●●○○○ Level 2 · Mathematics M2.2

Adding and taking away big numbers

Add and take away in your head and in columns, then check.

Add and take away two digit numbers in your head. Then use columns for bigger numbers, carrying and exchanging, estimate first, check by adding back, and solve problems in two steps.

YOU ARE READY FOR THIS BOOK IF

You can work out 46 + 7 and 50 − 8 in your head.

One step up	M3.2 Long multiplication and division
This book	**M2.2 Adding and taking away big numbers**
One step down	M1.3 Adding and taking away

Contents

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M2.2.7 Problems in two steps

Key words, A to Z

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M2.2.1 CHAPTER 1

Adding in your head

Can I add 46 and 29 without writing anything down?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** No. You always need paper for a sum like this.
- ☐ **B** Yes. Add the tens, then add the ones, then join them.
- ☐ **C** Yes. Add the ones first, and always write the answer down.

BY THE END YOU CAN

- Add two 2 digit numbers by adding the tens, then the ones
- Work out 46 + 29 as 46 + 30 − 1

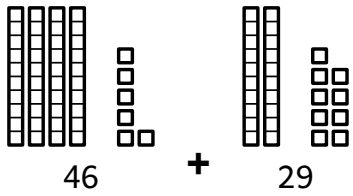
You have 46 beans. A friend gives you 29 more. How many beans is that?

Do not try to add it all at once. **Split** each number into tens and ones. That means break it into parts.

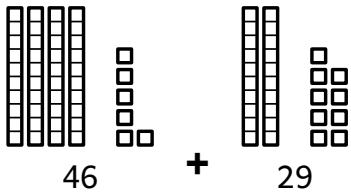
46 splits into 40 and 6. 29 splits into 20 and 9.

DRAW IT FIRST

Add the tens, then the ones

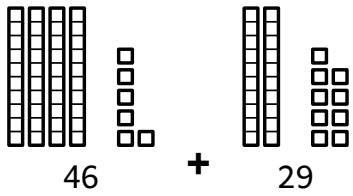


1 Show 46 and 29 as tens and ones.



40 + 20 = 60

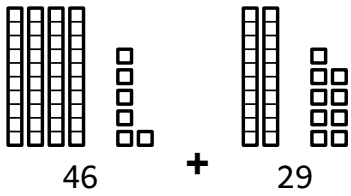
2 Add the tens. 40 + 20 = 60.



40 + 20 = 60

6 + 9 = 15

3 Add the ones. 6 + 9 = 15.



40 + 20 = 60

6 + 9 = 15

60 + 15 = 75

4 Join the answers. 60 + 15 = 75.

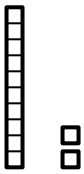
The ones made 15. That is 1 ten and 5 ones. So 60 + 15 is 75, not 6 015. The answer to an add sum is the ***total***.

WORKED EXAMPLE

Work out 58 + 34 by adding the tens, then the ones.

1. Split. 58 is 50 and 8. 34 is 30 and 4.
2. Add the tens. 50 + 30 = 80.
3. Add the ones. 8 + 4 = 12.
4. Join them. 80 + 12 = 92.

Answer: 92

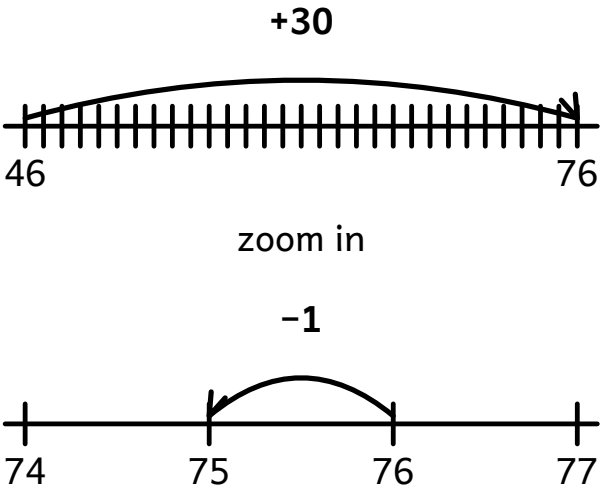


12 ones make 1 ten and 2 ones

8 + 4 = 12. Ten of the ones make a new ten. 2 ones are left.

A quicker way works when a number is close to a ten. 29 is close to 30.

Add 30 to 46. That gives 76. But 29 is 1 less than 30. You added 1 too many. Take 1 back.



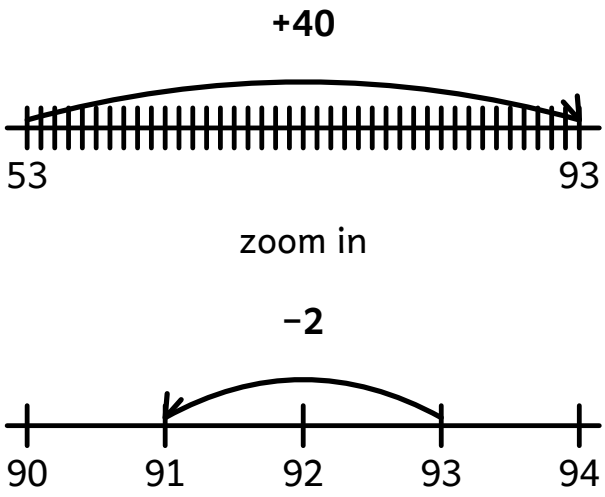
46 + 29 is the same as 46 + 30 − 1. Both give 75.

WORKED EXAMPLE

Work out 53 + 38 by adding 40, then taking 2 back.

1. 38 is close to 40. 38 is 2 less than 40.
2. Add 40. 53 + 40 = 93.
3. You added 2 too many. Take 2 back.
4. 93 − 2 = 91.

Answer: 91



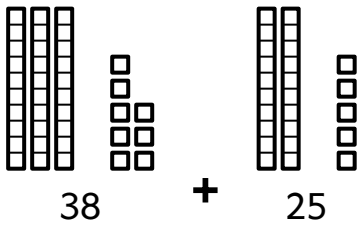
53 + 38 is the same as 53 + 40 − 2. Both give 91.

SEE IT THREE WAYS

With things

Make 38 with 3 bundles of ten sticks and 8 loose sticks. Make 25 with 2 bundles and 5 loose. Join the bundles: 5 bundles. Join the loose sticks: 13. Tie 10 into a bundle. You have 6 bundles and 3 loose.

As a picture



In symbols

30 + 20 = 50 and 8 + 5 = 13. 50 + 13 = 63. So 38 + 25 = 63.

TRY IT

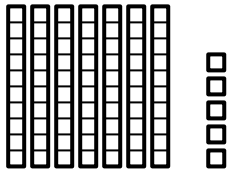
Add with bundles

You need: about 80 small sticks, beans or stones, string or grass to tie bundles, a pencil and paper.

1. Make 46. Tie 4 bundles of 10. Keep 6 loose.
2. Make 29. Tie 2 bundles of 10. Keep 9 loose.
3. Push the bundles together. Count them. Write 6 tens.
4. Push the loose ones together. Count 15. Tie 10 of them into a new bundle.
5. Count again. Write the bundles and the loose ones.

What you will see: You get 7 bundles and 5 loose. The ones made a new ten. That is 75.

If you cannot try it, this is what happens.



7 tens and 5 ones make 75

A WRONG IDEA MANY PEOPLE HAVE

~~For 46 + 29, add 30, then add 1 more. That gives 77.~~

Why it feels right: You changed 29 to 30. A change feels like it needs a fix. Adding 1 feels like the fix.

The test that breaks it: Try small numbers. Put down 5 beans. Add 9 more, one at a time. You count to 14. Now 5 + 10 is 15. So 5 + 9 is 1 less than 15. Check 46 + 29 the other way too. 60 + 15 = 75, not 77.

What is true: When you add a bigger number, take the extra back. 46 + 30 = 76. Then 76 − 1 = 75.

KEY WORDS

split
break a number into parts, such as 46 into 40 and 6.

total
the number you get when you add numbers together.

BACK TO YOUR GUESS

The answer is B: Yes. Add the tens, then add the ones, then join them.

You can do it in your head. Split each number into tens and ones. Add the tens. Add the ones. Join the two answers. 46 + 29 = 75.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Add 34 + 27. Add the tens, then the ones.

   Answer at the back of the book.

2. Ana adds 37 + 48. She gets 70 for the tens and 15 for the ones. What is the total?

   A 85

   B 7 015

   C 75

   Answer at the back of the book.

3. Add 64 + 39. Add 40 first, then take 1 back.

   Answer at the back of the book.

4. Kofi says 25 + 18 = 25 + 20 + 2 = 47. Is he right?

   A Yes. You add 2 to make up for it.

   B No. 18 is 2 less than 20, so take 2 back. The total is 43.

   C No. 25 + 20 is 45, so the total is 45.

   Answer at the back of the book.

5. A farm has 48 hens and 35 ducks. How many birds are there?

   Answer at the back of the book.

6. Hana adds 64 + 27 by splitting. Which two sums does she do?

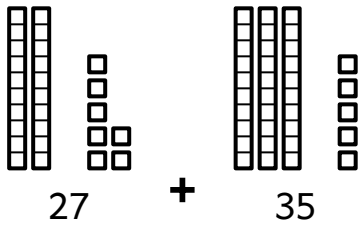
   A 6 + 2 and 4 + 7

   B 60 + 4 and 20 + 7

   C 60 + 20 and 4 + 7

   Answer at the back of the book.

7. Look at 27 + 35. The 7 ones and the 5 ones are put together. What do they make?



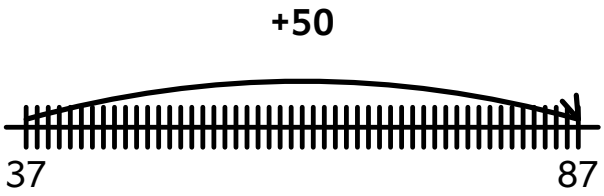
   A 1 ten and 2 ones

   B 2 tens and 1 one

   C 12 tens

   Answer at the back of the book.

8. Priya works out 37 + 49 by adding 50 first. The line shows her hop. What is 37 + 49?



   A 88

   B 87

   C 86

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Split each number into tens and ones. Add the tens. Add the ones. Join them. Or add a near ten and take the extra back. 46 + 29 = 46 + 30 − 1 = 75.

Draw: A number line. Draw a long hop of +30. Draw a short hop back of −1. Write 46, 75 and 76 under it.

M2.2.2 CHAPTER 2

Taking away in your head

What is 302 − 298? Do I have to write it down?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** It is a hard sum. I must write it in columns.
- ☐ **B** It is a small answer. The two numbers are close together.
- ☐ **C** It is about 100. 300 − 200 = 100.

BY THE END YOU CAN

- Take away by counting up from the smaller number
- Find the difference between 302 and 298 without writing

Ravi has 302 beans. Mei has 298 beans. How many more beans has Ravi?

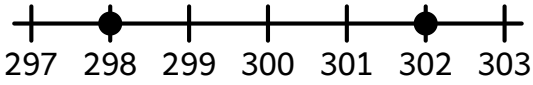
That is 302 − 298. Do not write it in columns. Look at the numbers first.

The **difference** between two numbers is how far apart they are.

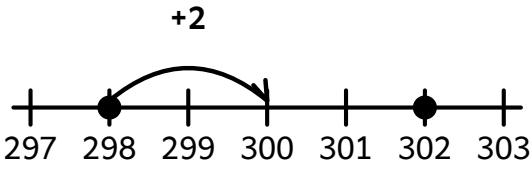
To find it, **count up** from the smaller number. Hop up to the bigger one.

DRAW IT FIRST

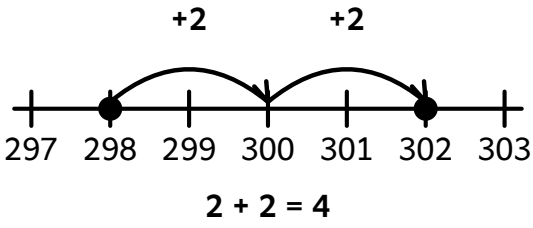
Count up from the smaller number



1 Put 298 and 302 on a number line.



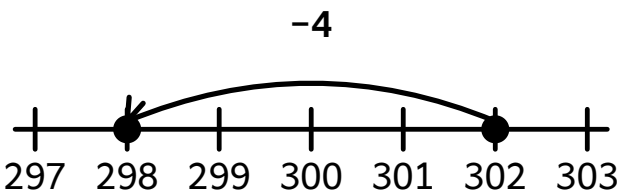
2 Hop up to 300. That is 2.



3 Hop on to 302. That is 2 more. 2 + 2 = 4.

The difference is 4. Ravi has 4 more beans than Mei.

You can also count back from 302 to 298. It is the same 4 steps.



Count up or count back. The gap between 298 and 302 is 4.

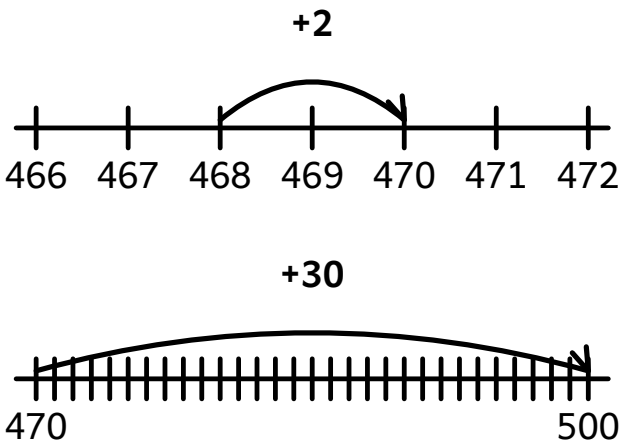
When two numbers are close, count up. It is quicker than a column sum.

WORKED EXAMPLE

Find the difference between 500 and 468.

1. Start at the smaller number, 468.
2. Hop up to 470. That is 2.
3. Hop on to 500. That is 30.
4. Add the hops. 2 + 30 = 32.

Answer: 32



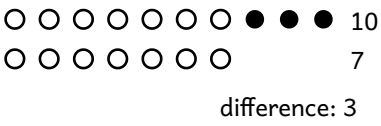
468 to 470 is 2. 470 to 500 is 30. 2 + 30 = 32.

SEE IT THREE WAYS

With things

Make a line of 10 beans. Make a line of 7 beans under it. Count the beans that stick out. That is the difference.

As a picture



In symbols

10 – 7 = 3. Check: 7 + 3 = 10. The difference is 3.

TRY IT

Count up with stones

You need: about 15 small stones, beans or sticks, a pencil and paper.

1. Make a line of 7 stones.
2. Add stones one at a time. Say 8, 9, 10, 11 as you add each one.
3. Stop at 11. Count the stones you added.
4. Write 11 − 7 = and the number you counted.

What you will see: You added 4 stones. The difference between 7 and 11 is 4.

If you cannot try it, this is what happens.



11 − 7 = 4

A WRONG IDEA MANY PEOPLE HAVE

~~302 − 298 = 196. In each column, take the smaller digit from the bigger one.~~

Why it feels right: Each little step is true. 3 − 2 = 1. 9 − 0 = 9. 8 − 2 = 6. And you never have to cross anything out.

The test that breaks it: 302 and 298 are only a few apart. 196 is far too big. Count up from 298: 299, 300, 301, 302. That is 4 steps. Add back too: 298 + 196 = 494, not 302.

What is true: A take away works on the whole numbers, not on separate digits. 302 − 298 = 4.

KEY WORDS

difference
how far apart two numbers are.

count up

start at the smaller number and hop to the bigger one.

BACK TO YOUR GUESS

The answer is B: It is a small answer. The two numbers are close together.

302 and 298 are only a few apart. Count up from 298. 2 steps reach 300. 2 more reach 302. The difference is 4.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Find the difference between 51 and 47. Count up from 47.

   Answer at the back of the book.

2. Work out 403 − 398 in your head.

   Answer at the back of the book.

3. Tariq says 405 − 397 = 192. How can you tell he is wrong?

   A The numbers are close, so the answer is small. It is 8.

   B 192 is right. Each column was taken away.

   C He should have added 405 and 397.

   Answer at the back of the book.

4. Maya has a rope of 126 cm. Joseph has a rope of 118 cm. How much longer is Maya's rope?

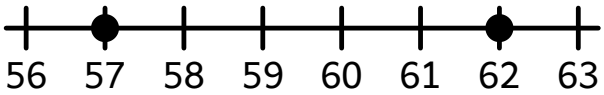
   Answer at the back of the book.

5. **From an earlier chapter**

   Add 57 + 38. Add the tens, then the ones.

   Answer at the back of the book.

6. Sipho finds the difference between 62 and 57 by counting up. Where does he start?



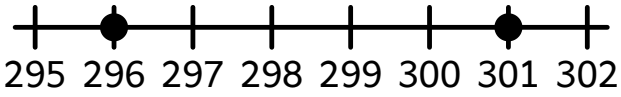
A At 62, the bigger number

B At 57, the smaller number

C At 60, the next ten

Answer at the back of the book.

7. Amina counts up from 296 to 301. What is the difference between them?



A 4

B 6

C 5

Answer at the back of the book.

8. What is 604 − 598?

A 6

B 194

C 2

Answer at the back of the book.

9. Mei has 402 stones. Kofi has 396 stones. How many more stones has Mei?

A 798

B 6

C 7

Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

The difference is how far apart two numbers are. Count up from the smaller number. 298 to 300 is 2. 300 to 302 is 2. The difference is 4.

Draw: A number line. Mark 298 and 302. Draw a hop of +2 and another hop of +2.

M2.2.3 CHAPTER 3

Column adding

Why do I line the numbers up when I add on paper?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** So the sum looks neat on the page.
- ☐ **B** So ones add to ones, tens to tens, hundreds to hundreds.
- ☐ **C** So the biggest number is always at the top.

BY THE END YOU CAN

- Line up digits by place value before you add
- Add 3 digit numbers in columns, carrying when you need to

Some sums are too big for your head. Try 358 + 276.

Write the numbers in a **column**. A column is a line of digits, one above the other.

Each column is one place. Ones go under ones. Tens go under tens. Hundreds go under hundreds.

hundreds	tens	ones
3	5	8

In 358, the 3 is hundreds. The 5 is tens. The 8 is ones.

DRAW IT FIRST

Add 358 + 276 in columns

$$\begin{array}{r} 3\ 5\ 8 \\ +\ 2\ 7\ 6 \\ \hline \square\ \square\ \square \end{array}$$

1 Write 358. Write 276 under it. Line up the places.

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ } \\ 3\ 5\ 8 \\ +\ 2\ 7\ 6 \\ \hline 6\ 3\ 4 \end{array}$$

2 Start at the right. Write the answer, one column at a time. Carry 1 when a column makes 10 or more.

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ } \\ 3\ 5\ 8 \\ +\ 2\ 7\ 6 \\ \hline 6\ 3\ 4 \end{array}$$

ones: 8 + 6 = 14
tens: 5 + 7 + 1 = 13
hundreds: 3 + 2 + 1 = 6

3 Read the three small sums. They are the working.

Start at the right, with the ones. 8 + 6 = 14. That is 1 ten and 4 ones.

Write the 4. **Carry** the 1 ten. That means write it small above the tens column.

10 ones make 1 ten. So the carried 1 is a ten, not a one.

Now the tens. 5 + 7 + 1 = 13. Write 3 and carry 1 hundred.

Last, the hundreds. 3 + 2 + 1 = 6. The answer is 634.

$$\begin{array}{rrr} & 3 & 5 & 2 \\ + & & 4 & 1 \\ \hline & 3 & 9 & 3 \end{array}$$

41 has no hundreds. Its 4 sits under the 5 of 352.

WORKED EXAMPLE

Add 347 + 285 in columns.

1. Ones. 7 + 5 = 12. Write 2. Carry 1 ten.
2. Tens. 4 + 8 + 1 = 13. Write 3. Carry 1 hundred.
3. Hundreds. 3 + 2 + 1 = 6. Write 6.
4. The answer is 632.

Answer: 632

$$\begin{array}{rrrr} & {\scriptstyle 1} & {\scriptstyle 1} & \\ & 3 & 4 & 7 \\ + & 2 & 8 & 5 \\ \hline & 6 & 3 & 2 \end{array}$$

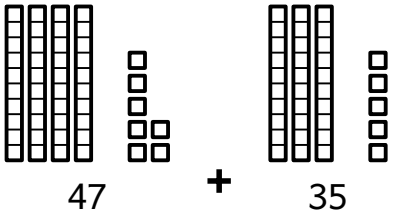
Both the ones and the tens carry. The answer is 632.

SEE IT THREE WAYS

With things

Make 47 with 4 bundles of ten and 7 loose sticks. Make 35 with 3 bundles and 5 loose. Join the loose sticks: 12. Tie 10 into a bundle. Join the bundles: 8 bundles and 2 loose.

As a picture



In symbols

47 + 35. Ones: 7 + 5 = 12. Write 2, carry 1. Tens: 4 + 3 + 1 = 8. The answer is 82.

TRY IT

Carry with bundles

You need: about 80 small sticks, beans or stones, string or grass to tie bundles, paper and a pencil.

1. Draw two boxes on paper. Write tens over one and ones over the other.
2. Make 38. Put 3 bundles of ten in the tens box. Put 8 loose in the ones box.
3. Add 27. Put 2 more bundles in the tens box. Put 7 loose in the ones box.
4. Count the ones box. It holds 15. Tie 10 of them into a bundle.
5. Move the new bundle to the tens box. That is the carry. Count both boxes.

What you will see: The tens box has 6 bundles. The ones box has 5 loose. That is 65.

If you cannot try it, this is what happens.

$$\begin{array}{rr} & {\scriptstyle 1} \\ & 3\ 8 \\ + & 2\ 7 \\ \hline & 6\ 5 \end{array}$$

A WRONG IDEA MANY PEOPLE HAVE

~~Line numbers up on the left. 352 + 41 means 352 + 410 = 762.~~

Why it feels right: We read and write words from the left. So lining up from the left feels natural.

The test that breaks it: 41 is 4 tens and 1 one. It has no hundreds. Add it to 352 and you get 393. 762 is more than twice 352. That is far too big.

What is true: Line up by place, from the right. Ones go under ones. Tens go under tens. 352 + 41 = 393.

KEY WORDS

column
a line of digits, one above the other, in one place.

carry
move a new ten or hundred into the next column.

BACK TO YOUR GUESS

The answer is B: So ones add to ones, tens to tens, hundreds to hundreds.

Add each digit to a digit in the same place. Ones go with ones. Tens go with tens. Hundreds go with hundreds. The columns keep each place in its own line.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Add 245 + 132 in columns.

   Answer at the back of the book.

2. Add 467 + 285 in columns.

   Answer at the back of the book.

3. Ravi adds 36 + 48 in columns. What is the total?

   A 84

   B 714

   C 74

   Answer at the back of the book.

4. Amina adds 126 + 8. She puts the 8 under the 1 of 126. What is wrong?

   A 8 is only ones. It goes under the 6.

   B Nothing is wrong. The 8 can go anywhere.

   C The 8 should go under the 2.

   Answer at the back of the book.

5. A school has 258 girls and 267 boys. How many children are there?

   Answer at the back of the book.

6. **From an earlier chapter**

   Find the difference between 502 and 498. Count up.

   Answer at the back of the book.

7. Priya adds 352 + 41 in columns. Which two digits are in the tens column?

   A 3 and 4

   B 5 and 4

   C 2 and 1

   Answer at the back of the book.

8. Joseph adds 457 + 168 in columns. In the ones column, 7 + 8 = 15. What does he do next?

$$\begin{array}{r} 4\ 5\ 7 \\ +\ 1\ 6\ 8 \\ \hline \square\ \square\ \square \end{array}$$

   A Write 15. Carry nothing.

   B Write 1. Carry 5.

   C Write 5. Carry 1 ten.

   Answer at the back of the book.

9. Kofi adds 359 + 247 in columns. What is the total?

   A 596

   B 606

   C 506

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Line up ones under ones, tens under tens. Add from the right. A column may make 10 or more. Write the ones. Carry the ten. 358 + 276 = 634.

Draw: Write 358 + 276 in columns. Add the small carried 1s above the tens and hundreds.

M2.2.4 CHAPTER 4

Column taking away

How do I take 178 away from 524 on paper?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** In each column, take the smaller digit from the bigger one.
- ☐ **B** When the top is too small, swap 1 ten for 10 ones.
- ☐ **C** Turn the sum round, so the bigger number is at the bottom.

BY THE END YOU CAN

- Take away 3 digit numbers in columns, exchanging when you need to
- Take away across a zero, as in 403 − 167

Here is a take away: 524 − 178. Write it in columns.

The bigger number goes on top. Line up the places. Start at the right, with the ones.

You cannot take 8 from 4. There are not enough ones.

So **exchange**. That means swap 1 ten for 10 ones. The ten comes from the tens column.

DRAW IT FIRST

Take away 178 from 524

$$\begin{array}{r} 5\ 2\ 4 \\ -\ 1\ 7\ 8 \\ \hline \square\ \square\ \square \end{array}$$

1 Write 524. Write 178 under it. Line up the places.

$$\begin{array}{r} \overset{4}{\not{5}}\ \overset{11}{\not{2}}\ {}^{1}4 \\ -\ 1\ 7\ 8 \\ \hline 3\ 4\ 6 \end{array}$$

2 Start at the right. If a top digit is too small, cross it out and exchange.

$$\begin{array}{r} \overset{4}{\not{5}}\ \overset{11}{\not{2}}\ {}^{1}4 \\ -\ 1\ 7\ 8 \\ \hline 3\ 4\ 6 \end{array}$$

ones: 14 − 8 = 6
tens: 11 − 7 = 4
hundreds: 4 − 1 = 3

3 Read the three small sums. They are the working.

Ones: the 4 became 14. 14 − 8 = 6.

Tens: the 2 gave away 1 ten. Only 1 ten is left. You cannot take 7 from 1.

Exchange again. Take 1 hundred. It is 10 tens. Now you have 11 tens. 11 − 7 = 4.

Hundreds: 5 gave away 1, so 4 are left. 4 − 1 = 3. The answer is 346.

Now check by **adding back**. Add the answer to the number you took away.

346 + 178 = 524. It matches the top number, so the answer is right.

WORKED EXAMPLE

Take away 631 − 254 in columns.

1. Ones: 1 − 4 cannot be done. Exchange 1 ten. 11 − 4 = 7.
2. Tens: 3 gave 1 away, so 2 are left. 2 − 5 cannot be done. Exchange 1 hundred. 12 − 5 = 7.
3. Hundreds: 6 gave 1 away, so 5 are left. 5 − 2 = 3.
4. The answer is 377. Check: 377 + 254 = 631.

Answer: 377

$$\begin{array}{rccc} & 5 & 12 & \\ & \not{6} & \not{3} & {}^{1}1 \\ - & 2 & 5 & 4 \\ \hline & 3 & 7 & 7 \end{array}$$

The 3 tens gave 1 ten away, so 2 were left. Then 1 hundred made them 12. The 6 hundreds became 5.

A zero in the middle needs care. Look at 403 − 167. There are 0 tens to give.

$$\begin{array}{rccc} & 3 & 9 & \\ & \not{4} & \not{0} & {}^{1}3 \\ - & 1 & 6 & 7 \\ \hline & 2 & 3 & 6 \end{array}$$

The 4 hundreds became 3. The 0 tens became 9. The 3 ones became 13.

WORKED EXAMPLE

Take away 403 − 167 in columns.

1. Ones: 3 − 7 cannot be done. There are 0 tens to give.
2. Exchange 1 hundred for 10 tens. The hundreds are now 3. The tens are 10.
3. Exchange 1 ten for 10 ones. The tens are now 9. The ones are 13.
4. Ones: 13 − 7 = 6. Tens: 9 − 6 = 3. Hundreds: 3 − 1 = 2.
5. The answer is 236. Check: 236 + 167 = 403.

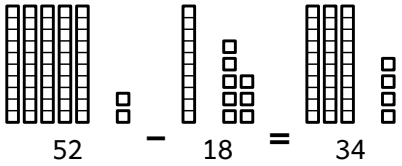
Answer: 236

SEE IT THREE WAYS

With things

Make 52 with 5 bundles of ten and 2 loose sticks. Take away 18. You need 8 loose sticks but have 2. Untie 1 bundle. Now you have 12 loose. Take 8. Then take 1 bundle.

As a picture



In symbols

52 − 18 = 34.
Ones: 2 − 8 cannot be done. Exchange 1 ten. 12 − 8 = 4.
Tens: 4 − 1 = 3.

TRY IT

Exchange with bundles

You need: about 50 small sticks, beans or stones, string or grass to tie bundles, paper and a pencil.

1. Draw two boxes on paper. Write tens over one and ones over the other.
2. Make 42. Put 4 bundles of ten in the tens box. Put 2 loose in the ones box.
3. Take away 17. You need to take 7 loose, but there are only 2.
4. Untie 1 bundle. Put its 10 sticks in the ones box. It holds 12 now.
5. Take 7 loose from the ones box. Take 1 bundle from the tens box.
6. Count what is left in each box.

What you will see: You have 2 bundles and 5 loose. That is 25. The exchange moved 1 ten into the ones box.

If you cannot try it, this is what happens.

$$\begin{array}{r} {\scriptstyle 3}\ \ {\scriptstyle 1} \\ \not{4}\ 2 \\ -\ 1\ 7 \\ \hline 2\ 5 \end{array}$$

A WRONG IDEA MANY PEOPLE HAVE

~~403 − 167 = 364. In each column, take the smaller digit from the bigger one.~~

Why it feels right: Each little step is true. 7 − 3 = 4. 6 − 0 = 6. 4 − 1 = 3. And you never have to exchange.

The test that breaks it: Add back. 167 + 364 = 531. That is not 403. So 364 cannot be right.

What is true: Take the bottom digit from the top digit, never the other way. Exchange when the top is too small. 403 − 167 = 236.

KEY WORDS

exchange
swap 1 ten for 10 ones, or 1 hundred for 10 tens.

adding back
check a take away. Add the answer to the number you took away.

BACK TO YOUR GUESS

The answer is B: When the top is too small, swap 1 ten for 10 ones.

You cannot take 8 ones from 4 ones. So swap 1 ten for 10 ones. That is an exchange. Then 14 − 8 = 6. The rest follows.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Take away 685 − 243 in columns.

   Answer at the back of the book.

2. Take away 732 − 456 in columns.

   Answer at the back of the book.

3. Take away 603 − 248 in columns.

   Answer at the back of the book.

4. Lucía takes away 305 − 148. What is the answer?

   A 157

   B 243

   C 167

   Answer at the back of the book.

5. A bag holds 500 beans. 237 beans are used. How many are left?

   Answer at the back of the book.

6. **From an earlier chapter**

   Add 276 + 348 in columns.

   Answer at the back of the book.

7. Mei takes away 463 − 287. In the ones column, 3 − 7 cannot be done. She exchanges 1 ten. What does she work out now?

   A 7 − 3

   B 10 − 7

   C 13 − 7

   Answer at the back of the book.

8. Tariq takes away 652 − 187 in columns. What is the answer?

$$\begin{array}{r} 6\ 5\ 2 \\ -\ 1\ 8\ 7 \\ \hline \square\ \square\ \square \end{array}$$

   A 535

   B 465

   C 475

   Answer at the back of the book.

9. Sipho takes away 800 − 345 in columns. What is the answer?

$$\begin{array}{r} 8\ 0\ 0 \\ -\ 3\ 4\ 5 \\ \hline \square\ \square\ \square \end{array}$$

A 455

B 545

C 465

Answer at the back of the book.

10. Amina takes away 503 − 276 and gets 227. How can she check?

A Take 227 away from 276. It should make 503.

B Add 227 + 503. It should make 276.

C Add 227 + 276. It should make 503.

Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Bigger number on top. Take away from the right. A top digit may be too small. Exchange 1 ten for 10 ones. Check by adding back. 524 − 178 = 346.

Draw: The sum 524 − 178 in columns. Cross out digits and write the new numbers above them.

M2.2.5 CHAPTER 5

Four digits and more

The ones column makes 14. Where do I put it?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- [ ] **A** Write 14 under the ones.
- [ ] **B** Write 4 under the ones and carry the 1 to the tens.
- [ ] **C** Write 1 under the ones and carry the 4.

BY THE END YOU CAN

- Add and take away 4 digit numbers in columns
- Add a list of three or four numbers

You can add and take away in columns. Four digit numbers use the same steps.

There is one more column on the left, the thousands. Start at the ones, as always.

DRAW IT FIRST

Add 3 465 + 2 879 in columns

```
  3 4 6 5
+ 2 8 7 9
---------
```

Line up the digits

1 Write the numbers so ones are under ones. Draw a line.

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

Ones: 5 + 9 = 14

2 Ones: 5 + 9 = 14. Write 4. Carry the 1 to the tens.

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

Tens: 1 + 6 + 7 = 14

3 Tens: 1 + 6 + 7 = 14. Write 4. Carry the 1 to the hundreds.

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

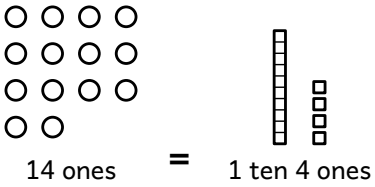
Hundreds: 1 + 4 + 8 = 13
Thousands: 1 + 3 + 2 = 6

4 Hundreds: 1 + 4 + 8 = 13. Write 3, carry 1. Thousands: 1 + 3 + 2 = 6.

When a column makes 10 or more, you ***carry***. Write the last digit under the column.

To carry is to move the other digit one column left. Write it small above that column.

SEE IT THREE WAYS

With things	**As a picture**	**In symbols**
Put 5 beans and 9 beans in the ones box. You have 14. Swap 10 beans for 1 stick in the tens box.	 14 ones = 1 ten 4 ones	**5 + 9 = 14. Write 4. Carry 1.**

Taking away uses the same columns. Sometimes the top digit is too small.

Then you **exchange**. Take 1 from the column on the left. It becomes 10 in this column.

If that column is 0, go on to the next one. Look at 5 002 − 2 457.

$$\begin{array}{cccc} & 4 & 9 & 9 \\ & \not{5} & \not{0} & \not{0}\,^{1}2 \\ - & 2 & 4 & 5 \quad 7 \\ \hline & 2 & 5 & 4 \quad 5 \end{array}$$

Two zeros in a row: go back to the 5. Each zero becomes 9.

WORKED EXAMPLE

Work out 5 002 − 2 457.

1. In the ones, 2 is smaller than 7. The next two digits are 0.
2. Go to the 5 thousands. Cross it out and write 4.
3. Write 9 over the hundreds and 9 over the tens.
4. Give the ones a ten. 2 becomes 12.
5. Now take away. 12 − 7 = 5, 9 − 5 = 4, 9 − 4 = 5, 4 − 2 = 2.

Answer: 2 545

You can add a list of numbers in columns too. Line up all the numbers.

Add down each column, starting at the ones.

$$\begin{array}{rrrr} & 1 & 1 & \\ & 2 & 4 & 5 \\ & 1 & 3 & 0 \\ & & 7 & 8 \\ + & 3 & 0 & 2 \\ \hline & 7 & 5 & 5 \end{array}$$

Ones: 5 + 0 + 8 + 2 = 15
Tens: 1 + 4 + 3 + 7 = 15
Hundreds: 1 + 2 + 1 + 3 = 7

The ones make 15. Write 5 and carry 1.

WORKED EXAMPLE

Work out 245 + 130 + 78 + 302.

1. Ones: 5 + 0 + 8 + 2 = 15. Write 5. Carry 1.
2. Tens: 1 + 4 + 3 + 7 + 0 = 15. Write 5. Carry 1.
3. Hundreds: 1 + 2 + 1 + 0 + 3 = 7. Write 7.

Answer: 755

The ones can make 20 or more. Then you carry 2 or more.

WORKED EXAMPLE

Work out 48 + 37 + 29 + 56.

1. Ones: 8 + 7 + 9 + 6 = 30.
2. Write 0. Carry 3 to the tens.
3. Tens: 3 + 4 + 3 + 2 + 5 = 17. Write 17.

Answer: 170

TRY IT

Carry three tens with beans

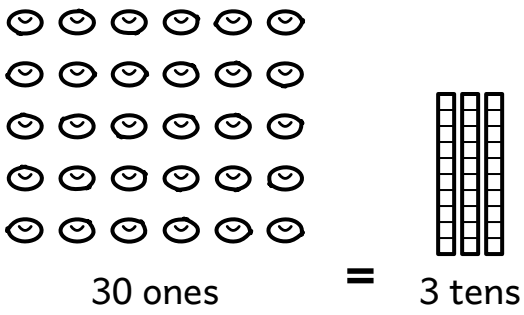
You need: 30 beans or small stones, 3 sticks, a pencil and paper.

Be safe: Do not eat the beans.

1. Draw two boxes on paper. Write "tens" over one and "ones" over the other.
2. Put 8, 7, 9 and 6 beans in the ones box. Count them. You have 30.
3. Take 10 beans out. Put 1 stick in the tens box. Do this 3 times.
4. Look at the ones box.

What you will see: No beans are left in the ones box. There are 3 sticks in the tens box. So you write 0 and carry 3.

If you cannot try it, this is what happens.



A WRONG IDEA MANY PEOPLE HAVE

~~I can write 14 under the ones column.~~

Why it feels right: 5 + 9 really is 14, so writing 14 seems right.

The test that breaks it: Try 15 + 9 that way. You write 14 and then 1, which reads 114. Count on from 15 by 9. You reach 24.

What is true: Each column holds one digit. 14 ones is 1 ten and 4 ones. Write 4 and carry 1. So 15 + 9 = 24.

KEY WORDS

carry

move the extra digit to the next column on the left.

exchange
take 1 from the column on the left. It becomes 10 in this column.

BACK TO YOUR GUESS

The answer is B: Write 4 under the ones and carry the 1 to the tens.

Each column holds one digit. 14 ones is 1 ten and 4 ones. Write the 4. Carry the 1 to the tens.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Work out 2 358 + 1 467 in columns.

   Answer at the back of the book.

2. Work out 6 300 − 2 845 in columns.

   Answer at the back of the book.

3. Add 54 + 38 + 27 + 66. The ones column makes 25. What do you do?

   A Write 5 and carry 2

   B Write 25 under the ones

   C Write 2 and carry 5

   Answer at the back of the book.

4. Work out 126 + 85 + 308 + 49.

   Answer at the back of the book.

5. **From an earlier chapter**

Ravi works out 403 − 167 and gets 364. He took the smaller digit from the bigger one each time. Is he right?

A Yes, he is right.

B No. The answer is 236.

C No. The answer is 570.

Answer at the back of the book.

6. Leila adds 4 763 + 1 859 in columns. What is the total?

$$\begin{array}{r} 4\ 7\ 6\ 3 \\ +\ 1\ 8\ 5\ 9 \\ \hline \square\ \square\ \square\ \square \end{array}$$

A 5 622

B 6 622

C 6 612

Answer at the back of the book.

7. Hana takes away 4 000 − 1 235 in columns. What is the answer?

$$\begin{array}{r} 4\ 0\ 0\ 0 \\ -\ 1\ 2\ 3\ 5 \\ \hline \square\ \square\ \square\ \square \end{array}$$

A 3 235

B 3 765

C 2 765

Answer at the back of the book.

8. Mei adds 36 + 48 + 19 + 27 in columns. The ones make 30. What is the total?

   A 130

   B 110

   C 100

   Answer at the back of the book.

9. Look at 5 002 − 2 457. The hundreds digit is 0. What does it become after the exchange?

   A 10

   B 9

   C 4

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Line up the digits. Start at the ones. When a column makes 10 or more, carry. Write the last digit. A list can carry 2 or more.

Draw: Write 3 465 + 2 879 in columns. Show each carry as a small 1.

M2.2.6 CHAPTER 6

Estimate and check

> **Ravi worked out 487 + 312 and got 7 990. How can you tell he is wrong?**

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** You cannot tell. You must work it out again.
- ☐ **B** Round the numbers and add. The answer is about 800.
- ☐ **C** Look at the last digit only.

BY THE END YOU CAN

- Round numbers to estimate an answer before you work it out
- Check a taking away answer by adding back

Ravi works out 487 + 312. He gets 7 990. Can that be right?

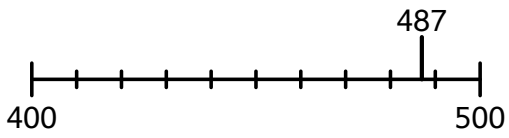
Before you add, make an **estimate**. An estimate is a quick answer that is near the right one.

To make one, you **round** each number. To round is to change it to the nearest ten or hundred.

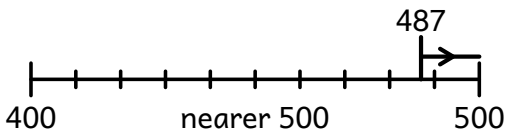
Round to the nearest hundred. Look at the tens digit. If it is 5 or more, go up. If it is 4 or less, go down.

DRAW IT FIRST

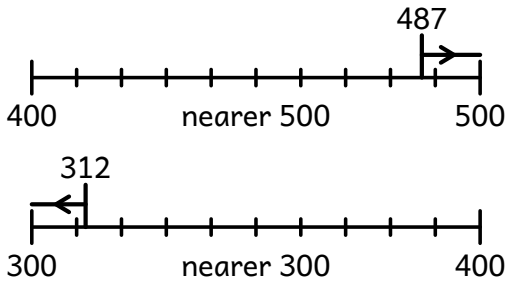
Estimate 487 + 312



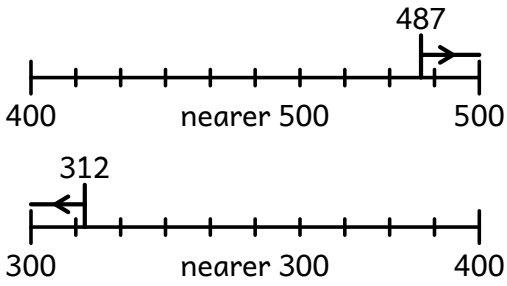
1 Find 487 on the line between 400 and 500.



2 It is nearer 500. Round it up to 500.



3 Find 312 between 300 and 400. It is nearer 300. Round it down to 300.



500 + 300 = 800
Exact answer: 799

4 Add the rounded numbers. 500 + 300 = 800. The exact answer is 799.

WORKED EXAMPLE

Estimate 487 + 312. Then work it out.

1. The tens digit of 487 is 8. Go up to 500.
2. The tens digit of 312 is 1. Go down to 300.
3. Add the rounded numbers. 500 + 300 = 800.
4. Now work out the exact sum. 487 + 312 = 799.

Answer: About 800. The exact answer is 799.

The estimate and the exact answer are close. Ravi's 7 990 is nowhere near 800.

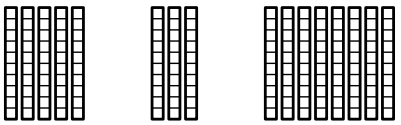
An estimate cannot tell you the last digit. It tells you if the answer is far off.

SEE IT THREE WAYS

With things

Think of 48 sticks as nearly 5 bundles of ten. Think of 31 sticks as about 3 bundles.

As a picture



In symbols

48 + 31 is about 50 + 30 = 80. The exact answer is 79.

Now check a take away. To **check** is to test an answer a second way.

Add your answer to the number you took away. You must get the first number back.

$$\begin{array}{r} {\scriptstyle 3\ \ 9} \\ \not{4}\ \not{0}\,{}^{1}3 \\ -\ 1\ 6\ 7 \\ \hline 2\ 3\ 6 \end{array}$$

403 − 167 = 236.

$$\begin{array}{r} {\scriptstyle 1\quad 1} \\ 2\ 3\ 6 \\ +\ 1\ 6\ 7 \\ \hline 4\ 0\ 3 \end{array}$$

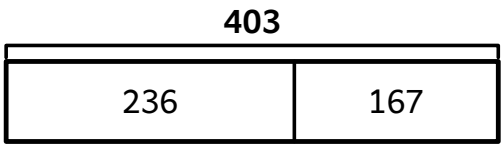
236 + 167 = 403. You got the first number back.

WORKED EXAMPLE

Check that 403 − 167 = 236.

1. Add the answer to the number you took away.
2. 236 + 167 = 403.
3. That is the first number. So 236 is right.

Answer: 236 + 167 = 403, so the answer is right



The answer and the number taken away make the whole. 236 + 167 = 403.

If the first number does not come back, work it out again.

TRY IT

Take away and put back

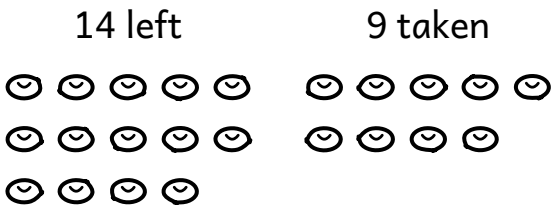
You need: 23 beans or small stones, a pencil and paper.

Be safe: Do not eat the beans.

1. Count out 23 beans. Write 23.
2. Take away 9 beans. Put them to one side.
3. Count the beans left. Write 23 − 9 = 14.
4. Put the 9 beans back with the 14. Count them all.

What you will see: You have 23 beans again. 14 + 9 = 23, so 23 − 9 = 14 is right.

If you cannot try it, this is what happens.



A WRONG IDEA MANY PEOPLE HAVE

~~An estimate is just a guess, or a wrong answer.~~

Why it feels right: An estimate is not exact, and people say "about".

The test that breaks it: Guess 487 + 312 with no rounding. Say 2 000. Now round and add. You get 800. The exact answer is 799.

What is true: An estimate is careful. You round, then add. It lands near the right answer and shows big mistakes.

KEY WORDS

estimate
a quick answer that is near the right one.

round
change a number to the nearest ten or hundred.

check
test an answer a second way.

BACK TO YOUR GUESS

The answer is B: Round the numbers and add. The answer is about 800.

Round each number and work out a quick sum. 500 + 300 = 800. An answer near 800 is likely. 7 990 is far too big.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. Estimate 396 + 213. Round each number to the nearest hundred.

   Answer at the back of the book.

2. Amina works out 624 + 275 and gets 1 899. Which estimate shows she is wrong?

   A About 600 + 300 = 900, so 1 899 is too big.

   B About 600 + 300 = 900, so 1 899 is right.

   C An estimate cannot show a mistake.

   Answer at the back of the book.

3. Tariq says 702 − 458 = 354. Check by adding back. Is he right?

   A Yes. 354 + 458 = 702.

   B No. 354 + 458 = 812. The answer is 244.

   C You cannot tell without working it out again.

   Answer at the back of the book.

4. Work out 5 000 − 2 618. Then check by adding back.

   Answer at the back of the book.

5. **From an earlier chapter**

   Which is 568 + 275?

   A 843

   B 733

   C 743

   Answer at the back of the book.

6. Hana estimates 748 + 231. She rounds each number to the nearest hundred. What is her estimate?

   A 1 000

   B 979

   C 900

   Answer at the back of the book.

7. Mei works out 905 − 378 and gets 527. Which sum checks her answer?

   A 527 + 378

   B 905 + 378

   C 527 − 378

   Answer at the back of the book.

8. Joseph works out 800 − 345 and gets 465. He adds back. 465 + 345 = 810. What does that tell him?

$$\begin{array}{r} 4\ 6\ 5 \\ +\ 3\ 4\ 5 \\ \hline \square\ \square\ \square \end{array}$$

   A His answer is right, because 810 is close to 800.

   B His answer is wrong. Adding back must give the first number.

   C His answer is right, because 465 is near the estimate of 500.

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Round, then work out a quick sum. 487 + 312 is about 500 + 300 = 800. To check a take away, add your answer back. You must get the first number.

Draw: Draw a line from 400 to 500. Mark 487 and draw an arrow to 500. Write 500 + 300 = 800.

M2.2.7 CHAPTER 7

Problems in two steps

How do I know if a problem needs adding or taking away?

YOUR GUESS

Pick one before you read on. It is fine to be wrong.

- ☐ **A** Always add the numbers you see.
- ☐ **B** Always take the small number from the big one.
- ☐ **C** Draw the whole and its parts. See which one is missing.

BY THE END YOU CAN

- Draw a bar model to decide whether to add or take away
- Solve a problem that needs two steps
- Find how many more you need to get from 37 to 50

Some problems do not say add or take away. A picture can help you choose.

A **bar model** is a picture of a problem. It uses bars for the numbers.

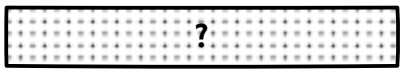
The **whole** is the long bar on top. It is all of the thing.

A **part** is one piece of the whole. The parts go side by side under it.

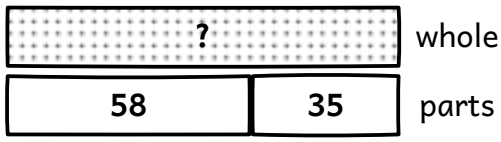
A farmer has 58 hens and 35 ducks. How many birds are there?

DRAW IT FIRST

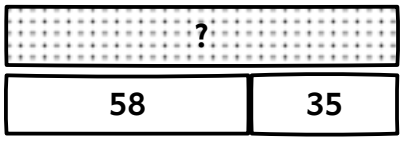
Draw the hens and ducks



1 Draw a long bar for the whole. You do not know it, so write ?.



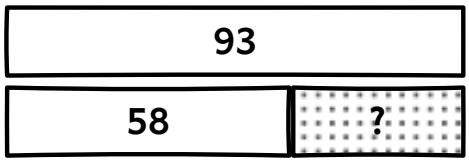
2 Under it, draw the parts side by side. Write 58 and 35.



58 + 35 = 93

3 You know the parts and want the whole. So add. 58 + 35 = 93.

Now the farmer has 93 birds. 58 are hens. How many are ducks?



You know the whole and one part. So take away. 93 − 58 = 35.

WORKED EXAMPLE

There are 93 birds. 58 are hens. How many are ducks?

1. The whole is 93. One part is 58.
2. You want the other part. Take away.
3. 93 − 58 = 35.

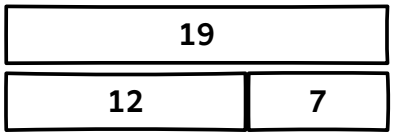
Answer: 35 ducks

SEE IT THREE WAYS

With things

Put 12 beans in one pile and 7 beans in another. Push the piles together. Count them.

As a picture



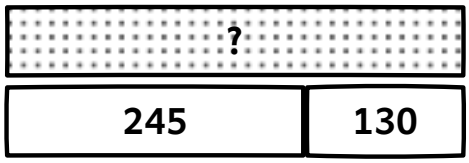
In symbols

12 + 7 = 19. Take away one part to find the other: 19 − 7 = 12.

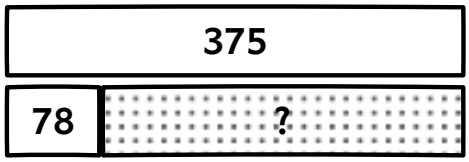
Some problems need two steps. Do one step, then the next.

A storeroom has 245 books. A van brings 130 more. Then 78 books go to a village. How many are left?

Step 1: add



Step 2: take away



Step 1 finds the whole, 375. Step 2 takes 78 away from it.

WORKED EXAMPLE

Work out how many books are left.

1. Step 1: the parts are 245 and 130. Add. 245 + 130 = 375.
2. Step 2: the whole is 375. One part is 78. Take away.
3. 375 − 78 = 297.

Answer: 297 books

Some problems go the other way. Take away first, then add.

A tank has 500 litres of water. Ana takes out 185. Rain adds 130. How much is in it now?

WORKED EXAMPLE

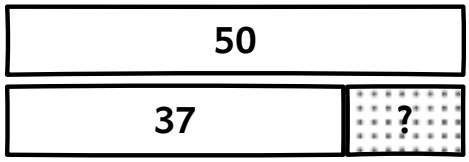
Work out how many litres are in the tank now.

1. Step 1: the whole is 500. One part is 185. Take away.
2. 500 − 185 = 315.
3. Step 2: the parts are 315 and 130. Add.
4. 315 + 130 = 445.

Answer: 445 litres

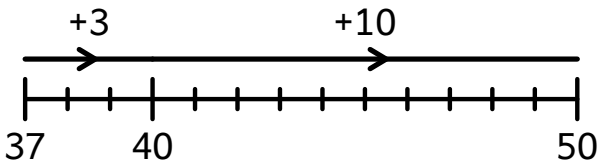
You need 50 beads for a necklace. You have 37. How many more beads do you need?

The beads you still need are the **missing part**. Take the 37 you have from the 50 you need.



You know the whole and one part. The beads you need are the missing part.

You can also count up from 37 to 50.



3 makes 40. 10 more makes 50. You need 3 + 10 = 13 more.

WORKED EXAMPLE

You need 50 beads and have 37. How many more do you need?

1. The whole is 50. One part is 37. Take away: 50 − 37.
2. Count up from 37. 3 more makes 40.
3. From 40 to 50 is 10 more.
4. Add the jumps. 3 + 10 = 13.

Answer: 13 beads

TRY IT

Two steps with beans

You need: 21 beans or small stones, a pencil and paper.

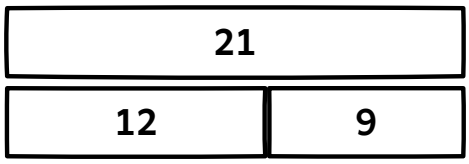
Be safe: Do not eat the beans.

1. Make a pile of 12 beans and a pile of 9 beans.
2. Push them together. Count them. Write 12 + 9 = 21.
3. Take 6 beans away. Count what is left. Write 21 − 6 = 15.
4. Draw a bar model for each step.

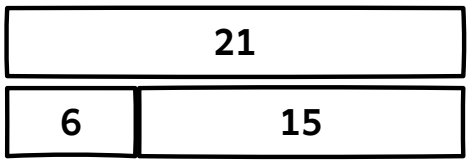
What you will see: Step 1 gave the whole, 21. Step 2 used 21 as the new whole.

If you cannot try it, this is what happens.

Step 1



Step 2



A WRONG IDEA MANY PEOPLE HAVE

~~**A word in the story tells you the sum. "More" always means add.**~~

Why it feels right: Many stories say "more" when something is added.

The test that breaks it: Kofi has 50 beans. Ana has 37. How many more has Kofi? Lay 37 beans in a row. Lay 50 under them, one to one. 13 have no partner.

What is true: Draw the bar model, not the words. The whole is 50 and one part is 37. Take away: 50 − 37 = 13.

KEY WORDS

bar model
a picture of a problem. The whole is on top. Its parts are under it.

whole
all of the thing. It is the long bar on top.

part
one piece of the whole.

missing part
the part you do not know. You find it by taking away.

BACK TO YOUR GUESS

The answer is C: Draw the whole and its parts. See which one is missing.

A picture shows what you know and what is missing. If the whole is missing, add. If a part is missing, take away.

CHECK YOURSELF

Try each one before you look. A wrong answer tells you where to go next.

1. There are 84 children in a hall. 39 are girls. Which sum finds the boys?

   A 84 − 39 = 45

   B 84 + 39 = 123

   C You cannot tell. The story needs a third number.

   Answer at the back of the book.

2. One sack holds 376 beans. Another holds 248. Draw a bar model. How many beans in all?

   Answer at the back of the book.

3. Kofi picks 468 mangoes in the morning and 259 in the afternoon. He gives away 600. How many are left?

   Answer at the back of the book.

4. A water drum holds 50 litres. It has 28 litres in it. How many more litres fill it?

   Answer at the back of the book.

5. **From an earlier chapter**

   Mei says 727 − 389 = 348. Add back to check. Is she right?

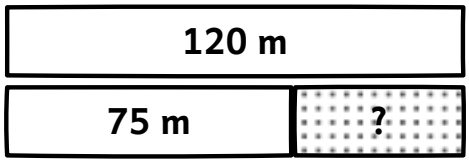
   A Yes, she is right.

   B No. The answer is 338.

   C No. The answer is 1 116.

   Answer at the back of the book.

6. A rope is 120 m long. Sipho cuts off 75 m. How long is the rest?



   A 195 m

   B 45 m

   C 155 m

   Answer at the back of the book.

7. A tank has 250 litres of water. Ana adds 135 litres. Then she uses 180 litres. How many litres are left?

   A 565 litres

   B 70 litres

   C 205 litres

   Answer at the back of the book.

8. Priya has a book of 400 pages. She has read 156 pages. Then she reads 85 more. How many pages are left?

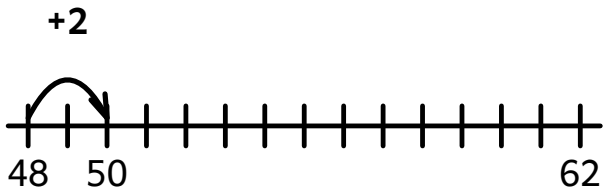
   A 159 pages

   B 244 pages

   C 241 pages

   Answer at the back of the book.

9. A minibus has 62 seats. 48 are taken. Hana counts up from 48 to 62. Her first hop is 2, to 50. How long is the next hop?



   A 14

   B 62

   C 12

   Answer at the back of the book.

KEEP IT

Copy this into your exercise book.

Draw the whole on top and its parts under it. Know the parts? Add. Know the whole and one part? Take away. Missing part: 50 − 37 = 13.

Draw: A long bar labelled 50. Under it, two bars: 37 and ?.

Key words, A to Z

Every key word in this book, what it means, and the chapter that teaches it.

adding back
check a take away. Add the answer to the number you took away. M2.2.4

bar model
a picture of a problem. The whole is on top. Its parts are under it. M2.2.7

carry
move a new ten or hundred into the next column. M2.2.3, M2.2.5

check
test an answer a second way. M2.2.6

column
a line of digits, one above the other, in one place. M2.2.3

count up
start at the smaller number and hop to the bigger one. M2.2.2

difference
how far apart two numbers are. M2.2.2

estimate
a quick answer that is near the right one. M2.2.6

exchange
swap 1 ten for 10 ones, or 1 hundred for 10 tens. M2.2.4, M2.2.5

missing part
the part you do not know. You find it by taking away. M2.2.7

part
one piece of the whole. M2.2.7

round
change a number to the nearest ten or hundred. M2.2.6

split
break a number into parts, such as 46 into 40 and 6. M2.2.1

total
the number you get when you add numbers together. M2.2.1

whole
all of the thing. It is the long bar on top. M2.2.7

Answers

M2.2.1. Adding in your head

1. **61**

   Tens: 30 + 20 = 50. Ones: 4 + 7 = 11. Then 50 + 11 = 61.

2. **85**

   70 + 15 = 85. Add the 15 ones to the 70. Do not write them beside it.

   - **If you chose B:** You wrote 70 and 15 side by side. Join them with a sum: 70 + 15.
   - **If you chose C:** You kept the 5 and lost the ten in 15. 15 is 1 ten and 5 ones. 70 + 15 = 85.

3. **103**

   64 + 40 = 104. 39 is 1 less than 40, so take 1 back. 104 − 1 = 103.

4. **No. 18 is 2 less than 20, so take 2 back. The total is 43.**

   25 + 20 = 45. 18 is 2 less than 20. You added 2 too many. 45 − 2 = 43.

   - **If you chose A:** Test with 5 + 9. 5 + 10 = 15, but 5 + 9 = 14. The extra is taken back.
   - **If you chose C:** You only want to add 18. That is 2 less than 20, so take 2 back. 45 − 2 = 43.

5. **83**

   Tens: 40 + 30 = 70. Ones: 8 + 5 = 13. 70 + 13 = 83.

6. **60 + 20 and 4 + 7**

   64 is 60 and 4. 27 is 20 and 7. Add the tens, 60 + 20. Add the ones, 4 + 7.

   - **If you chose A:** The 6 and the 2 sit in the tens place. They stand for 60 and 20. So add 60 + 20, not 6 + 2.
   - **If you chose B:** Those only split 64 and 27 again. Add the two tens, 60 + 20. Then add the two ones, 4 + 7.

7. **1 ten and 2 ones**

   7 + 5 = 12 ones. 10 of them make 1 ten, and 2 ones are left.

   - **If you chose B:** 7 + 5 = 12. You swapped the digits. 12 is 1 ten and 2 ones. 2 tens and 1 one is 21.
   - **If you chose C:** 12 tens would be 120. You have 12 single ones, and 10 ones make 1 ten.

8. **86**

   37 + 50 = 87. 49 is 1 less than 50, so you added 1 too many. 87 − 1 = 86.

   - **If you chose A:** You added the extra 1. 49 is 1 less than 50. The hop of 50 is 1 too long. Take 1 back.
   - **If you chose B:** 87 is 37 + 50. But 49 is 1 less than 50, so take 1 back.

M2.2.2. Taking away in your head

1. **4**

   47 to 50 is 3. 50 to 51 is 1. 3 + 1 = 4.

2. **5**

   398 to 400 is 2. 400 to 403 is 3. 2 + 3 = 5.

3. **The numbers are close, so the answer is small. It is 8.**

   397 to 400 is 3. 400 to 405 is 5. 3 + 5 = 8. And 397 + 8 = 405.

   - **If you chose B:** Add back. 397 + 192 = 589, not 405. Taking away is not done column by column.
   - **If you chose C:** Adding gives 802. Count up from 397 to find the gap.

4. **8 cm**

   118 to 120 is 2. 120 to 126 is 6. 2 + 6 = 8. So Maya's rope is 8 cm longer.

5. **95**

   Tens: 50 + 30 = 80. Ones: 7 + 8 = 15. 80 + 15 = 95.

6. **At 57, the smaller number**

   You hop up, so you start low. Start at 57 and hop up to 62. 57 to 60 is 3. 60 to 62 is 2. The difference is 5.

   - **If you chose A:** From 62 you would count back down. To count up, start at 57 and hop up to 62.
   - **If you chose C:** 60 is a stepping stone on the way, not the start. Start at 57. 57 to 60 is 3. 60 to 62 is 2.

7. **5**

   296 to 300 is 4. 300 to 301 is 1. 4 + 1 = 5.

   - **If you chose A:** 296 to 300 is 4. But you must reach 301. One more hop makes 4 + 1 = 5.
   - **If you chose B:** You counted the number you started on. Count the hops, not the numbers. 4 + 1 = 5.

8. **6**

   598 to 600 is 2. 600 to 604 is 4. 2 + 4 = 6.

   - **If you chose B:** That takes the smaller digit from the bigger one in each column. 604 and 598 are close, so the answer is small. Count up from 598.
   - **If you chose C:** 598 to 600 is 2. But you must go on to 604. 2 + 4 = 6.

9. **6**

   396 to 400 is 4. 400 to 402 is 2. 4 + 2 = 6. Mei has 6 more stones.

   - **If you chose A:** 798 is 402 + 396. How many more asks for the gap. Count up from 396 to 402.
   - **If you chose C:** You counted the 396 as well. Count the hops. 396 to 400 is 4. 400 to 402 is 2. 4 + 2 = 6.

M2.2.3. Column adding

1. **377**

   Ones: 5 + 2 = 7. Tens: 4 + 3 = 7. Hundreds: 2 + 1 = 3. No column makes 10, so nothing is carried.

2. **752**

   Ones: 7 + 5 = 12. Write 2, carry 1. Tens: 6 + 8 + 1 = 15. Write 5, carry 1. Hundreds: 4 + 2 + 1 = 7.

3. **84**

   Ones: 6 + 8 = 14. Write 4, carry 1. Tens: 3 + 4 + 1 = 8. The answer is 84.

   - **If you chose B:** You wrote the whole 14 under the ones. Write 4 and carry the 1 ten.
   - **If you chose C:** You forgot the carried ten. Tens: 3 + 4 + 1 = 8.

4. **8 is only ones. It goes under the 6.**

   The 6 is in the ones column. Ones go under ones. Then 126 + 8 = 134.

   - **If you chose B:** Under the 1, the 8 counts as 800. 126 + 800 = 926. But 126 + 8 = 134.
   - **If you chose C:** The 2 is in the tens column. 8 is 8 ones, so it goes with the 6.

5. **525**

   Ones: 8 + 7 = 15. Write 5, carry 1. Tens: 5 + 6 + 1 = 12. Write 2, carry 1. Hundreds: 2 + 2 + 1 = 5.

6. **4**

   498 to 500 is 2. 500 to 502 is 2. 2 + 2 = 4.

7. **5 and 4**

   352 is 3 hundreds, 5 tens and 2 ones. 41 is 4 tens and 1 one. So the tens column holds 5 and 4.

   - **If you chose A:** That lines the numbers up on the left. The 3 of 352 is in the hundreds. The tens column holds 5 and 4.
   - **If you chose C:** The 2 and the 1 are the ones, the last digits. The tens come next, to the left of them.

8. **Write 5. Carry 1 ten.**

   15 ones is 1 ten and 5 ones. Write the 5 under the ones. Carry the 1 ten to the tens column.

   - **If you chose A:** Only one digit goes in a column. 15 is 1 ten and 5 ones. Write the 5 and carry the ten.
   - **If you chose B:** 15 ones is 1 ten and 5 ones. The 5 ones stay in the ones column. The 1 ten moves to the tens.

9. **606**

   Ones: 9 + 7 = 16. Write 6, carry 1. Tens: 5 + 4 + 1 = 10. Write 0, carry 1. Hundreds: 3 + 2 + 1 = 6.

   - **If you chose A:** You forgot the carried ten. Ones: 9 + 7 = 16, so carry 1 ten. Tens: 5 + 4 + 1 = 10. Write 0 and carry 1 hundred.
   - **If you chose C:** The tens made 10. Write 0 and carry 1 hundred. Hundreds: 3 + 2 + 1 = 6.

M2.2.4. Column taking away

1. **442**

   Ones: 5 − 3 = 2. Tens: 8 − 4 = 4. Hundreds: 6 − 2 = 4. Every top digit is big enough, so there is no exchange.

2. **276**

   Ones: 2 − 6 cannot be done. Exchange. 12 − 6 = 6. Tens: 2 left. Exchange. 12 − 5 = 7. Hundreds: 6 left. 6 − 4 = 2. Check: 276 + 456 = 732.

3. **355**

   There are 0 tens. Exchange 1 hundred for 10 tens. Then exchange 1 ten for 10 ones. Ones: 13 − 8 = 5. Tens: 9 − 4 = 5. Hundreds: 5 − 2 = 3. Check: 355 + 248 = 603.

4. **157**

   Exchange 1 hundred, then 1 ten. Ones: 15 − 8 = 7. Tens: 9 − 4 = 5. Hundreds: 2 − 1 = 1. Check: 157 + 148 = 305.

   - **If you chose B:** You took the smaller digit from the bigger in each column. Add back: 148 + 243 = 391, not 305.
   - **If you chose C:** After the exchange the tens column is 9, not 10. 9 − 4 = 5, not 6.

5. **263**

   Exchange 1 hundred for 10 tens, then 1 ten for 10 ones. Ones: 10 − 7 = 3. Tens: 9 − 3 = 6. Hundreds: 4 − 2 = 2. Check: 263 + 237 = 500.

6. **624**

   Ones: 6 + 8 = 14. Write 4, carry 1. Tens: 7 + 4 + 1 = 12. Write 2, carry 1. Hundreds: 2 + 3 + 1 = 6.

7. **13 − 7**

   The ten gives 10 more ones. 10 + 3 = 13 ones. Then 13 − 7 = 6.

   - **If you chose A:** That turns the sum round. The 7 must be taken away from the 3. Exchange 1 ten to get more ones.
   - **If you chose B:** The 3 ones are still there. 10 ones and 3 ones make 13. So work out 13 − 7.

8. **465**

   Ones: 12 − 7 = 5. Tens: 4 are left. Exchange 1 hundred. 14 − 8 = 6. Hundreds: 5 − 1 = 4. Check: 465 + 187 = 652.

   - **If you chose A:** You took the smaller digit from the bigger one in each column. Add back: 187 + 535 = 722, not 652.
   - **If you chose C:** The first exchange took 1 ten from the tens column. Only 4 tens are left. 14 − 8 = 6, not 7.

9. **455**

   Exchange 1 hundred for 10 tens. Then 1 ten for 10 ones. Ones: 10 − 5 = 5. Tens: 9 − 4 = 5. Hundreds: 7 − 3 = 4. Check: 455 + 345 = 800.

   - **If you chose B:** You took the smaller digit from the bigger one in each column. Add back: 345 + 545 = 890, not 800.
   - **If you chose C:** After both exchanges the tens column is 9, not 10. One ten went to the ones. 9 − 4 = 5.

10. **Add 227 + 276. It should make 503.**

    Add the answer to the number you took away. 227 + 276 = 503. It matches the top number.

    - **If you chose A:** 227 and 276 are both smaller than 503. Taking one from the other cannot make 503. Add them instead.
    - **If you chose B:** 227 + 503 makes 730. Add the answer to the number you took away. That is 276.

M2.2.5. Four digits and more

1. **3 825**

   Ones: 8 + 7 = 15, write 5, carry 1. Tens: 1 + 5 + 6 = 12, write 2, carry 1. Hundreds: 1 + 3 + 4 = 8. Thousands: 2 + 1 = 3.

2. **3 455**

   In the ones, 0 is smaller than 5. Exchange along the zeros. The hundreds, now 2, need an exchange too. 10 − 5 = 5, 9 − 4 = 5, 12 − 8 = 4, 5 − 2 = 3. Check: 3 455 + 2 845 = 6 300.

3. **Write 5 and carry 2**

   The ones make 4 + 8 + 7 + 6 = 25. That is 2 tens and 5 ones. The tens then make 5 + 3 + 2 + 6 + 2 = 18. The total is 185.

   - **If you chose B:** A column holds one digit. Write the last digit, 5, and carry the rest.
   - **If you chose C:** The digits are the wrong way round. 25 is 2 tens and 5 ones. The 5 stays.

4. **568**

   Ones: 6 + 5 + 8 + 9 = 28, write 8, carry 2. Tens: 2 + 2 + 8 + 0 + 4 = 16, write 6, carry 1. Hundreds: 1 + 1 + 0 + 3 + 0 = 5.

5. **No. The answer is 236.**

   Exchange 1 hundred for 10 tens, then 1 ten for 10 ones. 13 − 7 = 6, 9 − 6 = 3, 3 − 1 = 2. Check: 236 + 167 = 403.

   - **If you chose A:** In the ones, 3 is smaller than 7. You cannot take 7 from 3, so you must exchange. Go to M2.2.4.
   - **If you chose C:** 570 is 403 + 167. A take away gives less than 403.

6. **6 622**

   Ones: 3 + 9 = 12, write 2, carry 1. Tens: 6 + 5 + 1 = 12, write 2, carry 1. Hundreds: 7 + 8 + 1 = 16, write 6, carry 1. Thousands: 4 + 1 + 1 = 6.

   - **If you chose A:** The hundreds made 16. Write 6 and carry 1 to the thousands. Thousands: 4 + 1 + 1 = 6.
   - **If you chose C:** The ones made 12. Carry 1 ten. Tens: 6 + 5 + 1 = 12, not 11.

7. **2 765**

   Exchange along the zeros. The thousands are 3. The hundreds and tens are 9. The ones are 10. 10 − 5 = 5, 9 − 3 = 6, 9 − 2 = 7, 3 − 1 = 2. Check: 2 765 + 1 235 = 4 000.

   - **If you chose A:** You took the smaller digit from the bigger one in each column. Add back: 1 235 + 3 235 = 4 470, not 4 000.
   - **If you chose B:** The 4 thousands gave 1 away. Only 3 are left. 3 − 1 = 2, not 3.

8. **130**

   Ones: 6 + 8 + 9 + 7 = 30. Write 0, carry 3. Tens: 3 + 4 + 1 + 2 + 3 = 13. The total is 130.

   - **If you chose B:** You carried only 1. The ones made 30, which is 3 tens. Carry 3. Tens: 3 + 4 + 1 + 2 + 3 = 13.
   - **If you chose C:** You forgot the 3 tens from the ones. Tens: 3 + 4 + 1 + 2 + 3 = 13.

9. **9**

   The 0 gets 10 from the thousands. Then it gives 1 to the tens. 10 − 1 = 9.

   - **If you chose A:** The 0 gets 10 from the thousands. Then it gives 1 to the tens. That leaves 9, not 10.
   - **If you chose C:** The 4 is in the thousands. It was 5 and gave 1 away. The hundreds 0 became 9.

M2.2.6. Estimate and check

1. **600**

   396 rounds up to 400, because the tens digit is 9. 213 rounds down to 200. 400 + 200 = 600. The exact answer is 609.

2. **About 600 + 300 = 900, so 1 899 is too big.**

   624 rounds to 600. 275 rounds to 300. 600 + 300 = 900. The exact answer is 899. Her answer is about twice as big.

   - **If you chose B:** Look again. 1 899 is about twice 900. The answer should be near 900.
   - **If you chose C:** It can. A big gap between the estimate and the answer shows a mistake.

3. **No. 354 + 458 = 812. The answer is 244.**

   Adding back should give 702. It gives 812. The right answer is 244, because 244 + 458 = 702.

   - **If you chose A:** Add again. 354 + 458 = 812, not 702.
   - **If you chose C:** You can tell by adding back. 354 + 458 = 812, which is not 702.

4. **2 382**

   Exchange along the zeros. 5 000 − 2 618 = 2 382. Check: 2 382 + 2 618 = 5 000.

5. **843**

   Ones: 8 + 5 = 13, write 3, carry 1. Tens: 1 + 6 + 7 = 14, write 4, carry 1. Hundreds: 1 + 5 + 2 = 8.

   - **If you chose B:** You did not carry. 8 + 5 = 13 and 6 + 7 = 13 each carry a 1. Go to M2.2.3.
   - **If you chose C:** You carried once. The tens make 6 + 7 + 1 = 14, so carry again. Go to M2.2.3.

6. **900**

   748 rounds down to 700, because the tens digit is 4. 231 rounds down to 200. 700 + 200 = 900.

   - **If you chose A:** You rounded 748 up to 800. The tens digit is 4, so go down to 700.
   - **If you chose B:** 979 is the exact answer. An estimate rounds first. 700 + 200 = 900.

7. **527 + 378**

   Add the answer to the number you took away. 527 + 378 = 905. That is the first number, so she is right.

   - **If you chose B:** That makes 1 283. Add the answer to the number you took away.
   - **If you chose C:** Taking 378 from 527 does not give you back 905. Add instead.

8. **His answer is wrong. Adding back must give the first number.**

   Adding back gives 810, not 800. So 465 is wrong. The right answer is 455, because 455 + 345 = 800.

   - **If you chose A:** Adding back must give the first number exactly. 810 is 10 more than 800, so there is a mistake.
   - **If you chose C:** An estimate shows only big mistakes. 465 is near 500, but adding back shows it is off.

M2.2.7. Problems in two steps

1. **84 − 39 = 45**

   The whole is 84. One part is 39. Take away. 84 − 39 = 45 boys, and 45 + 39 = 84.

   - **If you chose B:** 84 is the whole. 39 is one part. You want the other part, so take away.
   - **If you chose C:** You know the whole, 84, and one part, 39. That is enough to find the other part.

2. **624**

   You know the two parts and want the whole. Add. 376 + 248 = 624.

3. **127**

   Step 1: 468 + 259 = 727. Step 2: 727 − 600 = 127.

4. **22 litres**

   50 − 28 = 22. Or count up: 2 makes 30, then 20 makes 50. 2 + 20 = 22.

5. **No. The answer is 338.**

   348 + 389 = 737, not 727. The right answer is 338, because 338 + 389 = 727.

   - **If you chose A:** Add 348 + 389. You get 737, not 727. Adding back shows a mistake. Go to M2.2.6.
   - **If you chose C:** 1 116 is 727 + 389. This is a take away, so the answer is less than 727.

6. **45 m**

   The whole is 120 m. One part is 75 m. Take away. 120 − 75 = 45. Check: 45 + 75 = 120.

   - **If you chose A:** 120 m is the whole rope before the cut. The rest is a part, so take away.
   - **If you chose C:** You took the smaller digit from the bigger one in each column. Add back: 155 + 75 = 230, not 120.

7. **205 litres**

   Step 1: 250 + 135 = 385. Step 2: 385 − 180 = 205.

   - **If you chose A:** You added all three numbers. Ana uses 180 litres, so take them away at step 2.
   - **If you chose B:** You left out the 135 litres Ana added. Add first: 250 + 135 = 385. Then take away 180.

8. **159 pages**

   Step 1: 156 + 85 = 241 pages read. Step 2: 400 − 241 = 159 pages left.

   - **If you chose B:** You forgot the 85 pages. Step 1: she has read 156 + 85 = 241. Step 2: 400 − 241.
   - **If you chose C:** 241 is how many pages she has read. The question asks how many are left. Take 241 from 400.

9. **12**

   The next hop goes from 50 to 62. 62 − 50 = 12. The two hops make 2 + 12 = 14 free seats.

   - **If you chose A:** 14 is the whole gap, both hops together. The next hop goes from 50 to 62.
   - **If you chose B:** 62 is where the hop ends. The hop is how far it goes, from 50 to 62.

About this book

For learners who can add and take away numbers up to 100, such as 46 + 7 and 50 − 8. In many schools this fits children of about 8 to 10, and older learners who get lost in column sums can start here too. Activities use sticks, beans and paper. A learner can work alone: every exercise has its answer and the reason for it.

Written and drawn by attnom. Edition 1.0, 2026-11-09.

This book is free. You may read it, print it, copy it and share it with anyone.

The newest copy is at https://attnom.com/academy/adding-and-taking-away-big-numbers.