times the size of
base 10
tenth hundredth
partition
short multiplication
column represent
exchange
efficient
partitioning
flexible partitioning

Remainders

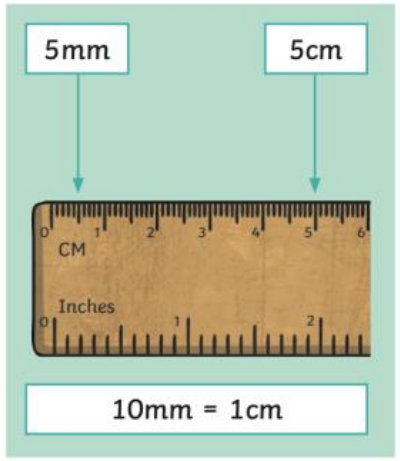
73 ÷ 3 = 24 remainder 1



Walmsley C.E. Primary School
Where getting better never stops

Year 3 and 4 Mixed (Page 1)
Length and Perimeter

Measuring Length



Equivalent lengths

1 m = 100 cm 4 m = 400 cm

1 m	1 m	1 m	1 m
100 cm	100 cm	100 cm	100 cm

200 cm = 2 m 150 cm = $1\frac{1}{2}$ m

1 m	1 m
100 cm	100 cm

1 m	$\frac{1}{2}$ m
100 cm	50 cm

Equivalent lengths
Equal lengths

1 cm = 10 mm 4 cm = 40 mm

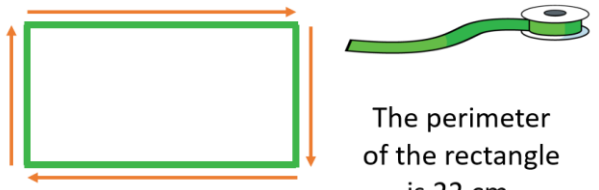
1 cm	1 cm	1 cm	1 cm
10 mm	10 mm	10 mm	10 mm

20 mm = 2 cm

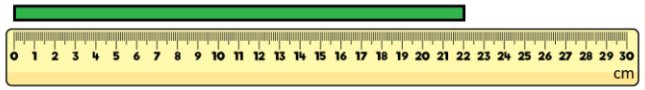
1 cm	1 cm
10 mm	10 mm

Perimeter

Perimeter is the total length around the edge of a 2-D shape.

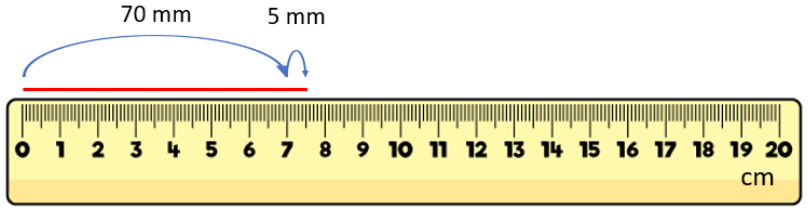


The perimeter of the rectangle is 22 cm.

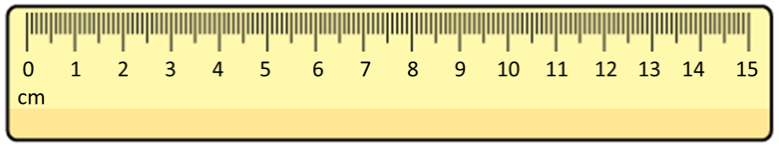


Vocabulary

Metres m
centimetres cm
millimetres mm
kilometres km
length
long
height
measurement
unit of measure
compare
add
subtract
perimeter
sides
width
rectilinear
regular
polygon
irregular

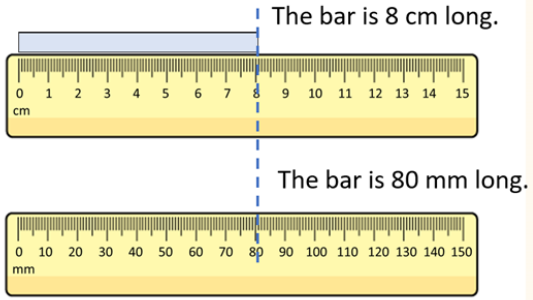


The line is 75 mm long.



The line is 5 cm and 6 mm long.

What is the length of the bar?

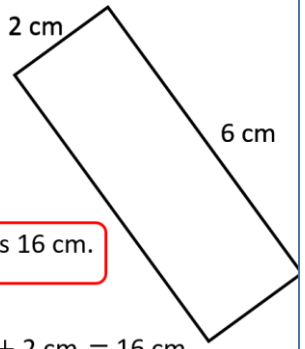


8 cm = 80 mm

There are 10 millimetres in one centimetre.

There are 100 centimetres in one metre.

What is the perimeter of the rectangle?

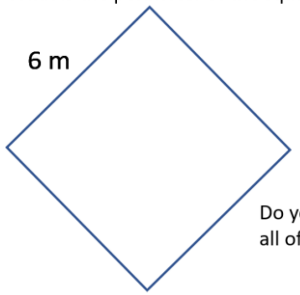


Opposite sides of a rectangle are equal.

The perimeter is 16 cm.

6 cm + 2 cm + 6 cm + 2 cm = 16 cm

What is the perimeter of the square?



6 m × 4 = 24 m

Do you need to measure all of the sides?

6 m + 6 m + 6 m + 6 m = 24 m

Year 3 and 4 Mixed (Page 2)
Length and Perimeter

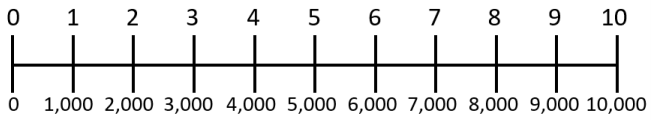
Measure in Kilometres and metres

kilometres	(km)
metres	(m)
centimetres	(cm)
millimetres	(mm)

Which unit would you use to measure each item?

Kilometres	Metres	Centimetres
Distance between two cities	Height of a house	Length of a pencil case

kilometres



metres

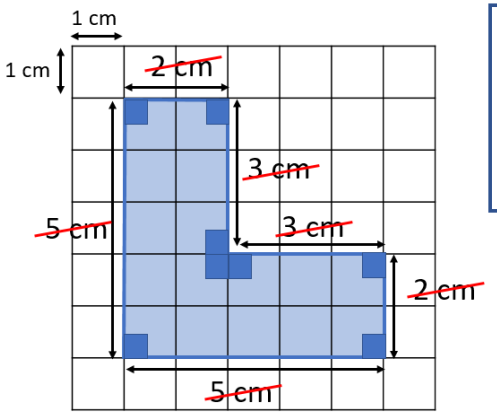
1 km = 1,000 m

10 km = 10,000 m

There are 1,000 metres in 1 kilometre.

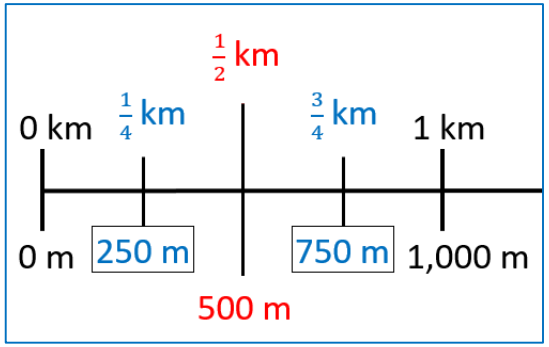
Perimeter or rectilinear shapes

Work out the perimeter of the rectilinear shape.



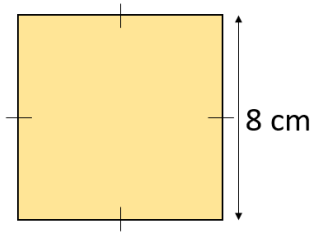
A rectilinear shape has straight sides that meet at right angles.

2 cm + 3 cm + 3 cm + 2 cm + 5 cm + 5 cm = 20 cm



Perimeter of regular polygons

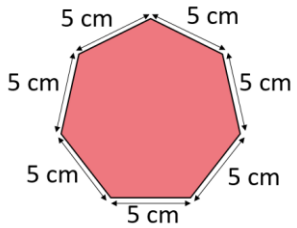
What is the perimeter of the shape?



Each side is 8 cm.
There are 4 sides, so the perimeter of the polygon is 4 × 8 cm = 32 cm

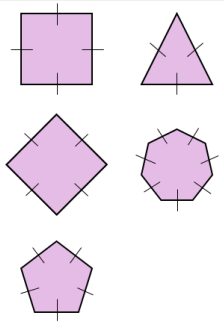
A polygon is a **closed shape** made of **straight lines**

What is the perimeter of the regular polygon?



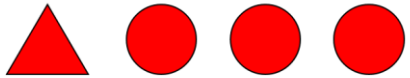
7 × 5 cm = 35 cm

Regular polygons



- All sides are equal in length.
- All angles are equal in size.

Year 3 and 4 Mixed Fractions A (page 1)



Numerator
How many parts are we looking at?

Denominator
How many equal parts are there?

$\frac{1}{4}$ of the shapes are triangles.

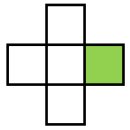
Unit Fractions

$\frac{1}{3}$ is shaded

The shape is split into 3 equal parts.

The denominator is 3

The fraction that is shaded is $\frac{1}{3}$



$\frac{1}{5}$ is shaded

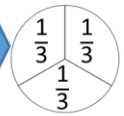
The shape is split into 5 equal parts.

The denominator is 5

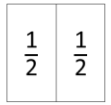
The fraction that is shaded is $\frac{1}{5}$

The Whole

When the numerator and the denominator are the same, the fraction is equal to one whole.



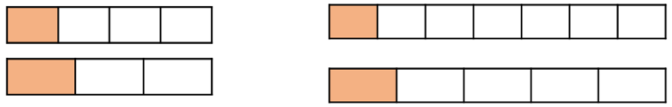
$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$ $\quad \frac{3}{3} = 1$ whole



$\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$ $\quad \frac{2}{2} = 1$ whole

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4}$ $\quad \frac{4}{4} = 1$ whole

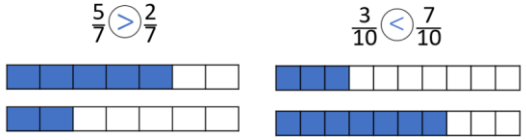
Comparing Fractions



$\frac{1}{4} < \frac{1}{3}$ $\qquad$ $\frac{1}{7} < \frac{1}{5}$

What do you notice?

When the numerators are the same, the greater the denominator, the smaller the fraction.



$\frac{5}{7} > \frac{2}{7}$ $\qquad$ $\frac{3}{10} < \frac{7}{10}$

What do you notice?

When the denominators are the same, the greater the numerator, the greater the fraction.

Non unit fractions

What fraction of the shape is shaded?

$\frac{2}{3}$ is shaded

There are 3 equal parts.

So the denominator is 3

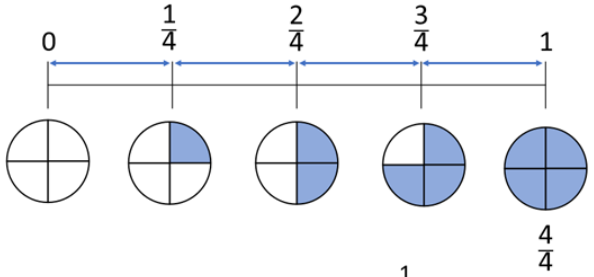
2 of the equal parts are shaded.

So the numerator is 2

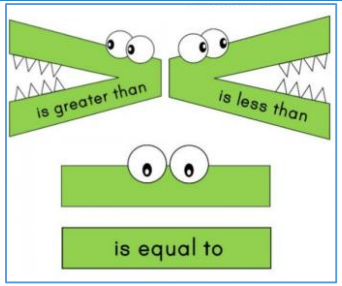
The fraction that is shaded is $\frac{2}{3}$

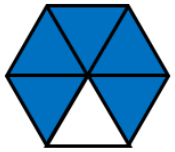
Fractions on a Number Line

The number line has been split into 4 equal parts.



Each interval is worth $\frac{1}{4}$





The fraction that is shaded is $\frac{5}{6}$

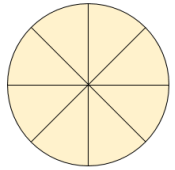
Vocabulary

Whole
divided equal parts
denominator
numerator
unit fractions
non-unit fractions
mixed numbers
partitioning
number line
interval
greater
integer
improper
fraction
equivalent

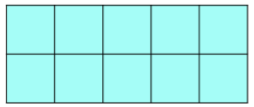
Year 3 and 4 Mixed Fractions (page 2)

Understanding the whole

The whole has been divided into 8 equal parts.



Each part is worth $\frac{1}{8}$



What fraction of the shape is shaded? $\frac{10}{10}$

The whole of the shape is shaded.

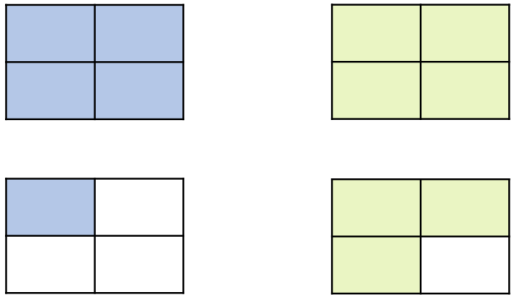
If the numerator and denominator are equal, it is equal to a whole. E.g. $\frac{3}{3} = 1$ or $\frac{7}{7} = 1$

What fraction of the shape is shaded? $\frac{3}{5}$

What fraction of the shape is not shaded? $\frac{2}{5}$

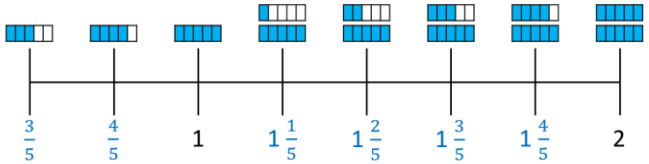
Comparing Mixed Numbers

Which fraction is smaller, $1\frac{1}{4}$ or $1\frac{3}{4}$?

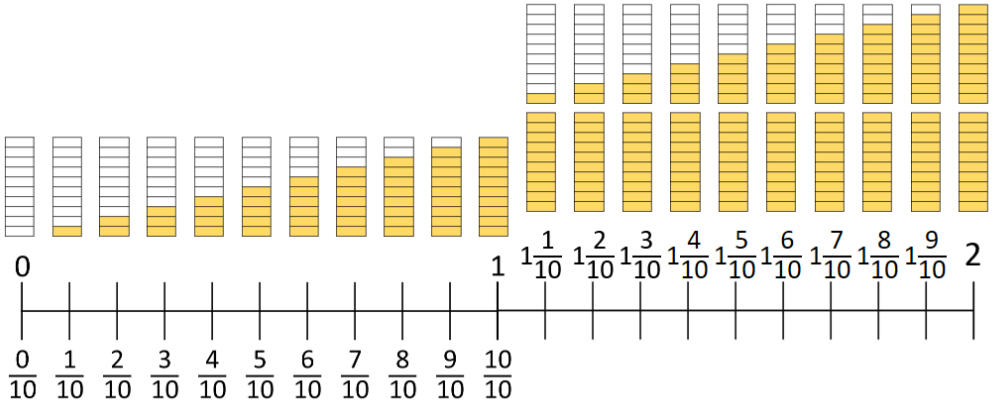


$1\frac{1}{4} < 1\frac{3}{4}$

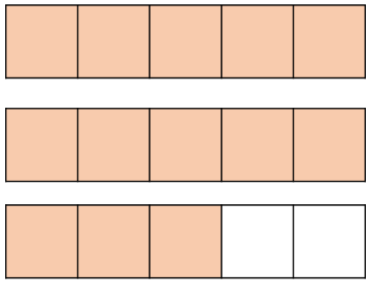
Counting beyond one



The sequence is counting forwards in $\frac{1}{5}$s



Mixed Numbers

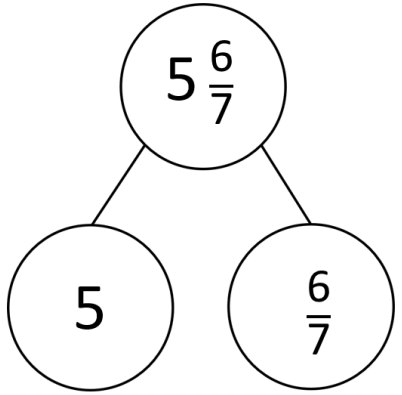


A mixed number is a whole number and a proper fraction.

There are 2 wholes.

There are $\frac{3}{5}$

The mixed number is $2\frac{3}{5}$

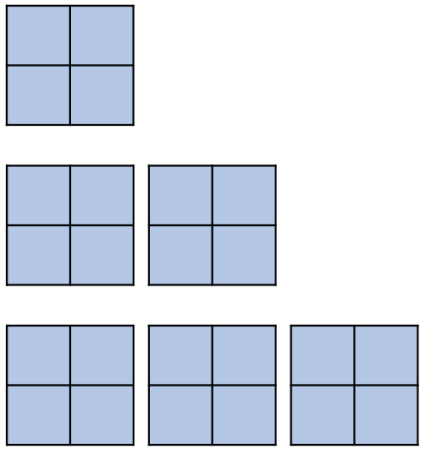


$5\frac{6}{7}$ can be partitioned into 5 wholes and $\frac{6}{7}$

Year 3 and 4 Mixed Fractions (page 3)

Improper fractions

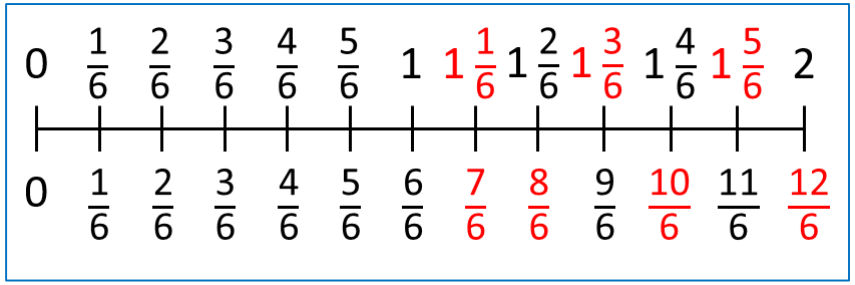
An **improper fraction** is a fraction that has a numerator that is greater than or equal to the denominator.



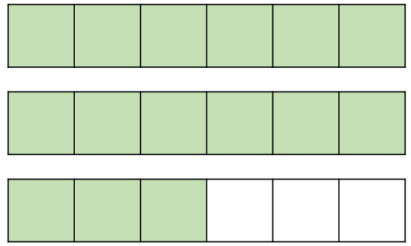
$\frac{4}{4}$ = 1 whole

$\frac{8}{4}$ = 2 wholes

$\frac{12}{4}$ = 3 wholes



Convert mixed numbers to improper fractions



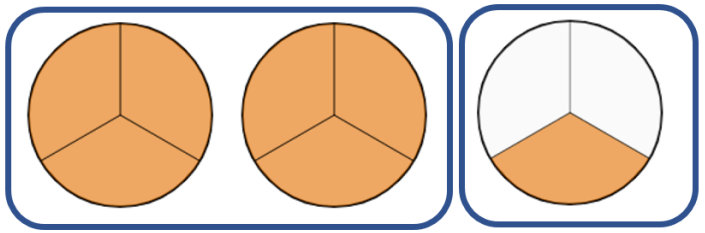
The integer in the mixed number is __2__

This is equivalent to __12__ sixths.

There are __3__ more sixths.

__12__ sixths + __3__ sixths = __15__ sixths

so the improper fraction is __$\frac{15}{6}$__

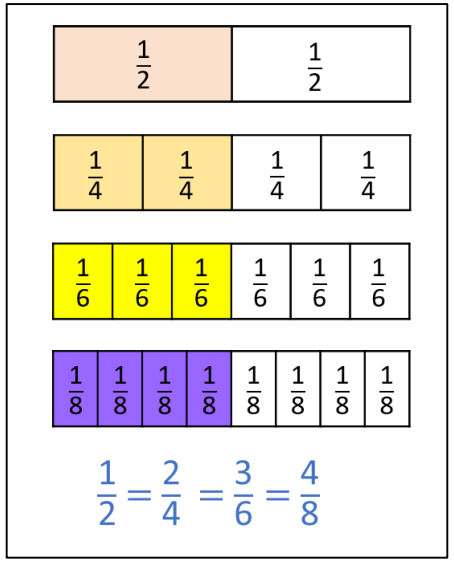


There are __2__ groups of 3 thirds.

There is __1__ third remaining.

As a mixed number, this is __$2\frac{1}{3}$__

Equivalent fractions



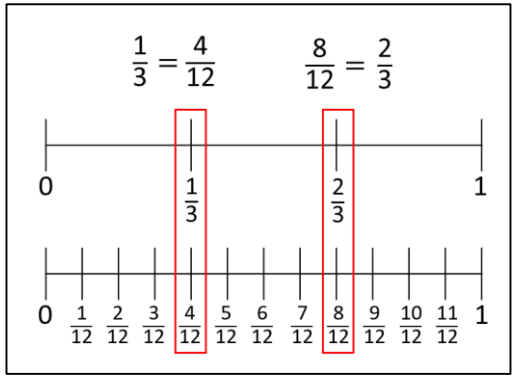
equivalent

"of equal value, amount or meaning"

are equivalent to

3 + 3 is equivalent to 5 + 1

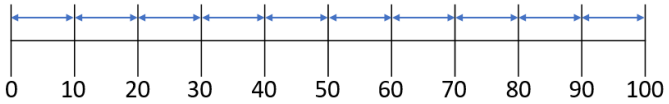
1 cm is equivalent to 10 mm



Walmsley C.E. Primary School
Where getting better never stops

Year 3 and Year 4 Mixed Mass and Capacity (page 1)

Using scales



The start of the number line is 0

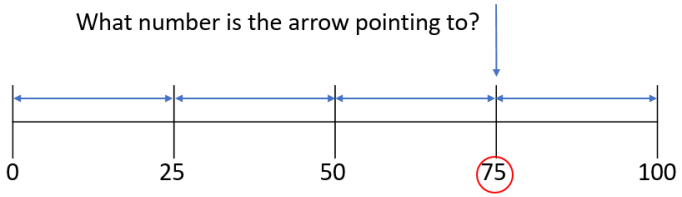
The end of the number line is 100

There are 10 intervals.

The number line is counting up in 10 s.

100 ÷ 10 = 10

What number is the arrow pointing to?



The start of the number line is 0

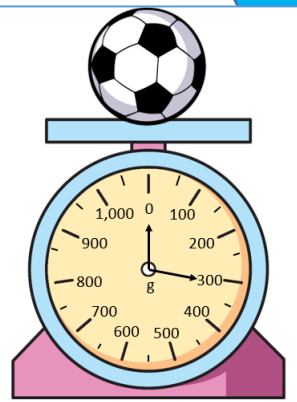
The end of the number line is 100

There are 4 intervals.

The number line is counting up in 25 s.

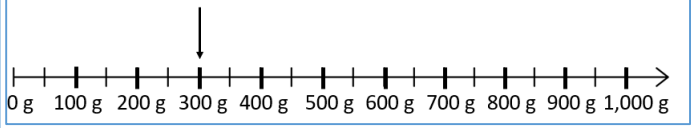
100 ÷ 4 = 25

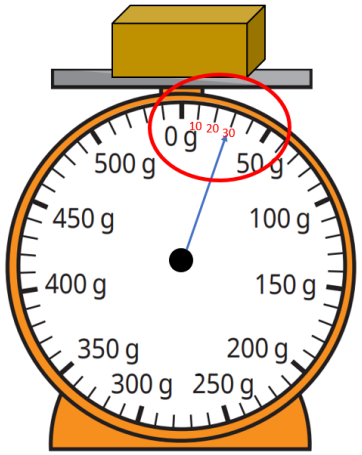
Measure mass in grams



What is the mass of the football?

The mass of the football is 300 g.





What is the mass of the box?

30 g

The start point is 0 g.

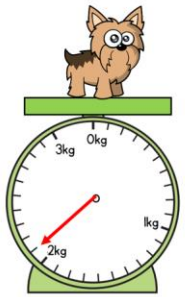
The end point is 50 g.

There are 5 intervals.

The scale is going up in 10 s.

50 ÷ 5 = 10

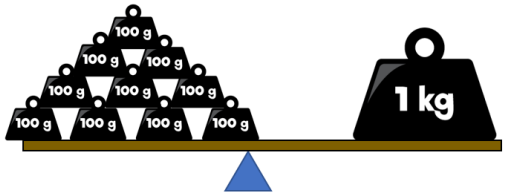
Measure mass in grams (g) and kilograms (kg)



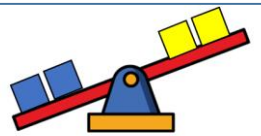
2 kg and 100 g

4 kg and 800 g

100 g × 10 = 1,000 g



1,000 g is equivalent to 1 kg



One blue box is heavier than one yellow box.

3 kg is lighter than 6 kg.

Vocabulary

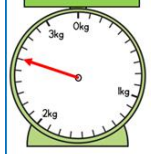
Mass
grams g
kilograms kg
equal parts
number line
interval
equivalent
heavier
lighter
add subtract
total
difference
capacity
volume
mililitres ml
litres l
interval
scale
partition

Adding and subtracting mass

What is total mass of the tractor and the parcel?

2 kg and 600 g

1 kg and 300 g



2 kg + 1 kg = 3 kg

600 g + 300 g = 900 g

3 kg + 900g = 3 kg and 900 g

Volume and Capacity

Year 3 and Year 4 Mixed Mass and Capacity (page 2)

Equipment we use to measure volume and capacity.

We measure liquid in litres and millilitres.

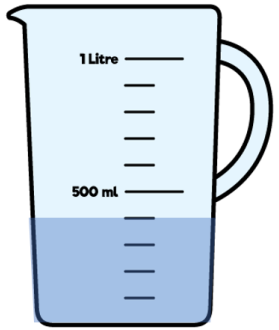
Milli means thousandth.

There are 1,000 millimetres in 1 metre.

There are 1,000 millilitres in 1 litre.

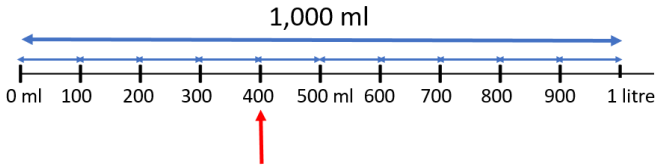
1,000 ml = 1 litre

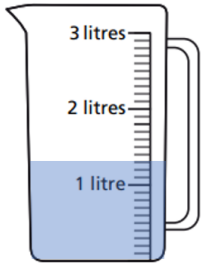
Measuring Volume and Capacity



What is the volume of water in the jug? 400 ml

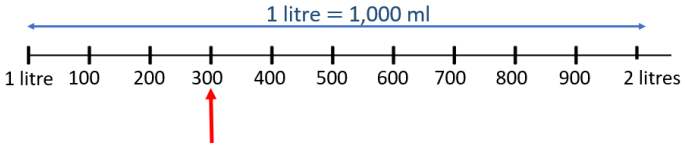
The scale has been split into 10 equal parts, so each interval represents 100 ml.





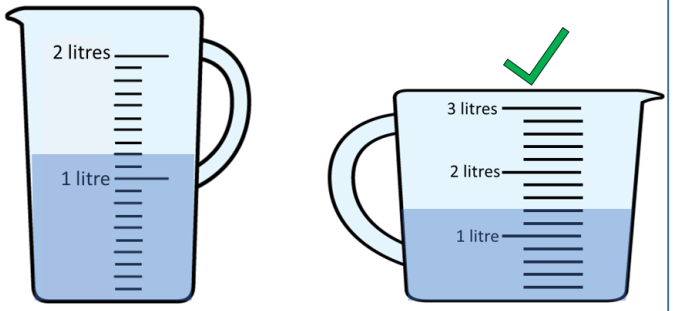
What is the volume of water in this jug? 1 litre and 300 ml

1,000 ÷ 10 = 100



Comparing Volume and Capacity

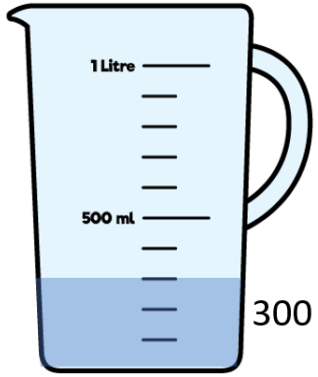
Which jug has the greatest capacity?
Which jug has the greatest volume of water?



1 litre 200 ml < 1 litre 400 ml

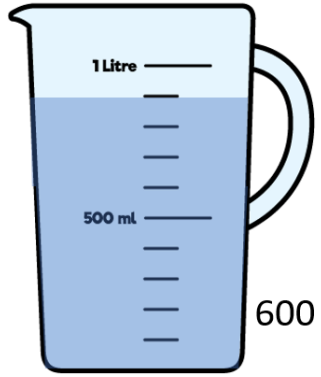
Add and Subtract Volume and Capacity

A



300 ml

B



600 ml

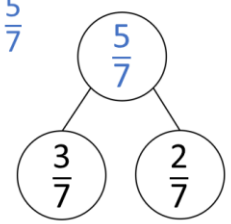
The water from jug A is poured into jug B.
How much water will be in jug B? 900 ml

300 + 600 = 900 ml

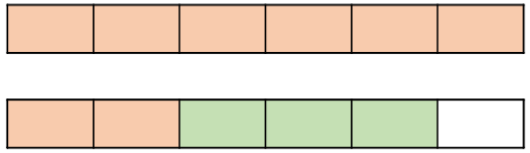
Year 3 and Year 4 Mixed Fractions B

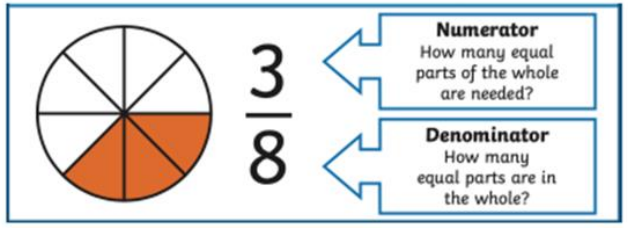
Adding fractions and mixed numbers

$\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$



$1\frac{2}{6} + \frac{3}{6} = 1\frac{5}{6}$

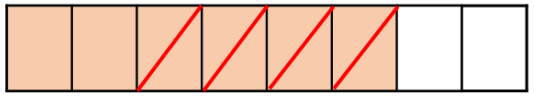




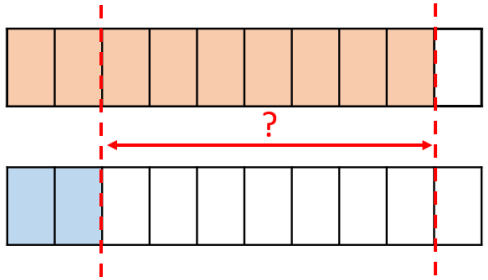
When adding or subtracting fractions, the denominators must be the same.

Subtracting fractions

$\frac{6}{8} - \frac{4}{8} = \frac{2}{8}$



$\frac{9}{10} - \frac{2}{10} = \frac{7}{10}$



One whole

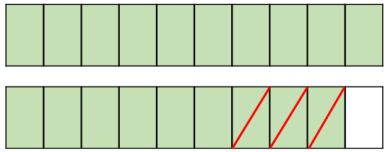
The whole is divided into 3 equal parts.

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

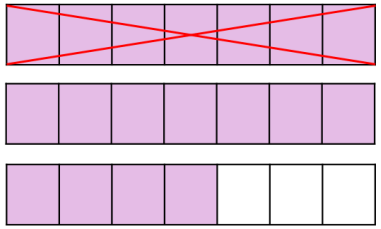
When the numerator and the denominator are the same, the fraction is equal to 1 whole.

Subtract from mixed numbers

$1\frac{9}{10} - \frac{3}{10} = 1\frac{6}{10}$

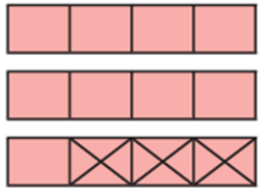


$2\frac{4}{7} - 1 = 1\frac{4}{7}$



When I subtract a whole number from a mixed number, the fraction stays the same.

Subtract from the whole



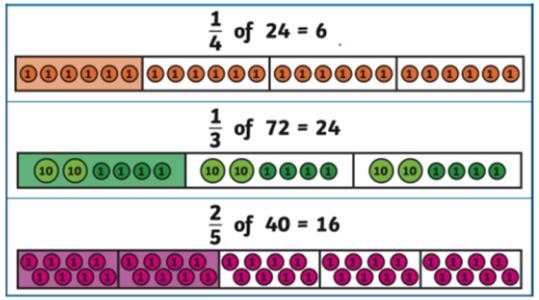
$3 - \frac{3}{4}$

$\frac{8}{8} - \frac{3}{8}$

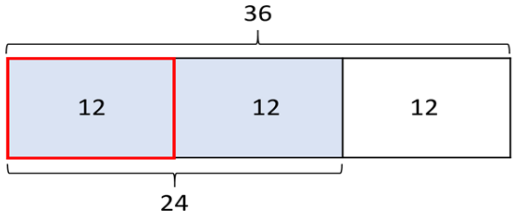
Vocabulary

whole equal parts
denominator
numerator
unit fractions
non-unit fractions
mixed numbers
partitioning
improper fraction
add
subtract
divide

Fractions of amounts



$\frac{2}{3}$ of $\boxed{36} = 24$



$24 \div 2 = 12$ $12 \times 3 = 36$

Walmsley C.E. Primary School
Where getting better never stops