Number and Place Value

Key Vocabulary

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

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

4324 > 3243
greater than

879 < 2126
less than

2497	2508	3012	3521	3530	4002

smallest — greatest

1000 More or 1000 Less

1000 Less	1000 More

1212 — **2212** — 3212

Negative Numbers

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10

Represent 4-Digit Numbers

3487

three thousand, four hundred and eighty-seven

1000s	100s	10s	1s

Thousands	Hundreds	Tens	Ones
1000 1000 1000 1000	100 100 100 100 100	10 10 10 10 10 10 10 10 10	1 1 1 1 1 1 1

3487

3000 400 80 7
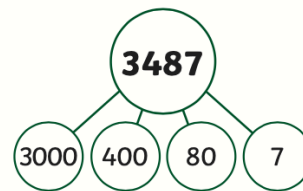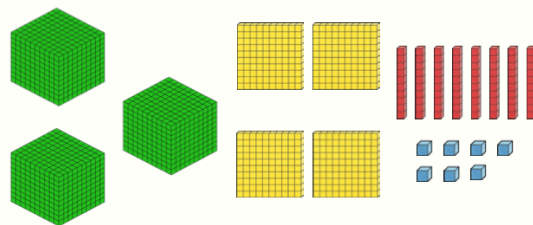
Roman Numerals

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————→

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

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
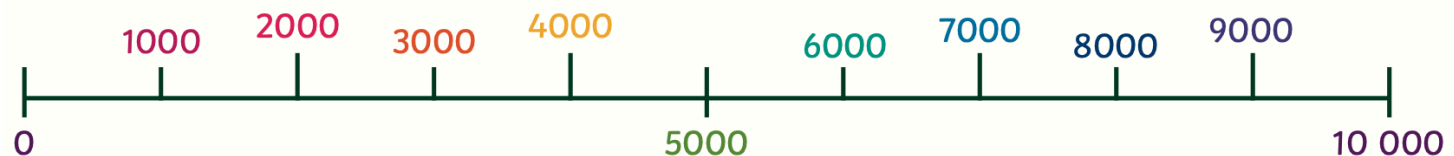
Addition and Subtraction Methods

Add 4-digit numbers

No exchange

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

Starting with the ones, add each column in turn.

One exchange

```
  51 6 2
+ 34 9 7
-------
  8 6 5 9
      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
  11 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
  5 7 4 9
- 3 4 7 1
-------
  2 2 7 8
```

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

```
   6 13 1
  5 7 4 2
- 3 4 7 6
-------
  2 2 6 6
```

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

Efficient subtraction

Calculate 6000 – 3617 = 2383

-2 -80 -300 -2000

3617 3620 3700 4000   6000

Addition and Subtraction

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

Here is the number 3124

1000 100 10 1 1
1000 1000 10 1 1
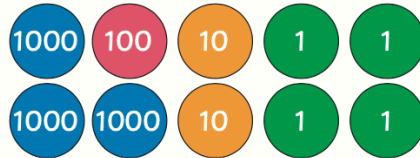
Add 2 thousands = 5124
Add 5 hundreds = 5624
Subtract 2 tens = 5604
Add 5 ones = 5609

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 = 5432   crossing tens
5126 − 600 = 4526   crossing hundreds

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

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

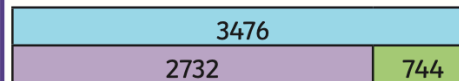Round to the nearest hundred

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	
2732	744

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

4237
1549   2688

1549 + 2688 = 4237	2688 + 1549 = 4237
4237 − 1549 = 2688	4237 − 2688 = 1549

Adding in a different order

420 + 372 + 280 =
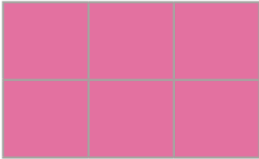
Change to

420 + 280 + 372 =

As 420 + 280 = 700
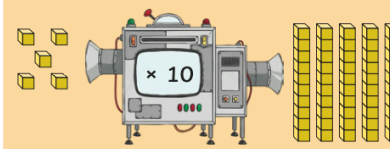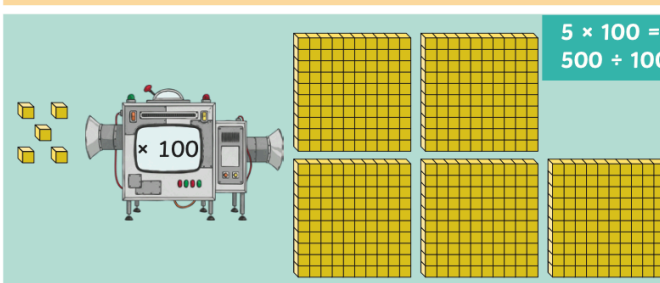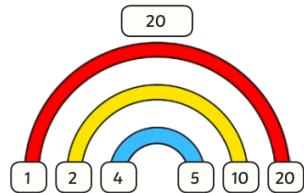
(because 42 + 28 = 70)

420 + 280 + 372 = 700 + 372 = 1072

Area and Perimeter

Keywords

area

perimeter

centimetres

metres

squares

distance

millimetres

kilometres

length

width

rectilinear
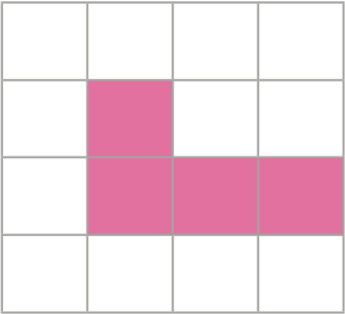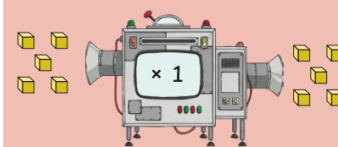
right angle

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.

Measuring Area

We can count **squares** to find the **area** of a **rectilinear** shape.

Area = 1 square

Area = 6 squares

Area = 4 squares

Units of Measure for Perimeter

km
m
cm
mm

1 **kilometre** = 1000 **metres**

1 **metre** = 100 **centimetres**

1 **centimetre** = 10 **millimetres**

Rectilinear Figures

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

Key Vocabulary

- multiply
- groups of
- lots of
- times
- divide
- share
- remainder
- factor
- multiple
- product

Multiplication and Division Facts

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Use Place Value to Multiply and Divide Mentally

$5 \times 1 = 5$
$5 \div 1 = 5$

$5 \times 10 = 50$
$50 \div 10 = 5$

$5 \times 100 = 500$
$500 \div 100 = 5$

Factor pairs and Commutativity

20

1, 2, 4, 5, 10, 20

$5 \times 4 = 20$

$4 \times 5 = 20$

The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:

| 1 and 20 | 2 and 10 | 4 and 5 |

Multiply Using Formal Written Methods

Th	H	T	O	
	5	4	3	
×			4	
		1	2	(4 × 3)
	1	6	0	(4 × 40)
2	0	0	0	(4 × 500)
2	1	7	2	

Th	H	T	O
	5	4	3
×			4
2	1	7	2
	1	1	

Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.

Multiplication and Division

Mental Calculations for Solving Problems

(2 × 3) × 4 = 24

(2 × 4) × 3 = 24

(3 × 4) × 2 = 24

16 × 3

10 × 3   6 × 3

30 + 18 = 48
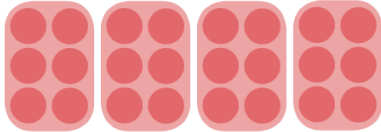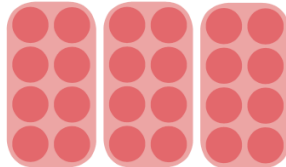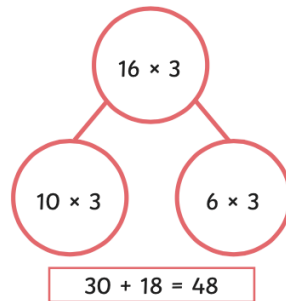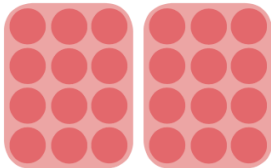
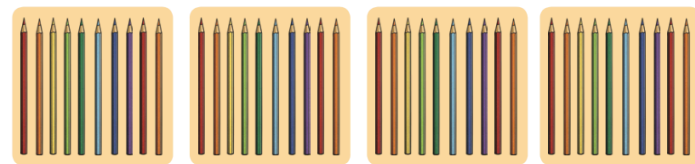## Integer Scaling Problems

10 pencils
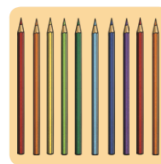
10 x 4 = 40 pencils

75g

75g × 2 = 150g

Short Division with Exact Answers

There are 69 tennis balls packed in tubes of 3.

There are 23 tubes altogether.

69 ÷ 3 = 23

23
3 | 69

69		
23	23	23