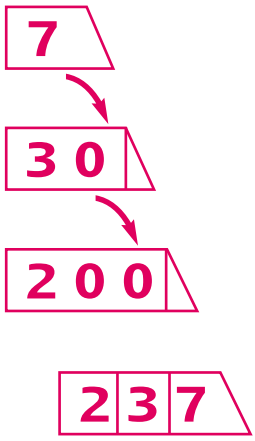
UNIT 2

SECTION 1: PUTTING NUMBERS INTO WORDS

DIRECT TEACHING POINTS

- Use this section as the basis of short mental activities during the term.
- Use place value cards to demonstrate how 237 can be thought of as 200 + 30 + 7 rather than 2 hundreds, 3 tens and 7 units.



- Pay attention to the correct spelling of number names.
- Give pupils practice in writing large numbers in words and numerals. Exercise 1 is a consolidation exercise.
- Star Challenge 1 is a good diagnostic exercise to test pupils' understanding of place value.
- In Star Challenge 2, encourage pupils to discuss their answers. They can repeat the exercise generating their own numbers, by throwing dice.

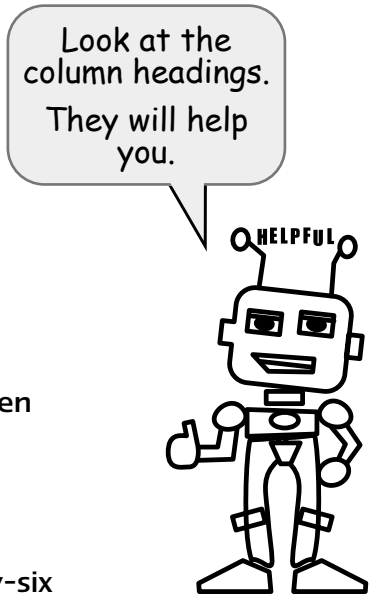
KEY VOCABULARY TO LEARN AND USE

number names (correct spelling)
place value

Putting numbers into words

1 Numbers and words

	M	HTh	TTh	Th	H	T	U	in words
1					2	0	1	two hundred and one
2					.....			two hundred and ten
3					.....			three hundred and six
4					5	3	0	five hundred and thirty
5					.....			six hundred and forty
6					.....			seven hundred and fifteen
7					.....			nine hundred and six
8					.....			nine hundred and sixty
9					.....			three hundred and forty-six
10					7	2	5	.....
11					4	0	3	.....
12					6	7	0	.....
13				1	2	0	4	one thousand, two hundred and four
14				.....				two thousand and five
15				.....				two thousand and fifty
16				.....				three thousand, one hundred and three
17				.....				three thousand, one hundred and thirty
18				2	5	0	0	two thousand, five hundred
19				.....				two thousand, five hundred and four
20				.....				two thousand, five hundred and forty
21				.....				six thousand and ten
22				4	0	0	9	.....
23				3	1	0	0	.....
24				7	0	2	3	.....
25		2	4	5	3	4	6	.....
26	2	4	3	2	0	3	0	.....



UNIT 2

Putting numbers into words

STAR CHALLENGE 1

Which of these numbers is ...?

All correct 1 star

4010	4100	4001	4 001 000	4 001 100
2007	2070	2700	2 007 000	2 000 007

1 Which of these numbers is four thousand and one? .....

2 Which of these numbers is four million, one thousand? .....

3 Which of these numbers is four million, one thousand, one hundred?

.....

4 Which of these numbers is two thousand and seventy? .....

5 Which of these numbers is two million and seven? .....

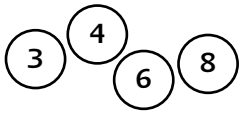
6 Which of these numbers is two thousand and seven? .....

STAR CHALLENGE 2

Making numbers to order

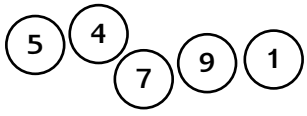
All correct 1 star

1 Make the biggest number you can using each of these digits only once. Write the number in figures and words.



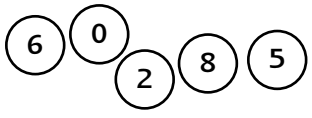
....

2 Make the smallest number you can using each of these digits only once. Write the number in figures and words.



....

3 Make the biggest number you can using each of these digits only once. Write the number in figures and words.



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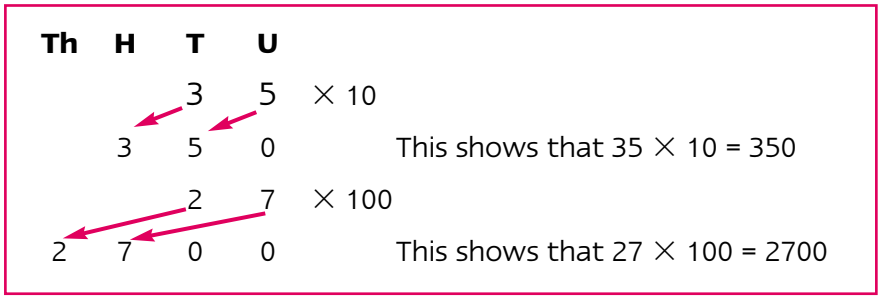
UNIT 2

SECTION 2: MULTIPLYING AND DIVIDING BY 10 AND 100

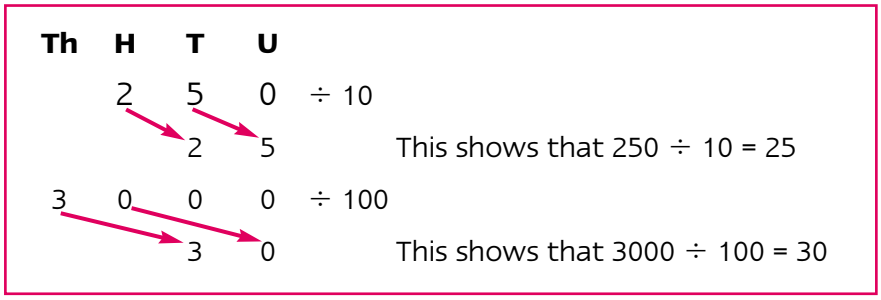
DIRECT TEACHING POINTS

- Use this Section as the basis of mental activities during the term.
- Show pupils how to generalise multiplication and division by 10 so that they will be able to cope with decimals. The change in value of the digits is the key to their understanding. You need to discuss why 4.6 × 10 ≠ 4.60 and 40.3 ÷ 10 ≠ 4.3.

  Multiplying a number by 10 moves the digits one place to the left.
  Multiplying a number by 100 moves the digits two places to the left.



  Dividing a number by 10 moves the digits one place to the right.
  Dividing a number by 100 moves the digits two places to the right.



- Emphasise that multiplication and division by 10 (and powers of 10) is a mental calculation.
- Make sure pupils can explain 30 × 50 as (for example) 3 × 5 × 100. Give them opportunities to explain their calculations.
- Star Challenge 3 is suitable for pairs of pupils to work on together. This question is typical of National Curriculum test questions.
- Star Challenge 4 will extend pupils who can quickly recall multiplication bonds. It revises square numbers from Unit 1. This work should form part of regular mental work and include questions like 40 × 40, 80 × 70.

KEY VOCABULARY TO LEARN AND USE

multiplication *division* *multiply* *divide*
squared *digit* *million* *thousand* *hundred*

UNIT 2

Multiplying and dividing by 10 and 100

1 Multiplying whole numbers by 10 and 100

1. 5 × 10 = ...
2. 42 × 10 = ...
3. 6 × ..... = 600
4. 83 × 100 = ...
5. 15 × 100 = ...
6. 17 × ..... = 170
7. ..... × 100 = 2300
8. 101 × 10 = ...

2 Dividing whole numbers by 10 and 100

1. 60 ÷ 10 = ...
2. 350 ÷ 10 = ...
3. ..... ÷ 10 = 49
4. 3100 ÷ 100 = ...
5. 200 ÷ 10 = ...
6. ..... ÷ 100 = 15
7. 7000 ÷ ..... = 700
8. 1100 ÷ ..... = 110

3 Multiplying and dividing by 10 and 100

1. 21 × 10 = ...
2. 30 × 100 = ...
3. 40 ÷ 10 = ...
4. 6000 ÷ 100 = ...
5. 32 × ..... = 3200
6. 500 ÷ ..... = 50
7. 200 × ..... = 2000
8. 640 ÷ ..... = 64
9. ..... × 10 = 270
10. ..... ÷ 10 = 270

Multiplying and dividing by 10 and 100

STAR CHALLENGE 3

× and ÷ puzzles

18–19 correct 2 stars
16–17 correct 1 star

Complete these. Put 1 digit in each box □.

1 4 3□ ÷ 1 0 = □3 *(2 marks)*

2 □5□ ÷ 1 0 = 7□ *(3 marks)*

3 Ellen puts a three-digit whole number into her calculator.
She divides the number by 10.
Her answer is 45.

What is the number that she put into her calculator?

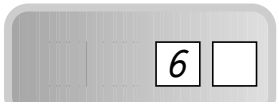
..... *(1 mark)*

4 5 2 × 1 0 0 = □□0□ *(3 marks)*

5 7 3 0□ ÷ 10 = □3 0 *(2 marks)*

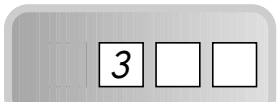
6 4□□0 ÷ 10 = □0 3 *(3 marks)*

7 Amy puts a single digit whole number into her calculator. She multiplies the number by 10.



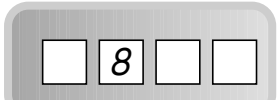
(a) Put in the last digit on the calculator display.
(b) What number did she multiply by 10? ..... *(2 marks)*

8 Peter puts a two-digit whole number into his calculator. He multiplies the number by 10.



(a) Put in the last digit on the calculator display.
(b) Can you tell what the middle digit is on the display? (Yes or no) .....

Peter puts the same two-digit whole number into his calculator. He multiplies the number by 100.



(c) Fill in the complete calculator display. *(3 marks)*

UNIT 2

Multiplying and dividing by 10 and 100

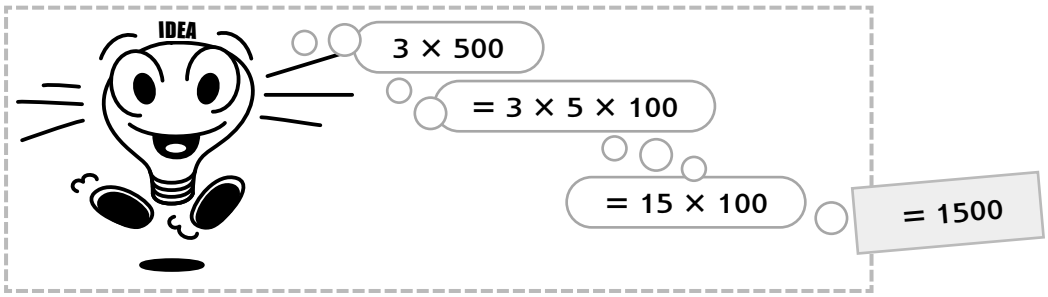
STAR CHALLENGE 4

Multiplying in your head

27–38 correct 2 stars
25–26 correct 1 star

Work out in your head:

1 6 × 20 = ...
2 7 × 30 = ...
3 7 × 40 = ...
4 8 × 30 = ...
5 5 × 50 = ...
6 4 × 90 = ...



7 3 × 400 = ...
8 2 × 700 = ...
9 5 × 600 = ...
10 7 × 300 = ...
11 3 × 600 = ...
12 2 × 3000 = ...
13 5 × 5000 = ...
14 7 × 2000 = ...
15 6 × 6000 = ...
16 8 × 4000 = ...
17 6 × 200 = ...
18 8 × 400 = ...
19 30 × 20 = ...
20 20 × 40 = ...
21 50 × 60 = ...
22 80 × 30 = ...
23 40 × 60 = ...
24 80 × 60 = ...

25 50 squared = ...
26 20 squared = ...
27 30 squared = ...
28 70 squared = ...
29 200 squared = ...
30 80 squared = ...

UNIT 2

SECTION 3: POSITIVE AND NEGATIVE NUMBERS

DIRECT TEACHING POINTS

- Use a number line to model positive and negative whole numbers.
- Pupils need experience of number lines (scales) in different orientations.
- The calculation of differences by counting on needs to be taught, initially between two positive numbers in Unit 1, and now between a negative number and a positive number. Use exercises 1, 2 and 3 as consolidation. Model the process on a thermometer scale or number line. Use this as a focus for mental work.
- Pupils need to work with word problems as presented in this section. Teach the key vocabulary.

integer *positive* *negative* *difference*
order *temperature* *thermometer*

UNIT 2

Positive and negative numbers

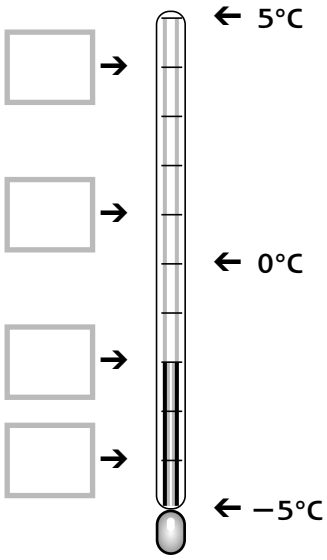
1 Winter weather

1 Put the four missing labels on the thermometer.

2 The temperature is −2°C.
The temperature rises by 1°.
The new temperature is .....

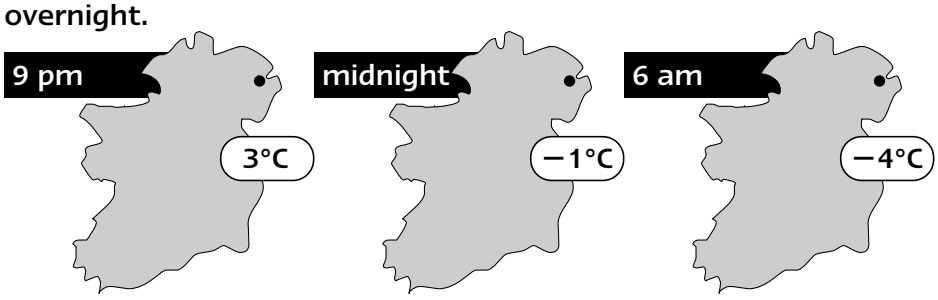
3 The temperature is −2°C.
The temperature falls by 3°.
The new temperature is .....

4 The temperature is −2°C.
The temperature rises by 5°.
The new temperature is .....



2 A cold night

These maps show how the temperature in Belfast changed overnight.



1 At what time was the temperature the highest? .....

2 At what time was the temperature the lowest? .....

3 Between 9 pm and midnight, did the temperature rise or fall? .....

4 How many degrees did the temperature fall between midnight and 6 am? .....

Positive and negative numbers

3 Comparing temperatures

Look at the map showing temperatures at midday. ➔

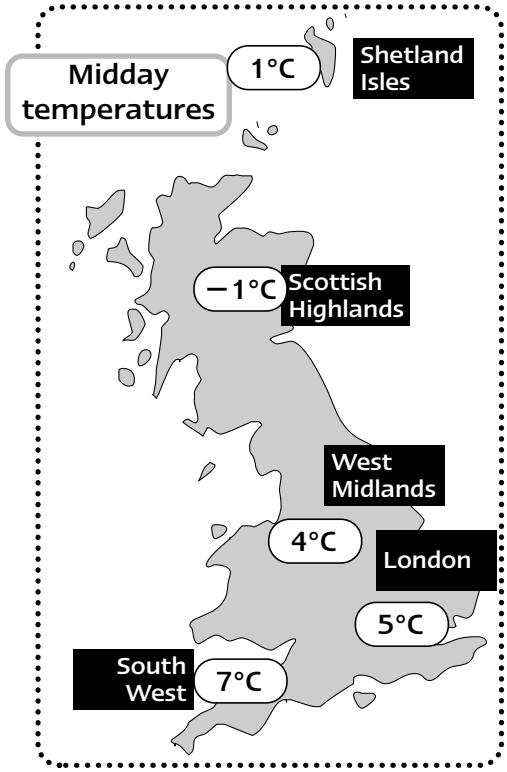
1 Which place has the highest temperature? .....

2 Which place has the lowest temperature? .....

3 What is the difference in temperature between London and the Shetland Isles?

.....

4 What is the difference in temperature between the South West and the Scottish Highlands? .....

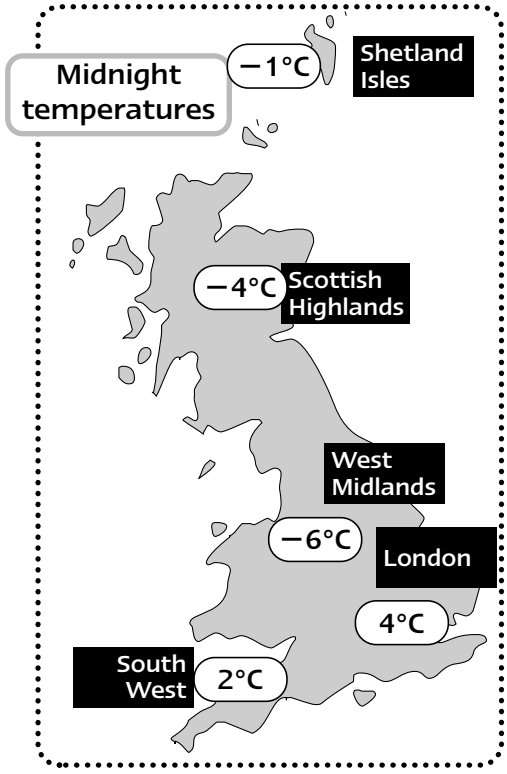


Look at the map showing temperatures at midnight. ➔

5 Which place has the highest temperature? .....

6 Which place has the lowest temperature? .....

7 What is the difference in temperature between the West Midlands and the Scottish Highlands? .....



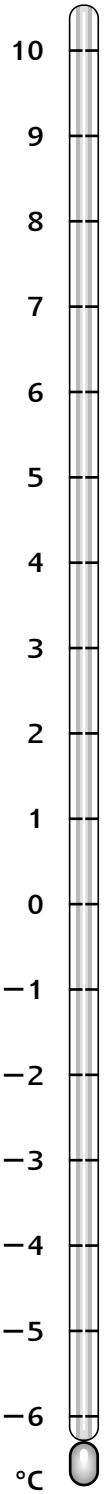
UNIT 2

Positive and negative numbers

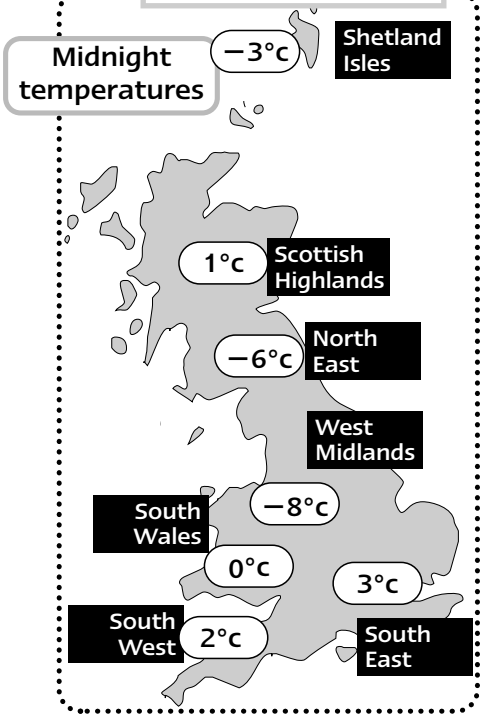
STAR CHALLENGE 5

Temperature differences

9 correct 2 stars
7–8 correct 1 star



Look at the map showing temperatures at midnight. →



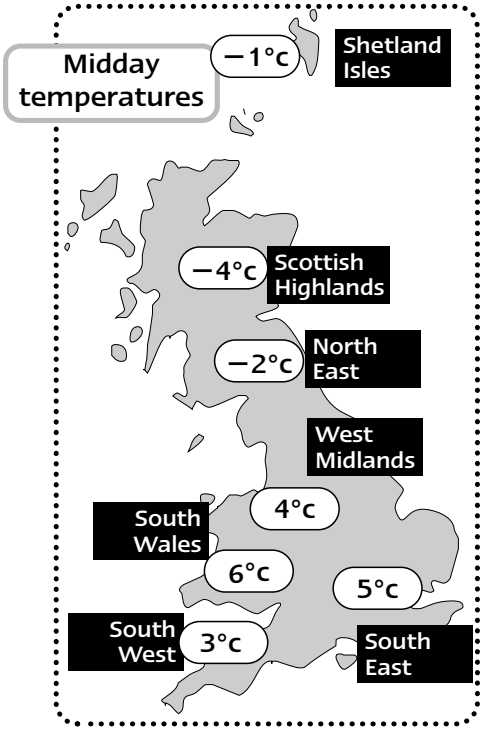
1 Which place has the highest temperature? .....

2 Which place has the lowest temperature? .....

3 Which is colder, the Scottish Highlands or the North East? .....

4 How many degrees colder is the West Midlands than the South East? .....

Look at the map showing temperatures at midday. →



5 Which place is the coldest? .....

6 Which place has the highest temperature? .....

7 What is the difference in temperature between the South West and the Shetland Isles? .....

Now look at both maps.

8 Look at the Scottish Highlands.
(a) Did the temperature fall or rise between midnight and midday? .....

(b) How many degrees did the temperature fall or rise between midnight and midday? .....

UNIT 2

SECTION 4 AND 5: ADDITION AND SUBTRACTION

DIRECT TEACHING POINTS

- You need to be familiar with the progression through informal and expanded methods as shown in the *Framework for teaching mathematics from Reception to Year 6*.
- Make a clear assessment of pupils' confidence in written methods for addition and subtraction. The aim is for all pupils to understand and use appropriately an efficient written method. Some pupils will have reached this stage but others may still be using expanded methods.

283 + 146

1

200 80 3
+ 100 40 6
= 300 + 120 + 9 = 429

2

283
+ 146
9 (add units first)
120 (then add tens)
300 (then add hundreds)
= 429

3

283
+ 146
429
1

687 − 253

600 80 7
− 200 50 3
= 400 + 30 + 4 = 434

684 − 256

600 80 4 = 600 70 14
− 200 50 6 − 200 50 6
= 400 + 20 + 8 = 428

734 − 251

700 30 4 = 600 130 4
− 200 50 1 − 200 50 1
3 = 400 + 80 + 3 = 483

833 − 256

800 30 3 = 800 20 13 = 700 120 13
− 200 50 6 − 200 50 6 − 200 50 6
7 = 500 + 70 + 7 = 577

457 − 323

4 5 7
− 3 2 3
1 3 4

543 − 327

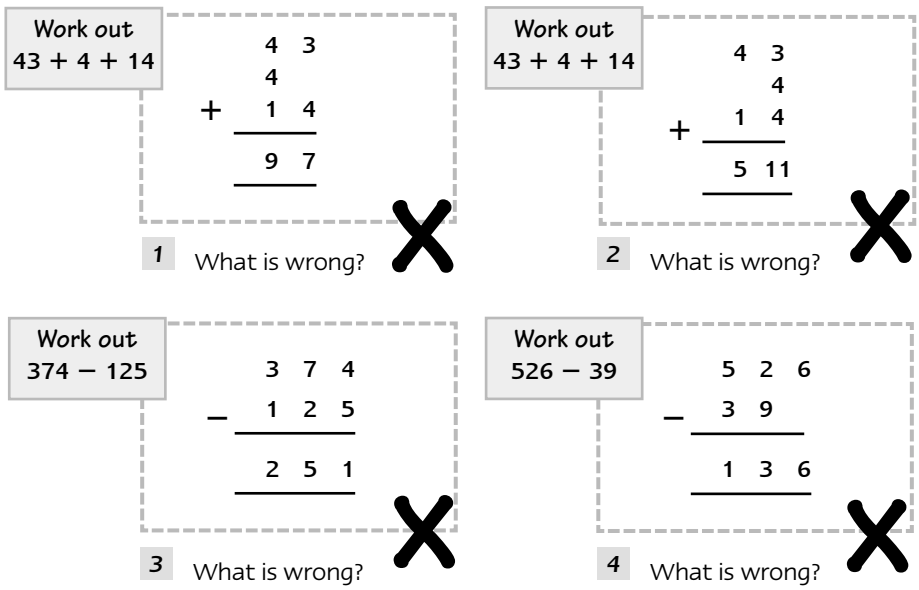
5 ^{3}4 ^{1}3
− 3 2 7
2 1 6

UNIT 2

- Target the practice exercises to meet pupils' needs. Not every pupil will need to do all the examples.

A no regrouping	1 576 – 234	2 695 – 273	3 768 – 332
B regroup T U	1 586 – 247	2 491 – 176	
C regroup H T	1 857 – 382	2 769 – 285	
D regroup H T U	1 706 – 387	2 904 – 268	3 645 – 387

- Use errors as teaching points.



- Discuss Star Challenge 7 in Section 5 with pupils. It is a useful introduction to the solution of equations. Emphasise the links between addition and subtraction. Learning one fact or knowing one result allows pupils to deduce many others.
- Star Challenges 7 and 8 are typical of National Curriculum test questions.
- For pupils who struggle with subtraction you may want to teach an alternative method. This one requires 'negative number' rather than decomposition.

```
  659
− 286
-----
  400
−  30
-----
    3
-----
  373
-----
```

KEY VOCABULARY TO LEARN AND USE

addition *subtraction* *sum* *minus*
subtract *difference* *take away*

Addition

1 Addition

1 523 + 271

2 432 + 336

3 463 + 235

4 734 + 162

5 428 + 151

6 656 + 232

7 247 + 22

8 345 + 213 + 21

9 359 + 9 + 24

10 1342 + 4468

11 2291+327+48

12 5531 + 16 + 3160

UNIT 2

Addition

STAR CHALLENGE 6

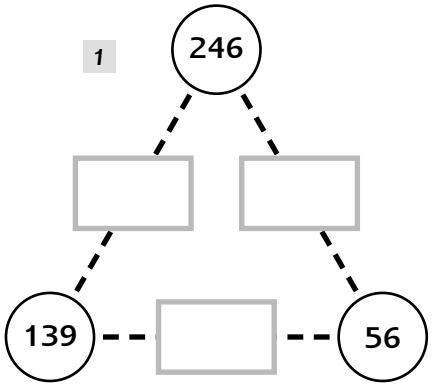
Addition arithmogons

6 correct 2 stars
5 correct 1 star

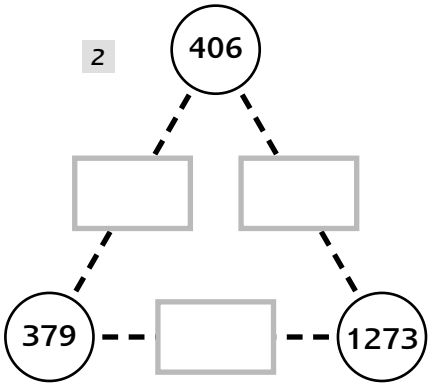
The number in each ☐ is the sum of the two numbers in the circles on each side of it.

Copy and complete each arithmogon.
Show all your working in your exercise book.

1



2



Make up some arithmogons.

UNIT 2

Subtraction

1 Subtraction I

A

1. 576 − 234
2. 695 − 273
3. 768 − 332

B

1. 586 − 247
2. 491 − 176

C

1. 857 − 382
2. 769 − 285

D

1. 706 − 387
2. 904 − 268
3. 645 − 387

UNIT 2

Subtraction

2 Subtraction 2

1 238 − 124

2 625 − 413

3 463 − 247

4 892 − 346

5 435 − 117

6 575 − 264

7 382 − 175

8 433 − 246

9 762 − 178

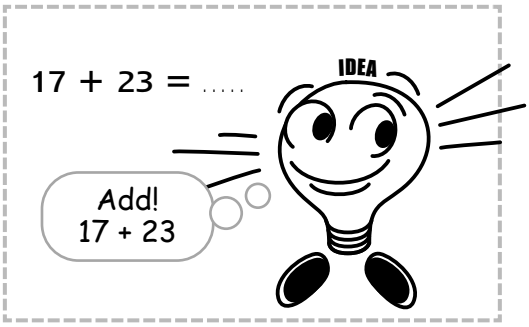
10 606 − 219

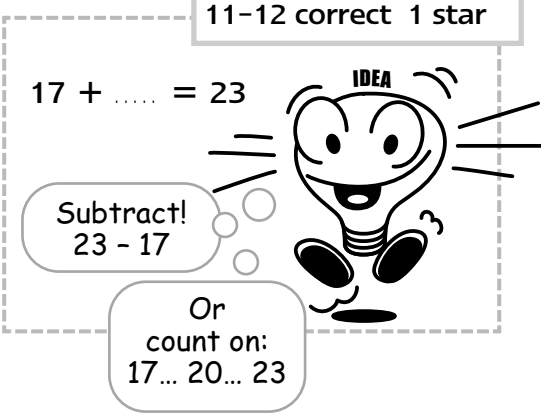
11 208 − 119

Subtraction

STAR CHALLENGE 7 Add or subtract?

13–14 correct 2 stars
11–12 correct 1 star





Calculate the missing numbers:

1	42 + 25 =	.....	8	10 − 4 =	4 + ...
2	42 + ... =	59	9	12 + 5 =	20 − .....
3	32 + ... =	47	10	15 + ... =	17 + 4
4	56 + 13 =	.....	11	12 + 8 = ...	+ 5
5	39 + ... =	70	12	46 + ... =	25 + 25
6	51 + 26 =	.....	13	25 − 6 =	10 + ...
7	4 + 5 = 7 + ...		14	21 + 14 =	42 − .....

STAR CHALLENGE 8 Find the missing digits

All correct 1 star

Copy the sums.
Put in the missing digits.

1
$$\begin{array}{r} 3\ 4 \\ +\ 5\square \\ \hline 9\ 1 \end{array}$$

2
$$\begin{array}{r} 3\square 8 \\ +\ 2\ 6\square \\ \hline 6\ 1\ 1 \end{array}$$

3 $\square 6\ 5 + \square 8\ 2 = 8\ 4\ 7$

There are six possible answers to Question 3.

UNIT 2

SECTION 6: CALCULATING WITH MONEY

DIRECT TEACHING POINTS

- Use mental work to consolidate complements to 100.

  60 + ☐ = 100 65 + ☐ = 100 63 + ☐ = 100

- Include some examples in context of money.

You go to the shop.
You have a £1 coin.
You buy a book.

How much change would you get if the till showed:

(a) **£0.90** Change from £1 = ... p

(b) **£0.55** Change from £1 = ... p

(c) **£0.35** Change from £1 = ... p

- Teach calculator skills. Pupils need to decide when it is appropriate to use mental, written or calculator methods to complete calculations. Discuss why £2.31 + 4p is not £6.31.

change *how much?* *how many?*

Calculating with money

1 Pounds and pence

whole pounds • parts of a pound

£23.50

pounds pence

Example

£0.05 = 5p
£0.40 = 40p

10p = £0.10
70p = £0.70

Complete each statement:

1 50p £0.50 so 20p + 20p + 20p = £

---

2 5p £0.05 so 5p + 2p + 1p = £

---

3 50p + 2p £0.52 so 20p + 10p + 1p = £

---

4 Write in pence: (a) £0.25 = ...p (c) £0.80 = ...p
(b) £0.12 = ...p (d) £0.08 = ...p

---

5 Write in pounds: (a) 75p = £..... (c) 9p = £.....
(b) 20p = £..... (d) 82p = £.....

Calculating with money

2 Checking your bill

You are less likely to make mistakes in bills if you:

- write all amounts in £ (£0.60 instead of 60p)
- stack the figures in a column
- stack the figures with the decimal points below each other

Each of these bills is written badly.
Write a new bill beside each old one.
Work out the total.

1 **Red Dragon Takeaway**

		New bill
Chow Mein	£2.45	£2.45
Noodles	90p	£0.90
Spring rolls	£1.30	£1.30
Total		

2 **It's a Snip**

		New bill
Cut and Blow	£6.40	.....
Conditioner	95p	.....
Coffee	30p	.....
Total		

3 **Pete's Pet Shop**

		New bill
Gerbil food	£1.65	.....
Fish pellets	£2.68	.....
Bird seed	84p	.....
Total		

4 **Patel's Papers**

		New bill
Newspapers	£3.45	.....
Sweets	£1.23	.....
Magazine	52p	.....
Total		

Calculating with money

STAR CHALLENGE 9

Find the mistakes

11–12 correct 1 star

The total of each of these two bills is wrong.
Write each bill correctly.
Find the total.

1

Tommy's Toys

Big Chance game	£4.25	.....
1 colouring book	80p	.....
1 pack of crayons	£1.90	.....
Total	£6.59 ✗	.....

2

Benny's Books

Racer's Annual	£3.95	.....
Modeller's Monthly	£1.40	.....
Puzzle book	65p	.....
Total	£11.85 ✗	.....

3 There are two mistakes in the entries.
Correct the mistakes.
Find the total.

Bobby's Bakers

2 loaves at 80p	£1.60	.....
6 cakes at 30p each	£1.08	.....
4 packets of crisps at 16p	£6.40	.....
1 swiss roll	£0.75	.....
Total		.....

UNIT 2

Calculating with money

STAR CHALLENGE 10

Meet the @ symbol

15–16 correct 2 stars
10–14 correct 1 star

2 pens @ 12p
means '2 pens at 12p each'

3 pkts nails @ 25p
means '3 packets of nails at 25p per packet'

Find the cost of:

1 3 pencils @ 10p .....

2 4 pkts nails @ 25p .....

3 3 cakes @ 40p .....

4 2 loaves @ 60p .....

5 3 tins beans @ 16p .....

6 6 roses @ £2 .....

Complete each of these bills:

7 **Bodger's DIY Ltd.**

4 shelves @ £2.45	.....
8 brackets @ 42p	.....
5 packs wood screws @ £1.06	.....
Wood glue @ 48p	£0.48
Total	.....

8 **Gossips Newspaper Shop**

6 copies Daily Waffle @ 65p	.....
5 copies Evening Chat @ 25p	.....
1 magazine @ 48p	.....
2 comics @ 35p	.....
Delivery charge 25p	.....
Total	.....

UNIT 2

SECTION 7: ADDITION AND SUBTRACTION PROBLEMS

DIRECT TEACHING POINTS

- Teach pupils to:
  - read a word problem
  - extract relevant information
  - decide which calculation is necessary
  - do the calculation
  - interpret the answer in the context of the problem.

  Model the process with some examples. Exercise 1 and Star Challenge 11 provide practice examples.

UNIT 2

Addition and subtraction problems

1 Do you add or subtract?

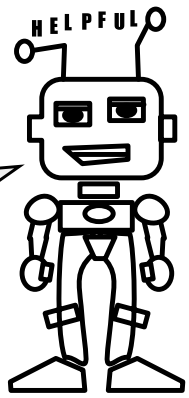
Example

Mary had £145.
She bought a dress for £27.

How much did she have left ?

She had £118 left.

$$\begin{array}{r} 1\,{}^{3}\!\not{4}\,{}^{1}5 \\ -\quad 2\ 7 \\ \hline 1\ 1\ 8 \end{array}$$



For each problem:
- read the question
- write down an addition or subtraction calculation
- work out the answer to the calculation
- write down the answer to the problem

1 Dave had £53.
He spent £35.
How much did he have left?

Calculation

Answer

2 In Y7, there are 68 girls and 87 boys.
How many students are there in Y7?

Calculation

Answer

3 Number in Y8 : 137
Number of Y8 present: 89
How many Y8 students are absent?

Calculation

Answer

4 Stella had £75 in her bank.
She won £50.
How much does she have now?

Calculation

Answer

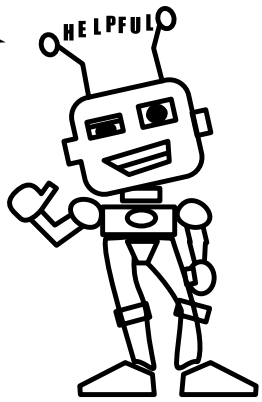
Addition and subtraction problems

STAR CHALLENGE 11

More difficult word problems

20 marks	3 stars
17–19 marks	2 stars
13–16 marks	1 star

For each problem:
- read the question
- write down an addition or subtraction calculation *(1 mark)*
- work out the answer to the calculation
- write down the answer to the problem *(1 mark)*



1 Dave had £375. He spent £240 on a CD player.
How much did he have left?

2 Sue had £264 in the bank. She puts another £37 into her bank account.
How much does she now have in the bank?

3 Carl has £417 in the bank. He takes out £50.
How much has he left in the bank?

4 Mary needs £635 to go on a ski trip. She has earned £542.
How much more does she need?

5 In Year 9 there are 76 boys and 58 girls.
(a) How many students are there in Year 9?
(b) On the last day of term, there were 97 Year 9 students in school. How many were absent?

6 Ella was born in 1997. How old will she be in 2050?

7 Eddy won £585. He gave £235 to his mother.
How much did he have left?

8 Ben went shopping for furniture for his new flat.
He bought a bed for £265.
He bought table and chairs for £182.
He bought a lamp for £29.
(a) How much did he spend altogether?
(b) He started with £500. How much did he have left?