Year 4 Mathematics Parents Information Support Booklet

'be kind, be honest and have courage to live life in all its fullness' John 10:10

Autumn Knowledge Organisers– Year 4

Block 1– Place Value within 10,000

Practise counting, reading and writing n numbers using the models and images shown in this place value knowledge organiser.

Number and Place Value — Knowledge Organiser

Key Vocabulary

- thousands
- hundreds
- tens
- ones
- zero
- place value
- greater than
- less than
- order
- round
- rounded to
- negative number
- partition
- digit
- Roman numeral

twinkl visit twinkl.com

Counting

Counting in 6s

0	6	12	18	24	30	36	42	48	54	60

Counting in 7s

0	7	14	21	28	35	42	49	56	63	70

Counting in 9s

0	9	18	27	36	45	54	63	72	81	90

Counting in 25s

0	25	50	75	100	125	150	175	200	225	250

Counting in 1000s

0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10 000

Compare and Order

2497	2508	3012	3521	3530	4002

smallest — greatest

1000 More or 1000 Less

Number and Place Value — Knowledge Organiser

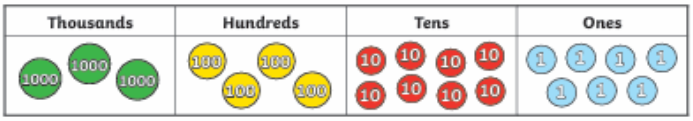
Negative Numbers

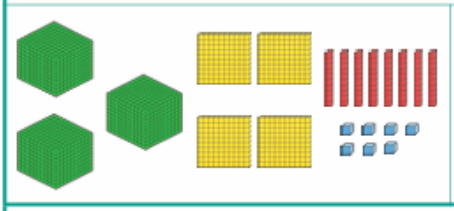
Represent 4-Digit Numbers

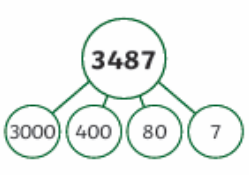
3487

three thousand, four hundred and eighty-seven

1000s	100s	10s	1s
III	IIII	IIII III	IIII II







Roman Numerals

one	1	I
five	5	V
ten	10	X
fifty	50	L
one hundred	100	C

XVIII = 18

XXIX = 29

LXXXIV = 84

Rounding

Look at the place value column to the right of the value you are rounding to. If this digit is a 4 or less, round down. If the digit is a 5 or more, round up.

Rounding to nearest 10

20	21	22	23	24	25	26	27	28	29	30

round down — round up

Rounding to the nearest 100

200	249	250	300

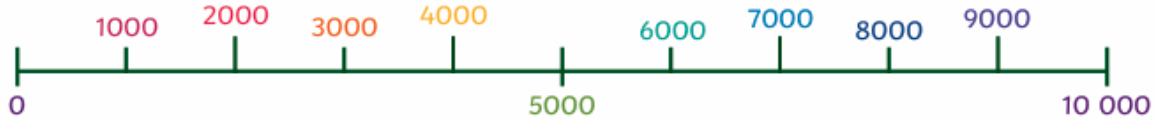
round down — round up

Rounding to the nearest 1000

2000	2499	2500	3000

round down — round up

twinkl visit twinkl.com



Block 2– Addition and Subtraction

Check with your class teacher what is currently being taught.

Addition and Subtraction — Knowledge Organiser

Key Vocabulary

- Add
- Total
- Plus
- Sum
- More
- Altogether
- Difference
- Subtract
- Less
- Minus
- Take away
- Mentally, Orally
- Column Addition
- Column Subtraction
- Exchange
- Estimate
- Inverse operation
- Solve problems
- Number facts

twinkl visit twinkl.com

Addition and Subtraction Methods

Add 4-digit numbers

No exchange

```
 5162
+3427
------
 8589
```

Starting with the ones, add each column in turn.

One exchange

```
 5162
+3497
------
 8659
    1
```

Starting with the ones, add each column in turn. When adding
6 tens + 9 tens = 15 tens
= 1 hundred + 5 tens
Place 1 hundred under the hundreds answer and 5 tens in the answer.

Multiple exchanges

```
 5864
+3497
------
 9361
 1 1 1
```

Starting with the ones, add each column in turn. Exchange tens, hundreds and/ or thousands as required.

Subtract 4-digit numbers

No exchange

```
 5789
- 3421
------
 2368
```

Starting with the ones, subtract each column in turn.

One exchange

```
  6 1
 5749
- 3471
------
 2278
```

Starting with the ones, subtract each column in turn. When subtracting 4 tens -7 tens, exchange 1 hundred to make:
14 tens – 7 tens = 7 tens

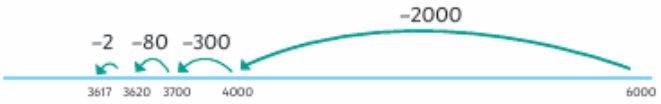
Multiple exchanges

```
 6131
 5742
- 3476
------
 2266
```

Starting with the ones, subtract each column in turn. Exchange tens, hundreds and/ or thousands as required.

Efficient subtraction

Calculate 6000 – 3617 = 2383



Addition and Subtraction — Knowledge Organiser

Add and Subtract 1s, 10s, 100s, 1000s

Here is the number 3124

Add 2 thousands = 5124
Add 5 hundreds = 5624
Subtract 2 tens = 5604
Add 5 ones = 5609

Here is the number 6708

Thousands	Hundreds	Tens	Ones
6	7	0	8

Add 3 thousands = 9708
Subtract 4 hundreds = 9308
Add 5 tens = 9358
Subtract 7 ones = 9351

Crossing ones, tens or hundreds

5392 + **4** tens = 5**4**32 crossing tens
5126 – **6**00 = 4**5**26 crossing hundreds

When crossing ones, tens or hundreds, more than one digit will change.

twinkl visit twinkl.com

Round to Estimate

1635 + 386 = 2021
Round to the nearest ten
1640 + 390 = 2030
Round to the nearest hundred
1600 + 400 = 2000

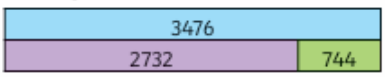
Both give a reasonable estimate, but rounding the nearest ten is more accurate.

9362 – 5729 = 3622
Round to the nearest hundred
9400 – 5700 = 3700
Round to the nearest thousand
9000 – 6000 = 3000

Rounding to the nearest hundred is much more accurate in this case.

Checking Strategies

Using Inverse



3476 – 744 = 2732 can be checked using
2732 + 744 = 3476
This part whole shows the inverse calculations using these three numbers.

1549 + 2688 = 4237	2688 + 1549 = 4237
4237 – 1549 = 2688	4237 – 2688 = 1549

Adding in a different order

420 + 372 + 280 =

Change to

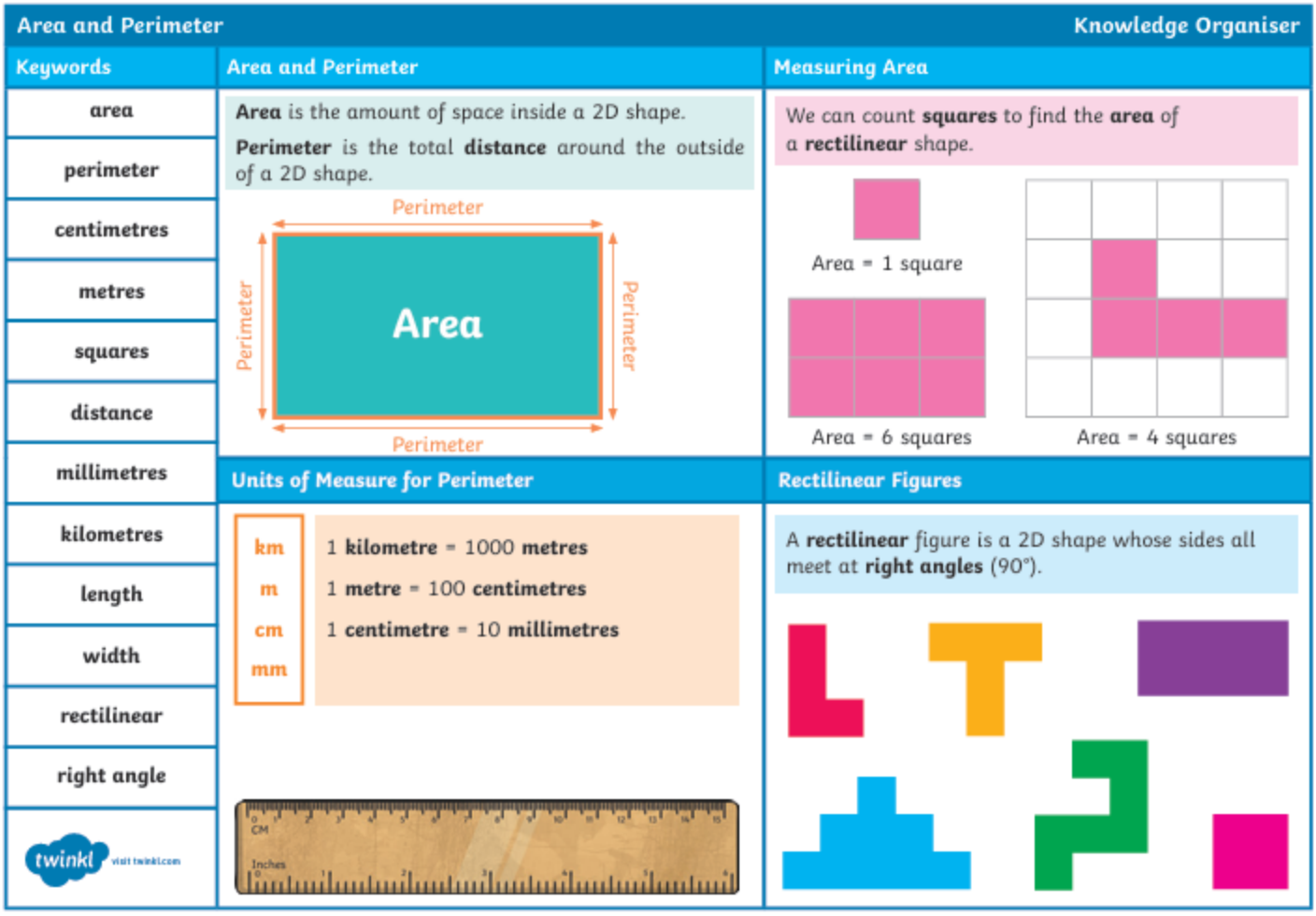
420 + 280 + 372 =

As 420 + 280 = 700

(because 42 + 28 = 70)

420 + 280 + 372 = 700 + 372 = 1072

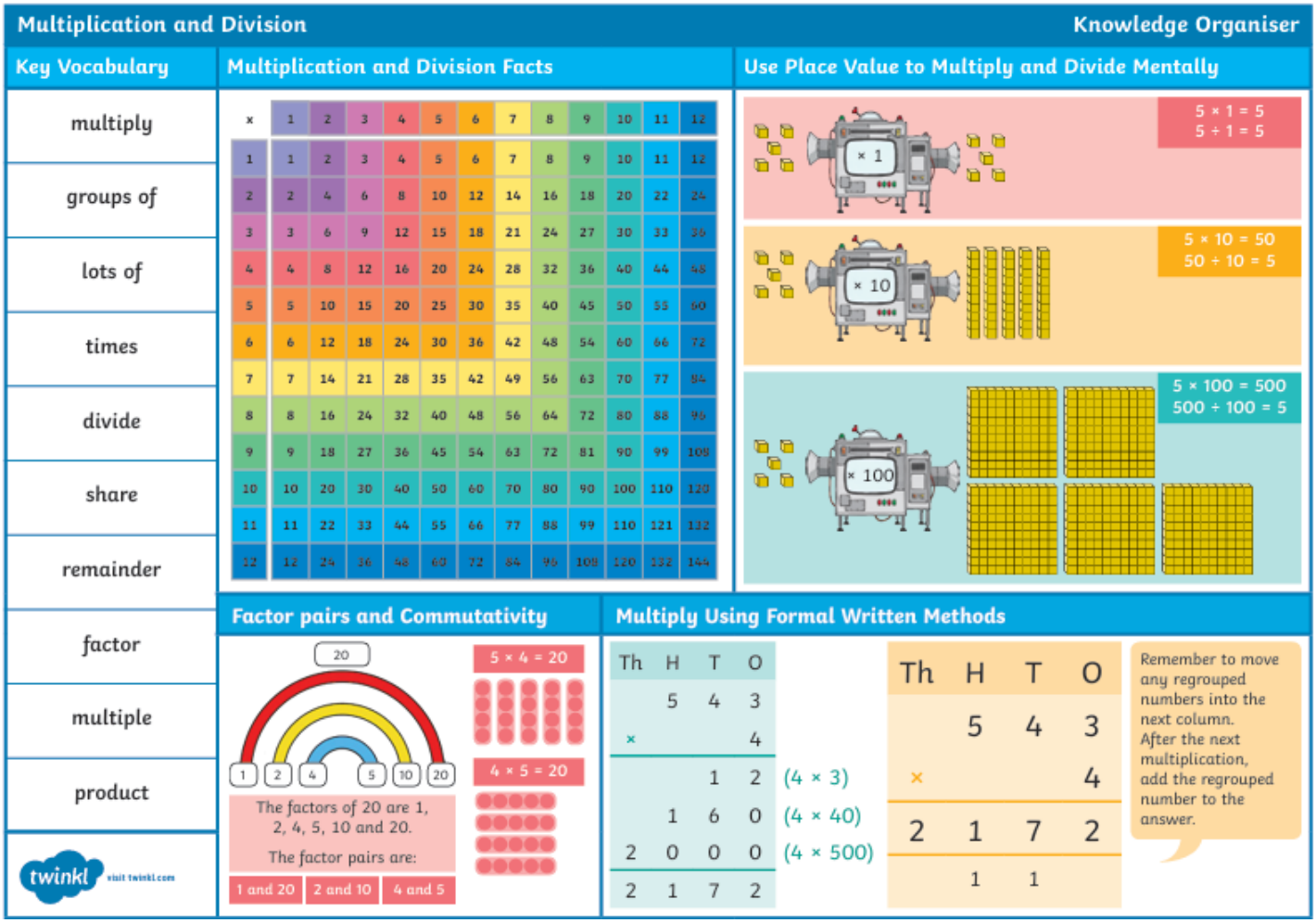
Block 3– Area



Vocabulary and home learning

- Practise drawing shapes on squared paper and finding the area (coverage or space inside the shape. Encourage reliable counting and multiplying if the shapes are rectilinear.
- Use the BBC and Purple Mash area and perimeter online challenges .
- Link area to multiplication.
- Draw a flat plan of a zoo and draw rectilinear shapes for animal cages. Can you work out the area and perimeter of each cage?
- Remember that area is a squared measurement, because you are measuring 2 dimensions; length x width.

Block 4– Multiplication and Division A



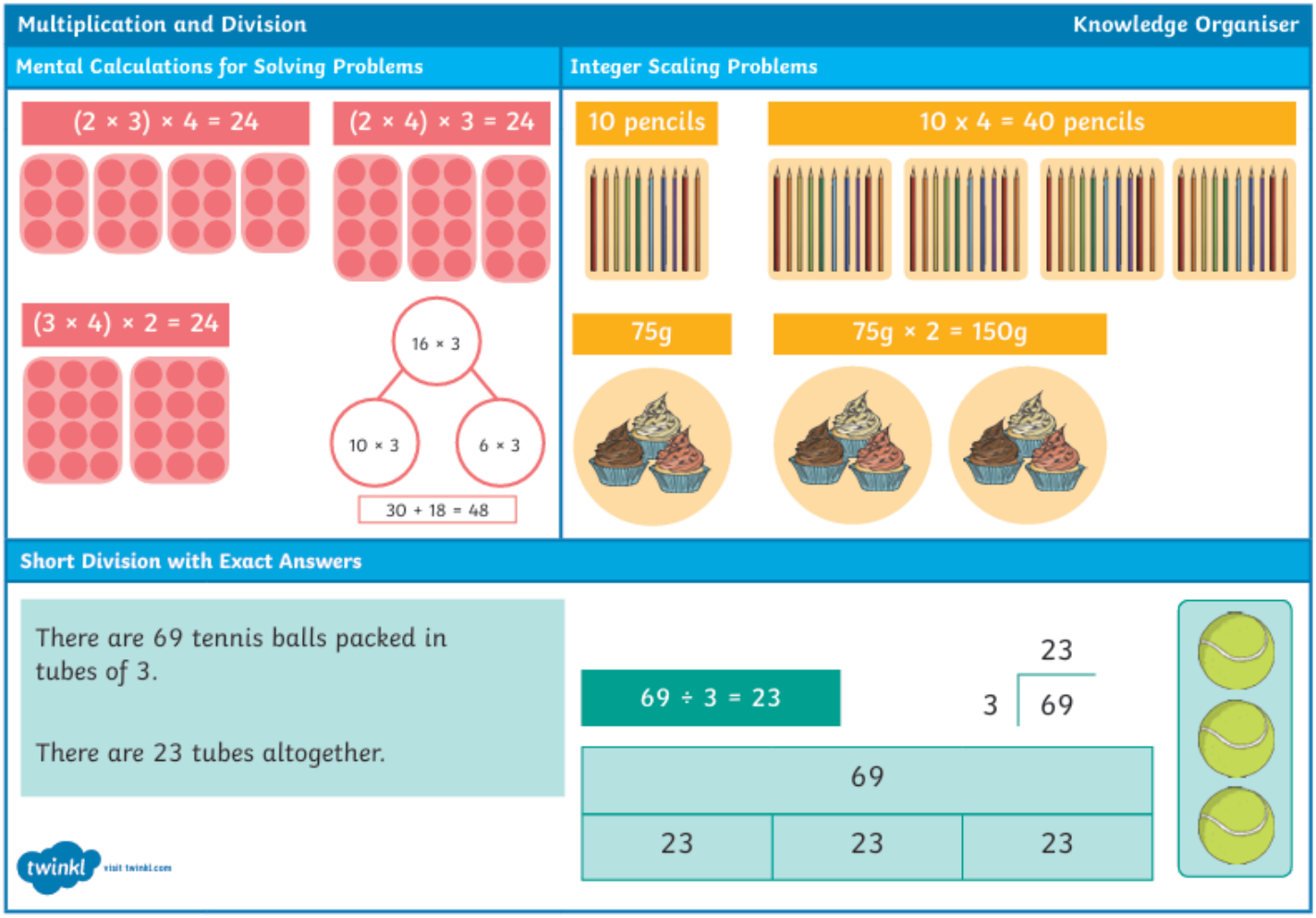
Vocabulary and home learning

Make a poster that shows the vocabulary of multiplication and division.

Practise using known facts and place value to multiply and divide bigger numbers. I know 4 x 3 = 12 so I know 40 x 3 is 120.

Practise column multiplication method using expanded and compact method (see above)

Spring Block 1 Multiplication and Division B



Vocabulary and home learning

Check with your class teacher to find out which division method your child is currently learning.

Practise short division using 2-digit numbers.

and bar modelling to show equal groups

Try and work a division out using short division and also draw it as a bar model.

Make up some word problems. Can you challenge a classmate?

Block 2 Perimeter

Area and Perimeter

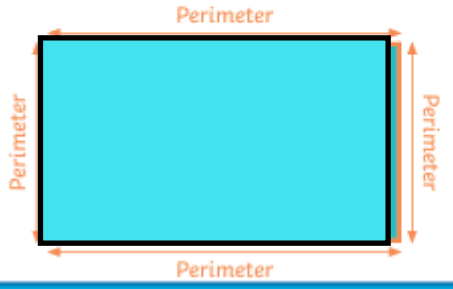
Keywords
area
perimeter
centimetres
metres
squares
distance
millimetres
kilometres
length
width
rectilinear
right angle

twinkl visit twinkl.com

Area and Perimeter

Area is the amount of space inside a 2D shape.

Perimeter is the total **distance** around the outside of a 2D shape.



Encourage Investigation

wonder how many different Shapes I can draw with a perimeter of 32cm?

Units of Measure for Perimeter

km	1 **kilometre** = 1000 **metres**
m	1 **metre** = 100 **centimetres**
cm	1 **centimetre** = 10 **millimetres**
mm	

Rectilinear Figures

A **rectilinear** figure is a 2D shape whose sides all meet at **right angles** (90°).

Vocabulary and home learning

Practise drawing shapes and finding the perimeter measurement of the shape on squared paper.

Practise vocabulary can your child explain what a key word means or draw an example?

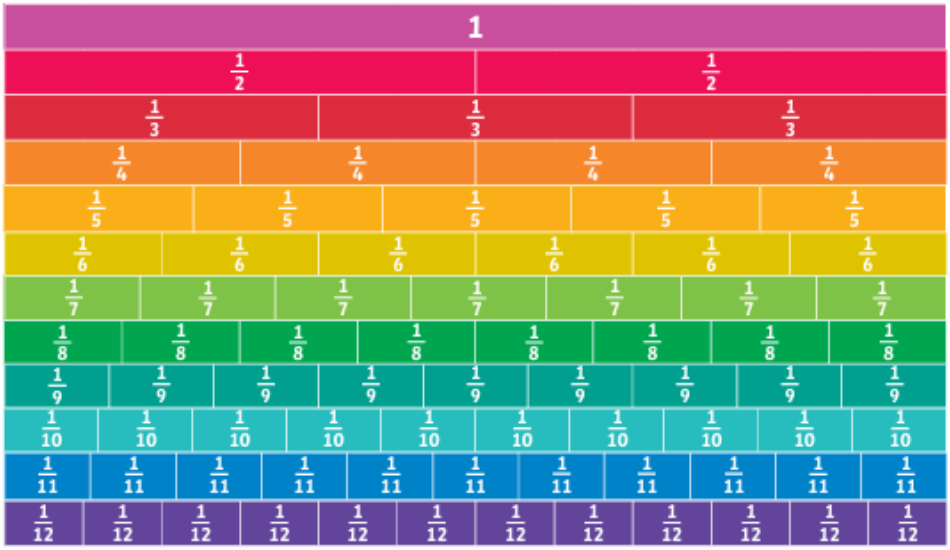
Block 3 Fractions

Fractions — Knowledge Organiser

Key Vocabulary

- numerator
- denominator
- unit fraction
- non-unit fraction
- equivalent
- quantities
- whole
- halves
- thirds
- quarters
- fifths
- sixths
- sevenths
- eighths
- ninths
- tenths
- elevenths
- twelfths
- quantities

Fraction Families



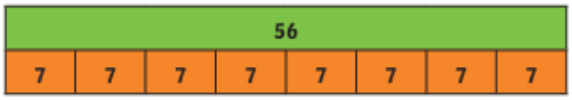
Fractions of Quantities

To find a fraction of a number, divide by the denominator and multiply by numerator.

To find quarters of 20:

$\frac{1}{4}$ of 20 = 5 $\frac{2}{4}$ of 20 = 10 $\frac{3}{4}$ of 20 = 15 $\frac{4}{4}$ of 20 = 20

To find eighths of 56:



$\frac{1}{8}$ of 56 = 7 $\frac{2}{8}$ of 56 = 14 $\frac{3}{8}$ of 56 = 21 $\frac{4}{8}$ of 56 = 28

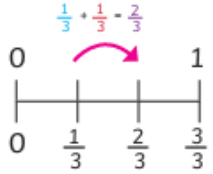
$\frac{5}{8}$ of 56 = 35 $\frac{6}{8}$ of 56 = 42 $\frac{7}{8}$ of 56 = 49 $\frac{8}{8}$ of 56 = 56

Fractions — Knowledge Organiser

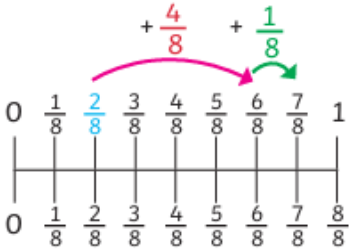
Adding Fractions

Fractions can be added when the denominators are the same.

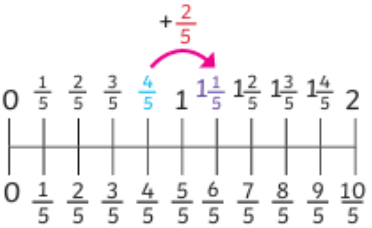
$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$



$\frac{2}{8} + \frac{4}{8} + \frac{1}{8} = \frac{7}{8}$



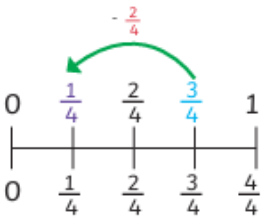
$\frac{4}{5} + \frac{2}{5} = \frac{6}{5}$ or $1\frac{1}{5}$



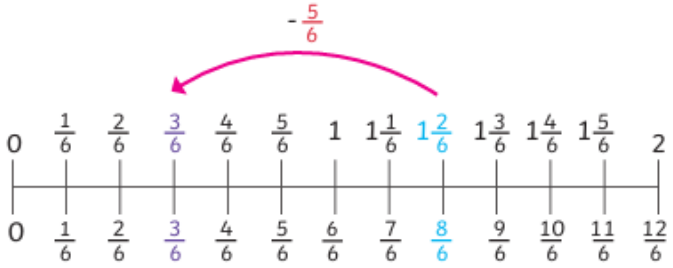
Subtracting fractions

Fractions can be subtracted when the denominators are the same.

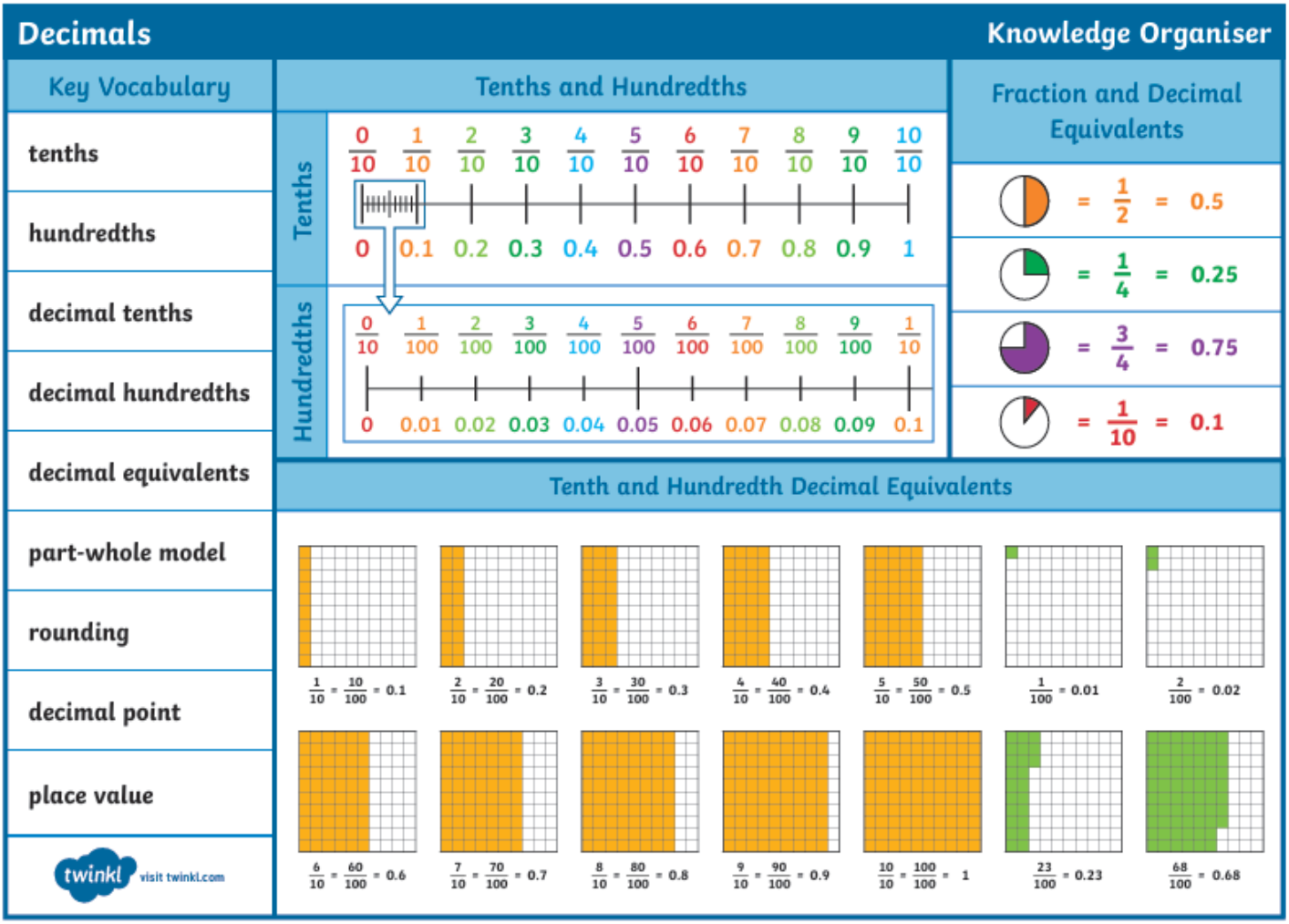
$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$



$\frac{8}{6} - \frac{5}{6} = \frac{3}{6}$



Summer Block 1 Decimals B



Vocabulary and home learning

- Practise counting in tenths and hundredths using money.
- Show decimals using a blank 100 square. Each row = 1 tenth.
- Can you shade these decimals? 4/10 22/100, 5/100
- Practise making decimals using the decimal place value grid and some Cheerios as place value counters.

Summer Block 2 Money

Practise counting coins and giving change . Use skills such as rounding and estimating when out shopping in the supermarkets.

Find the difference between an expensive and chaep brand of the same item.

Money — Knowledge Organiser

Key Vocabulary

- amount
- change
- combinations
- estimate
- decimal
- pence
- penny
- pounds
- round
- value
- convert

UK Coins

£0.01	£0.02	£0.05	£0.10	£0.20	£0.50	£1.00	£2.00
one penny coin	two pence coin	five pence coin	ten pence coin	twenty pence coin	fifty pence coin	one pound coin	two pound coin

UK Notes

£5	£10	£20	£50
five pound note	ten pound note	twenty pound note	fifty pound note

Pounds and Pence

£3 and 25 pence — £3.25

£52 and 13 pence — £52.13

463 = £4.63

705p = £7.05

92p = £0.92

Money — Knowledge Organiser

Ordering Money

We can compare or order amounts by changing all amounts to either pounds or pence.

£4.82 ☐ 428p

£4.82 = 482p

482p > 428p

£4.82 > 428p

Order in ascending order:

516p 156p £1.65 £6.51

£1.65 = 165p and £6.51 = 651p

156p, £1.65, 516p, £6.51

Estimating Money

That's about £8.

£7.00 £7.50 £8.00

That's about £4.

£4.00 £5.00

We can use estimates when calculating.

They are about £3 and £7 so will be about £10 in total.

They are about £4 and £3 so will be about £7 in total. I will have about £3 left.

Summer Block 3 Time

Practise drawing time lines to solve time problems . Harry watched a film that lasted 90 minutes. If he started watching it at 7:15, when did it finish?

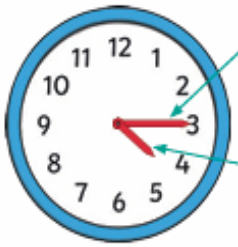
Time — Knowledge Organiser

Key Vocabulary

- 12-hour time
- 24-hour time
- Roman numerals
- analogue
- digital
- hours
- minutes
- seconds
- o'clock
- half past
- quarter past
- quarter to
- midday
- midnight
- noon
- a.m.
- p.m.

twinkl visit twinkl.com

Analogue and Digital Clocks



Minute Hand
The long hand points to the minutes past the hour.

Hour Hand
The short hand points to the hour. If this hand is pointing between the hours, it is the earlier hour of the two.

twelve o'clock

quarter past twelve

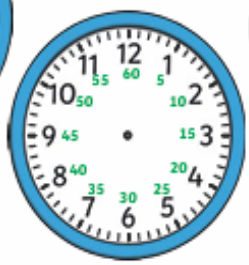
half past twelve

quarter to one

Durations of Time

There are **60 seconds** in a minute.

There are **60 minutes** in an hour.



There are **24 hours** in a day

There are **7 days** in a week.

There are **12 months** in a year.

Time — Knowledge Organiser

24-Hour Time

There are 24 hours in a day.

twinkl visit twinkl.com

01:00	1 a.m.	1 o'clock		
02:00	2 a.m.	2 o'clock		
03:00	3 a.m.	3 o'clock		
04:00	4 a.m.	4 o'clock		
05:00	5 a.m.	5 o'clock		
06:00	6 a.m.	6 o'clock		
07:00	7 a.m.	7 o'clock		
08:00	8 a.m.	8 o'clock		
09:00	9 a.m.	9 o'clock		
10:00	10 a.m.	10 o'clock		
11:00	11 a.m.	11 o'clock		
12:00	12 p.m.	12 o'clock		

13:00	1 p.m.	1 o'clock		
14:00	2 p.m.	2 o'clock		
15:00	3 p.m.	3 o'clock		
16:00	4 p.m.	4 o'clock		
17:00	5 p.m.	5 o'clock		
18:00	6 p.m.	6 o'clock		
19:00	7 p.m.	7 o'clock		
20:00	8 p.m.	8 o'clock		
21:00	9 p.m.	9 o'clock		
22:00	10 p.m.	10 o'clock		
23:00	11 p.m.	11 o'clock		
00:00	12 a.m.	12 o'clock		

Make shapes flashcards to test knowledge.

Make shapes using paper straws, plasticine or card. Play guess my shape describing the properties (features of the shapes).

Summer Block 4 Shape

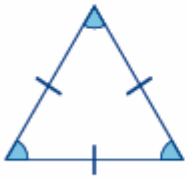
Properties of Shape — Knowledge Organiser

Key Vocabulary

- angle
- right angle
- acute
- obtuse
- horizontal
- vertical
- diagonal
- parallel
- perpendicular
- two-dimensional
- polygon
- line of symmetry
- reflection
- mirror line
- isosceles
- equilateral
- scalene
- quadrilateral
- rhombus
- parallelogram
- trapezium

Triangles

Triangles have 3 sides and 3 vertices. The total of the angles in a triangle is 180°.



An equilateral triangle is a regular polygon. It has sides of equal length and each angle is 60°.

An isosceles triangle has two sides of equal length and two angles of equal size.

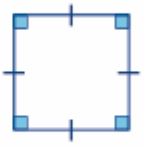
A right-angled triangle always has one 90° angle.

It can be isosceles or scalene.

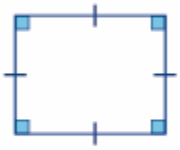
A scalene triangle has no equal sides or angles.

Quadrilaterals

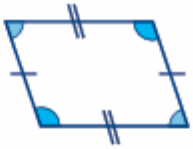
A quadrilateral is a polygon with four sides.



A square has four sides of equal length and four right angles (90°). A square is also a rectangle, a rhombus and a parallelogram.

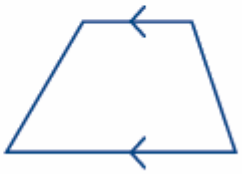


A rectangle has two pairs of parallel, equal sides and four right angles. A rectangle is also a parallelogram.

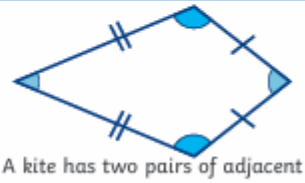


A parallelogram has two pairs of parallel, equal sides and opposite equal angles.

A rhombus has four sides of equal length and opposite equal angles. A rhombus is also a parallelogram.



A trapezium only has one pair of opposite parallel sides.



A kite has two pairs of adjacent equal sides and one pair of opposite equal angles.

Properties of Shape — Knowledge Organiser

Angles

An angle is created when two straight lines meet at a point or intersect.

Right angle

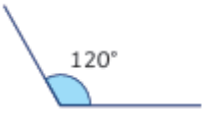
The intersection of perpendicular lines creates a right angle.

Acute angle

Any angle measuring more than 0 degrees and less than 90 degrees is acute.

Obtuse angle

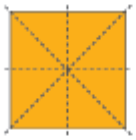
Any angle measuring more than 90 degrees but less than 180 degrees is obtuse.



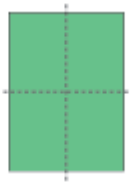
Lines of Symmetry

Lines of symmetry may be horizontal, vertical or diagonal. Some 2D shapes will have no lines of symmetry and some 2D shapes will have multiple lines of symmetry.

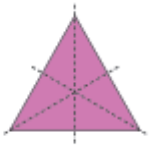
A square has four lines of symmetry.



A rectangle has two lines of symmetry.

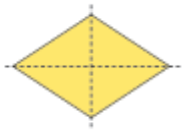


An equilateral triangle has three lines of symmetry.



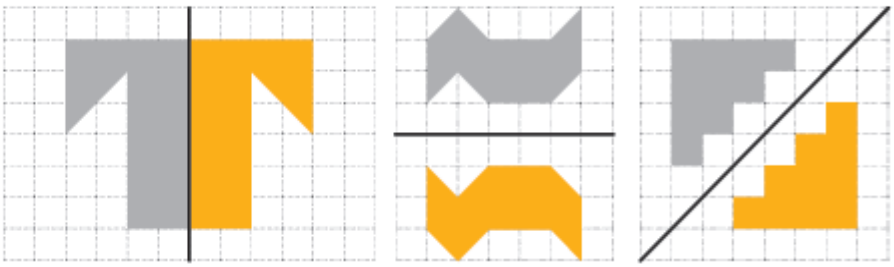
An isosceles triangle has one line of symmetry.

A rhombus has two lines of symmetry.



Symmetric Figures

Patterns and shapes can be reflected in a mirror line. Mirror lines can be vertical, horizontal or diagonal.



Summer Block 5 Statistics

Statistics — Knowledge Organiser

Key Vocabulary

- bar chart
- pictogram
- frequency table
- tally chart
- discrete data
- continuous data
- time graph
- sum
- difference
- comparison
- interpret

twinkl visit twinkl.com

Discrete and Continuous Data

Data that is counted in whole numbers is discrete. In **discrete data**, values between whole numbers cannot be counted.

Data that is measured and therefore can take on infinite values is continuous. In **continuous data**, values between whole numbers can be counted.

Frequency Tables

Tally marks are used to help count things. Each vertical line represents one unit. The fifth tally mark goes down across the first four to make it easier to count.

The frequency column is completed after all the data has been collected.

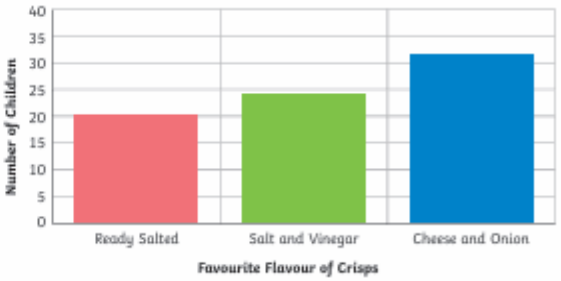
Eye Colour	Tally	Frequency
brown	𝍸 |	6
blue	𝍸 |||	8
green	|||	3
grey	||||	4
hazel	𝍸	5

Bar Charts

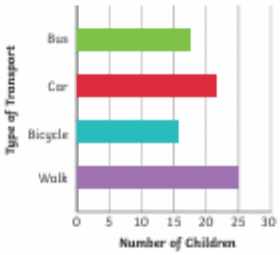
A bar chart has a horizontal axis and a vertical axis. Bars are used to show the data of each category. There must be a gap between each bar.

The scale of the bar chart is based on the range of data.

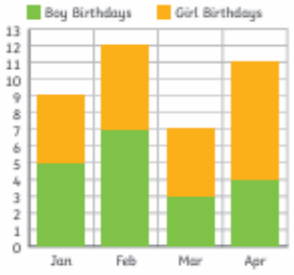
The scale on this bar chart counts in fives.



The bars are horizontal on this bar chart.



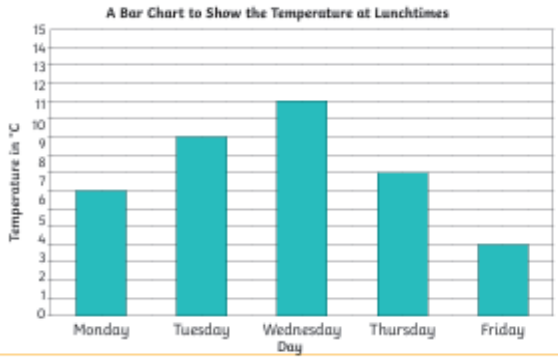
Two sets of data are shown on this stacked bar chart.

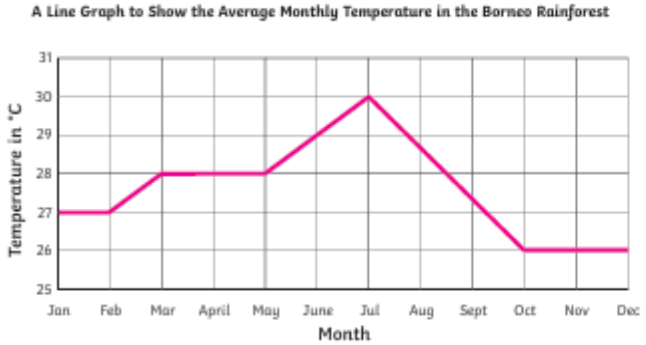


Statistics — Knowledge Organiser

Time Graphs

Time graphs show how data changes over time.





twinkl visit twinkl.com

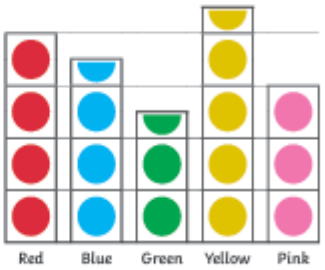
Pictograms

Pictograms use symbols or pictures to represent data.

This pictogram uses one symbol to represent two children.

Using this key, we can see that seven children prefer the colour blue.

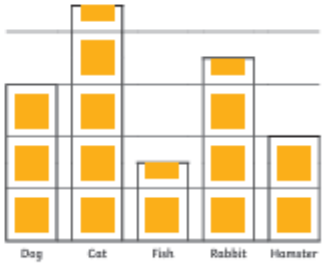
Class 10's Favourite Colours



◯ = 2 Children

This pictogram uses one picture to represent four children. Using this key, we can see that six children have a pet fish.

Class 10's Pets



▭ = 4 Children

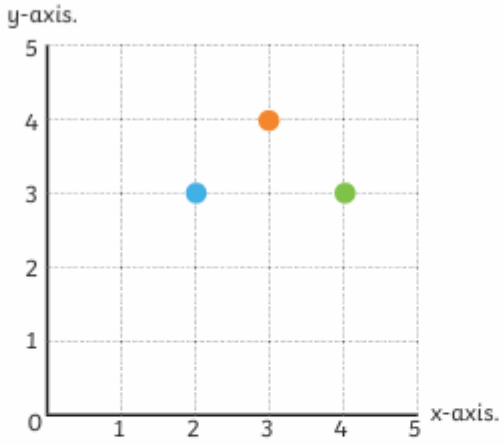
Summer Block 5 Position and Direction

Position and Direction — Knowledge Organiser

Key Vocabulary

- coordinate
- quadrant
- x-axis
- y-axis
- translation
- vertex
- vertices

Position in the First Quadrant



Coordinates are a useful way to locate a position on a map or grid.

The numbers across the horizontal line of the grid are on the **x-axis**.

The numbers on the vertical line of the grid are on the **y-axis**.

We always read or write the number on the x-axis before the **y-axis**.

The x and y position are written in brackets with a comma.

The coordinate of the blue spot is **(2, 3)**.

To help you remember which point to read or write first, simply remember to move 'along the corridor and up the stairs'.

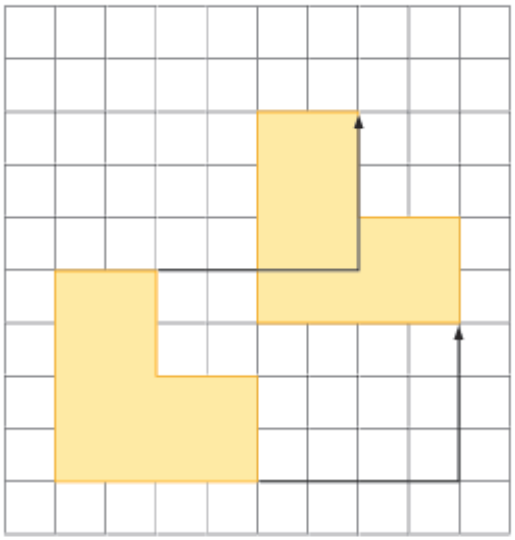
In other words, move on the x-axis and then move on the y-axis.

Position and Direction — Knowledge Organiser

Translation

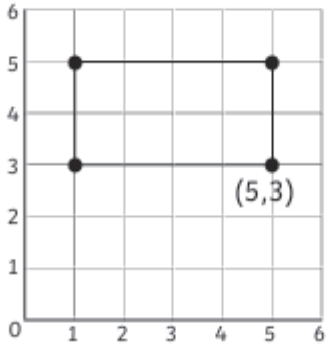
In maths, translation means moving an object on a grid. The object is moved without changing the size, turning or reflecting it.

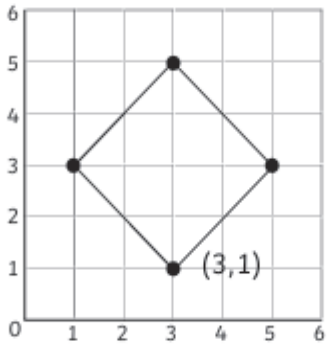
When translating an object on a grid, it can move up or down, left or right.



Plotting 2D Shapes

Each vertex (corner) of a 2D polygon can be represented as a coordinate on a 2D grid.

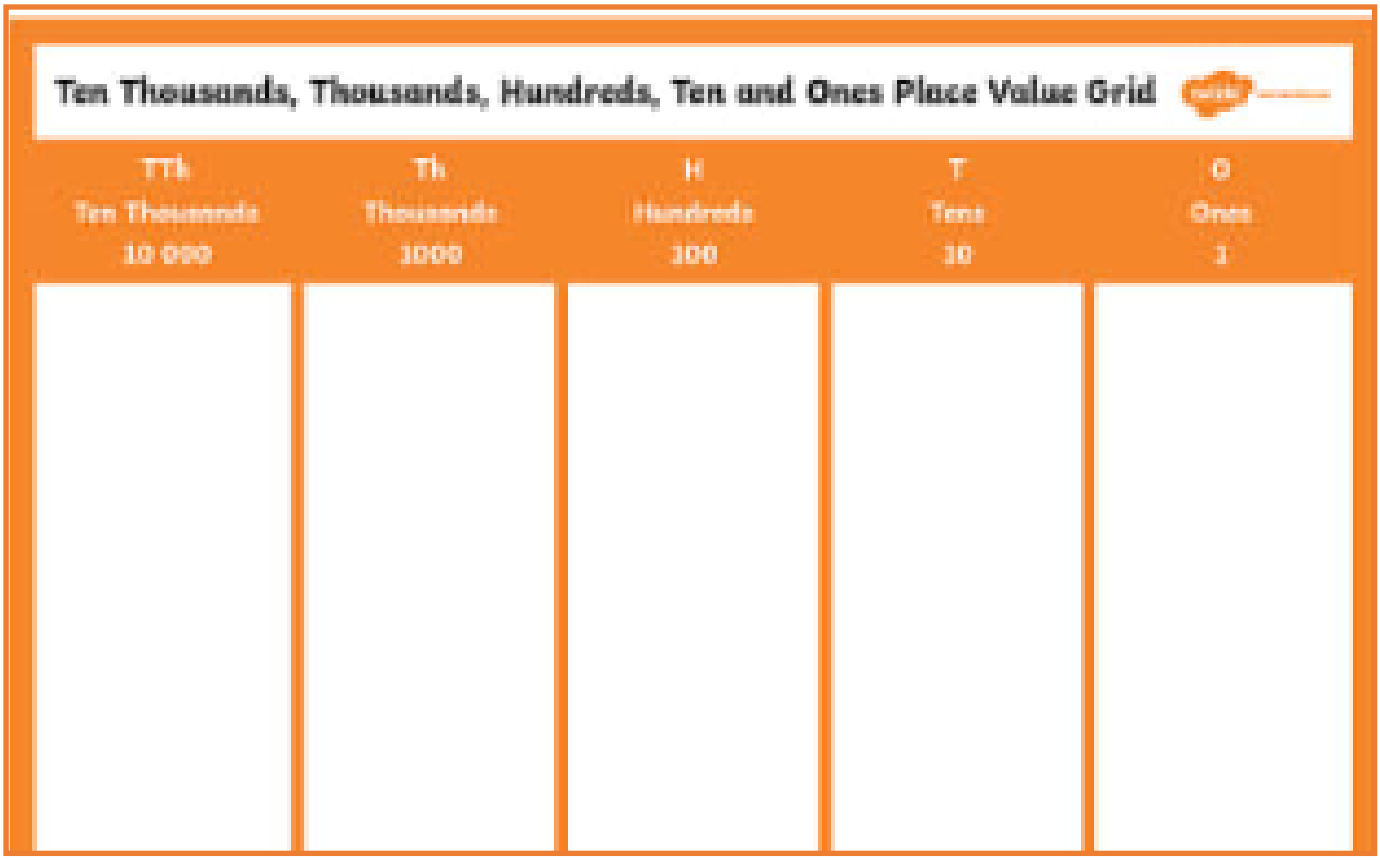




Multiplication Square

x	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

- Daily tables practise is crucial in year 4.
- Use Purple Mash tables test environment for speed testing.
- Skip count in multiples—tackle a table at a time.
- Play tables bingo
- Build a fact family -



Practise making numbers on place value grids.

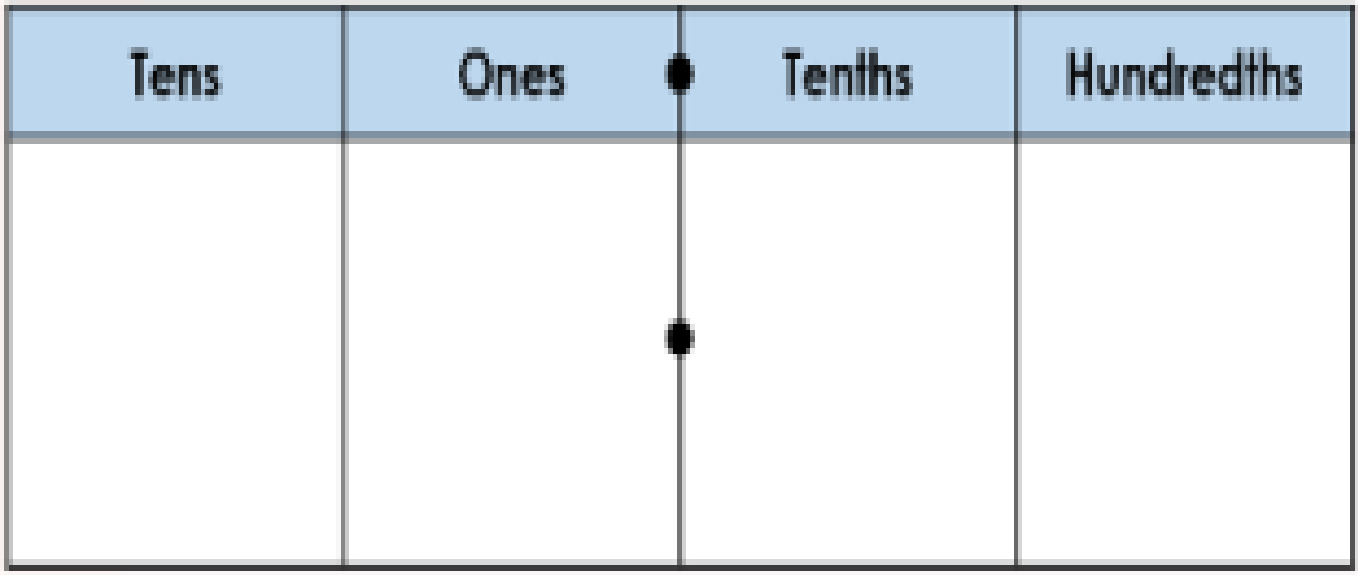
" Make me a 4 –digit number that is even– can you read it out to me?"

Make me a 4-digit number where the ones digit is less than the hundreds digit. Can you read it to me?

Can you guess my 4-digit number. The digits total 9 when added together?

Decimal place value grid

Practise writing money amounts such as £1.09



Real Life Maths!

Encourage your child to see Maths as skills essential to life, not just a lesson. Look at all these examples!

Real Life Maths Involve your child in as many problem-solving activities as possible.

- **shopping** — counting, estimating, rounding, budgeting, percentages giving change, adding, subtracting, multiplying, dividing, comparing,
- **Playing games** — counting, estimating comparing, subitising, sequencing
- **Planning an outing** — estimating, rounding, budgeting, timing using timetables, distance, journey time, dividing; adding subtracting dividing multiplying, working out change and cost.
- **Cooking a meal** — Proportion and ratio, measuring, estimating; timing, ordering dividing multiplying adding.
- **Using a TV guide** — Reading tables, data handling/ interpretation, time estimation, rounding, telling the time.