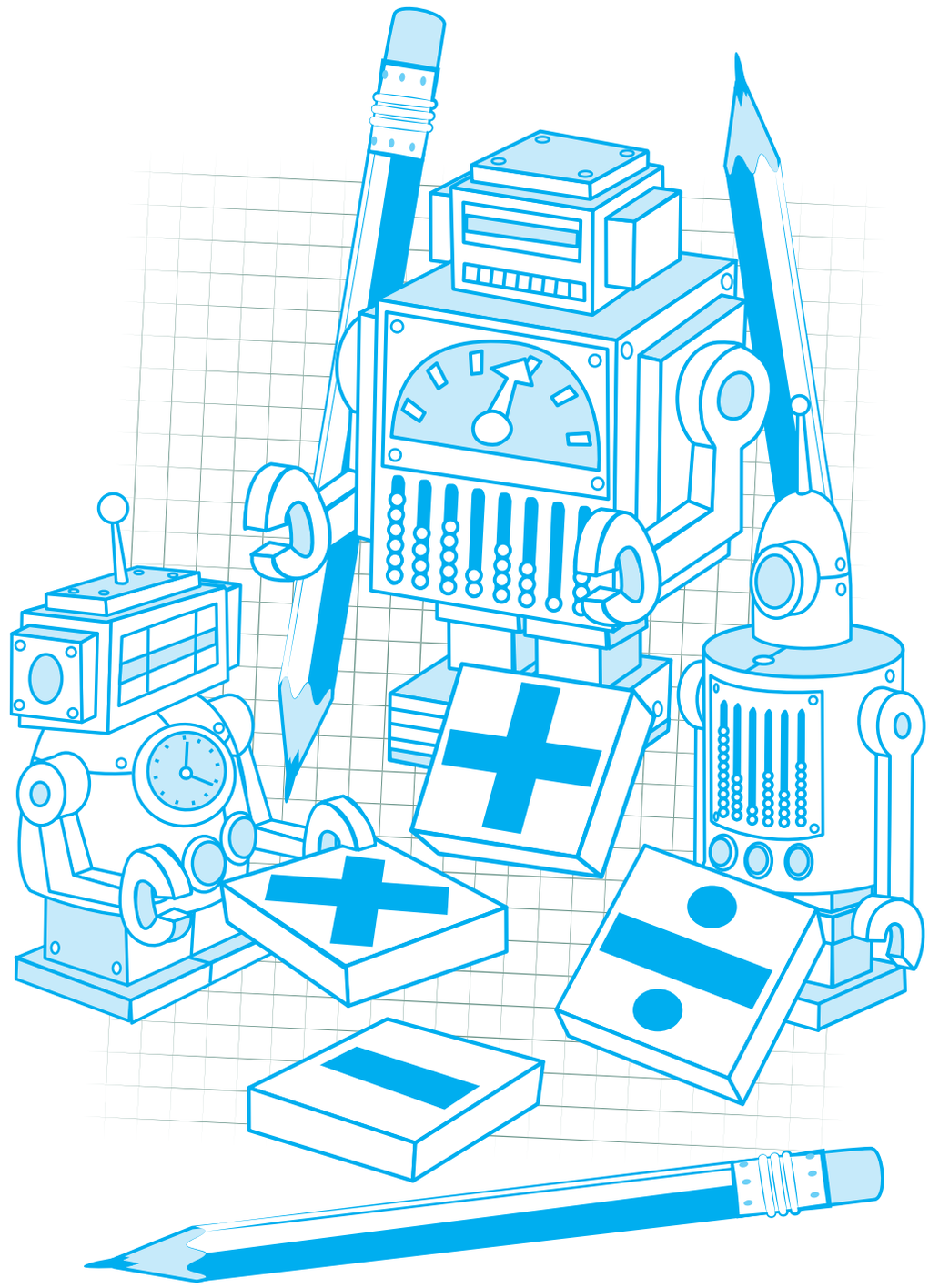
Key Stage **2**

Schofield&Sims

Written Calculation

Multiplication 2 Answers



Step 1: Three- and four-digit × one-digit

In **Multiplication 1** you learnt how to multiply by one-digit numbers, such as 847 × 7. In this book you will learn how to do **long multiplication**, where you multiply by two-, three- or four-digit numbers. First we will revise one-digit multiplication.

What to do (a reminder)

847 × 7 = ?

1 Multiply the digits of the top number, working from right to left. If you get more than 9 in any multiplication, carry sets of ten over to the column to the left. 7 × 7 = 49 so write 9 in the units column and carry the 4 tens over. Write the carried tens below the line.

2 Then multiply the tens digit, adding any carried tens. 4 tens × 7 = 28 tens, 28 tens + 4 carried tens = 32 tens. Write 2 in the tens column and carry the 3 hundreds.

3 Then multiply the hundreds digit, adding the carried hundreds. 8 hundreds × 7 = 56 hundreds. 56 hundreds + 3 carried hundreds = 59 hundreds. Write 9 in the hundreds column and carry the 5 thousands.

4 As the top number has no thousands you have no more multiplying to do, but you must write any carried thousands digits above the line to complete your answer.

	TTh	Th	H	T	U
			8	4	7
×					7
					9
				4	

			8	4	7
×					7
				2	9
			3	4	

			8	4	7
×					7
	5	9	2	9	
	5	3	4		

Now you try

1

	9	1	4	8
×				5
4	5	7	4	0
4		2	4	

2

		3	9	6
×				8
	3	1	6	8
	3	7	4	

3

		7	6	1
×				6
	4	5	6	6
	4	3		

4

	2	9	8	7
×				4
1	1	9	4	8
1	3	3	2	

More practice

Set out these questions yourself to answer them.

5 6273 × 8 = ?

TTh	Th	H	T	U
	6	2	7	3
×				8
5	0	1	8	4
5	2	5	2	

6 1924 × 7 = ?

TTh	Th	H	T	U
	1	9	2	4
×				7
1	3	4	6	8
1	6	1	2	

7 4178 × 5 = ?

	4	1	7	8
×				5
2	0	8	9	0
2		3	4	

8 4557 × 9 = ?

	4	5	5	7
×				9
4	1	0	1	3
4	5	5	6	

Problem solving

9 Three people each win £1896 on the lottery. How much did they win altogether?

	1	8	9	6
×				3
	5	6	8	8
	2	2	1	

£5688

10 Every day 8925 people travel on a train. How many people travel on this train in a week?

	8	9	2	5
×				7
6	2	4	7	5
6	6	1	3	

62 475

11 Work out the missing digit in this multiplication.

	6	7	8	4
×				8
5	4	2	7	2
5	6	6	3	

How did I find Step 1? ☐ Easy ☐ OK ☐ Difficult

Step 2: Two-, three- and four-digit × 10 and × 20

TTh	Th	H	T	U
	3	4	7	9
×			1	0
3	4	7	9	**0**

Now you need to remind yourself how to multiply by 10 and 20. When multiplying by 10 the digits of the number being multiplied move one place to the left. We put a zero into the units column to complete the answer.

What to do (a reminder)

3479 × 20 = ?

1. To multiply by 20, first write zero in the units column.
2. Then multiply the top number by 2, but writing the digits of the answer one place to the left. Start by multiplying the units digit by 2: 9 × 2 = 18. Write the 8 and carry 1 across.
3. Now multiply the tens digit and add the carried digit.
4. Then multiply the hundreds digit and add any carried digits.
5. Finally, multiply the thousands digit and add any carried digits.

TTh	Th	H	T	U
	3	4	7	9
×			2	0
			8	**0**

	3	4	7	9
×			2	0
6	9	5	8	**0**

Now you try

1

	3	1	8
×		1	0
3	1	8	**0**

2

	1	7	8	7
×			2	0
3	5	7	4	**0**

3

	4	8	3	6
×			1	0
4	8	3	6	**0**

4

		5	6	8	9
×				2	0
1	1	3	7	8	0

More practice

5

		7	7	7	7
×				2	0
1	5	5	5	4	0

6

		9	6	8	9
×				1	0
	9	6	8	9	0

Set out these questions yourself to answer them.

7 4762 × 10 = ?

HTh	TTh	Th	H	T	U
		4	7	6	2
×				1	0
	4	7	6	2	0

8 9569 × 20 = ?

HTh	TTh	Th	H	T	U
		9	5	6	9
×				2	0
1	9	1	3	8	0

Problem solving

9 How many times greater is the answer to 635 × 20 than the answer to 127 × 10?

		6	3	5
×			2	0
1	2	7	0	0

		1	2	7
×			1	0
1	2	7	0	

12700 is 10 times greater than 1270

10 A row of terraced houses is made from 20 joined houses, each identical in size. If the width of each house is 486cm, what is the width of the terrace?

	4	8	6
×		2	0
9	7	2	0

9720cm or 97.2m

11 Use the digits 6, 7, 8 and 9 in any order to make a four-digit number. Multiply the number by 20. Can you find the number that gives the answer 173940? Use spare paper for working.

	8	6	9	7
×			2	0
1	7	3	9	4	0

8697

How did I find Step 2? ☐ Easy ☐ OK ☐ Difficult

Step 3: Two- and three-digit × a teens number
no carrying in the addition

Now you should be feeling confident enough to put it all together and multiply by a 'teens' number.

	H	T	U
	2	0	4
×		1	3

What to do

204 × 13 = ?

1. In the first row under the question multiply the top number by the **units** digit of the bottom number: 204 × 3. Remember to work from right to left and carry if necessary. It helps to make your carry numbers quite small if you can.
2. In the next row multiply the top number by 10. Simply write a zero in the units column first and multiply the top number by 1, writing the digits one place to the left. 204 × 10 = 2040
3. Finally add your two answers. Be careful **not** to add the carry marks you used when multiplying. Just add the digits of the two answers. 612 + 2040 = 2652

	Th	H	T	U	
		2	0	4	
	×		1	3	
		6	1_1	2	← 204 × 3
	2	0	4	**0**	← 204 × 10

		2	0	4	
	×		1	3	
		6	1_1	2	← 204 × 3
+	2	0	4	**0**	← 204 × 10
	2	6	5	2	

Now you try

1

		1	3	2	
	×		1	4	
		5_1	2	8	← 132 × 4
+	1	3	2	**0**	← 132 × 10
	1	8	4	8	

2

		1	3	1	
	×		1	5	
		6_1	5	5	← 131 × 5
+	1	3	1	0	← 131 × 10
	1	9	6	5	

3

		2	1	5	
	×		1	3	
		6	4_1	5	← 215 × 3
+	2	1	5	0	← 215 × 10
	2	7	9	5	

4

		2	1	1	
	×		1	4	
		8	4	4	← 211 × 4
+	2	1	1	0	← 211 × 10
	2	9	5	4	

More practice

5

		1	0	6
	×		1	6
		6	3_3	6
+	1	0	6	0
	1	6	9	6

← 106 × 6
← 106 × 10

6

		5	3	4
	×		1	4
	2_2	1_1	3_1	6
+	5	3	4	0
	7	4	7	6

← 534 × 4
← 534 × 10

7

		3	0	7
	×		1	3
		9	2_2	1
+	3	0	7	0
	3	9	9	1

← 307 × 3
← 307 × 10

8

		2	3	4
	×		1	7
	1_1	6_2	3_2	8
+	2	3	4	0
	3	9	7	8

← 234 × 7
← 234 × 10

Set out these questions yourself to answer them.

9 43 × 15 = ?

	Th	H	T	U
			4	3
	×		1	5
		2_2	1_1	5
+		4	3	0
		6	4	5

10 214 × 13 = ?

	Th	H	T	U
		2	1	4
	×		1	3
		6	4_1	2
+	2	1	4	0
	2	7	8	2

Problem solving

11 Twelve people each win £214 on the lottery. How much did they win altogether?

		2	1	4
	×		1	2
		4	2	8
+	2	1	4	0
	2	5	6	8

£2568

How did I find Step 3? ☐ Easy ☐ OK ☐ Difficult

Step 4: Two- and three-digit × a teens number with carrying in the addition

These are similar to Step 3 but, when you add your two answers at the final stage, you might need to do some carrying.

	H	T	U
	2	5	1
×		1	3

What to do

1. First multiply the top number by the units digit of the bottom number: 251 × 3. Remember to work from right to left and carry if necessary.
2. In the next row multiply the top number by 10. Simply write a zero in the units column first and multiply the top number by 1, writing the digits one place to the left. 251 × 10 = 2510
3. Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. You might need to carry when adding. Here 7 hundreds + 5 hundreds = 12 hundreds, so carry 1 thousand. 753 + 2510 = 3263

251 × 13 = ?

	Th	H	T	U	
		2	5	1	
	×		1	3	
		7_{1}	5	3	← 251 × 3
	2	5	1	**0**	← 251 × 10

		2	5	1
	×		1	3
		7_{1}	5	3
+	2	5	1	**0**
	3	2	6	3
	1			

Now you try

1

			6	3
	×		1	3
		1_{1}	8	9 ← 63 × 3
+		6	3	**0** ← 63 × 10
		8	1	9
		1		

2

		1	8	4
	×		1	7
	1_{1}	2_{5}	8_{2}	8 ← 184 × 7
+	1	8	4	**0** ← 184 × 10
	3	1	2	8
	1	1		

3

		3	5	2
	×		1	5
	1_{1}	7_{2}	6_{1}	0 ← 352 × 5
+	3	5	2	**0** ← 352 × 10
	5	2	8	0
	1			

4

		4	5	6
	×		1	4
	1_{1}	8_{2}	2_{2}	4 ← 456 × 4
+	4	5	6	0 ← 456 × 10
	6	3	8	4
	1			

More practice

5

		1	9	6
	×		1	6
	1_{1}	1_{5}	7_{3}	6
+	1	9	6	0
	3	1	3	6

← 196 × 6
← 196 × 10

6

		3	6	4
	×		1	8
	2_{2}	9_{5}	1_{3}	2
+	3	6	4	0
	6	5	5	2

← 364 × 8
← 364 × 10

Set out these questions yourself to answer them.

7 44 × 19 = ?

	Th	H	T	U
			4	4
	×		1	9
		3_{3}	9_{3}	6
+		4	4	0
		8	3	6

8 658 × 13 = ?

	Th	H	T	U
		6	5	8
	×		1	3
	1_{1}	9_{1}	7_{2}	4
+	6	5	8	0
	8	5	5	4

Problem solving

9 Answer each of these multiplications using the same method.

111 × 19 = 2109

222 × 19 = 4218

333 × 19 = 6327

1 1 1	2 2 2	3 3 3
× 1 9	× 1 9	× 1 9
9 9 9	1_{1} 9_{1} 9_{1} 8	2_{2} 9_{2} 9_{2} 7
+ 1 1 1 0	+ 2 2 2 0	+ 3 3 3 0
2 1 0 9	4 2 1 8	6 3 2 7

Then look for patterns in the digits of the answers.
Can you use what you notice to predict the answer of 444 × 19?

8436

How did I find Step 4? ☐ Easy ☐ OK ☐ Difficult

Step 5: Three-digit × a teens number five-digit answers

Try these in the same way. Some of your answers may be five-digit numbers.

What to do

1 First multiply the top number by the units digit of the bottom number. 986 × 3 = 2958

2 In the next row multiply the top number by 10. Remember to write a zero in the units column first. 986 × 10 = 9860

3 Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. You might need to carry when adding.

986 × 13 = ?

	TTh	Th	H	T	U	
			9	8	6	
		×		1	3	
		2_2	9_2	5_1	8	← 986 × 3
		9	8	6	**0**	← 986 × 10

		9	8	6	
	×		1	3	
	2_2	9_2	5_1	8	
+	9	8	6	**0**	
1	2	8	1	8	

Now you try

1

		9	7	3
	×		1	5
	4_4	8_3	6_1	5 ← 973 × 5
+	9	7	3	**0** ← 973 × 10
1	4	5	9	5

2

		5	7	6
	×		1	9
	5_5	1_6	8_5	4 ← 576 × 9
+	5	7	6	**0** ← 576 × 10
1	0	9	4	4

3

		8	6	9
	×		1	4
	3_3	4_2	7_3	6 ← 869 × 4
+	8	6	9	0 ← 869 × 10
1	2	1	6	6

4

		9	5	8
	×		1	8
	7_7	6_4	6_6	4 ← 958 × 8
+	9	5	8	0 ← 958 × 10
1	7	2	4	4

More practice

Each of these questions has two missing digits. Can you work out which are missing?

5

		7	(3)	4
	×		1	6
	4_4	4_2	0_2	4
+	7	(3)	4	**0**
1	1	7	4	4

6

		(8)	2	5
	×		1	7
	5_5	7_1	7_3	5
+	(8)	2	5	**0**
1	4	0	2	5

Problem solving

Use the same method to answer these questions.

7 124 teams entered the Schools' Rugby Cup. Each team has 15 players. How many players were involved?

	1	2	4	
×		1	5	
	6_1	2_2	0	
+	1	2	4	0
	1	8	6	0

1860

8 A mobile phone package charges 19p for each minute used. How much does it cost for 689 minutes of calls?

	6	8	9	
×		1	9	
	6_6	2_8	0_8	1
+	6	8	9	0
1	3	0	9	1

13091p or £130.91

9 A word-processing program puts 372 words on each page. How many words will be on 17 pages?

	3	7	2	
×		1	7	
	2_2	6_5	0_1	4
+	3	7	2	0
	6	3	2	4

6324

10 At a garden centre a machine puts 654 seeds in each packet. How many seeds will be in 18 packets?

	6	5	4	
×		1	8	
	5_5	2_4	3_3	2
+	6	5	4	0
1	1	7	7	2

11772

How did I find Step 5? ☐ Easy ☐ OK ☐ Difficult

Check-up test 1 Up to four-digit × one-digit, ×10, ×20, and × teen numbers

Step 1

1

	2	9	8	7
×				5
1	4	9	3	5
	1	4	4	3

2 4127 × 8 = ?

	4	1	2	7
×				8
3	3	0	1	6
	3	1	2	5

Step 2

3

	6	3	2	8
×			1	0
6	3	2	8	0

4 6789 × 20 = ?

		6	7	8	9
×				2	0
1	3	5	7	8	0
	1	1	1	1	

Steps 3 and 4

5 329 × 17 = ?

		3	2	9
	×		1	7
	2_{2}	3_{2}	0_{6}	3
+	3	2	9	0
	5	5	9	3

6

		1	3	8
	×		1	6
		8_{2}	2_{4}	8
+	1	3	8	0
	2	2	0	8
		1	1	

Step 5

7

			7	3	4
		×		1	5
		3_{3}	6_{1}	7_{2}	0
+		7	3	4	0
	1	1	0	1	0
	1	1	1		

8

			8	8	8
		×		1	9
		7_{7}	9_{7}	9_{7}	2
+		8	8	8	0
	1	6	8	7	2
	1	1	1		

1 ☐
2 ☐
3 ☐
4 ☐
5 ☐
6 ☐
7 ☐
8 ☐

Steps 1 to 5 mixed

Use the grid below for working.

9 Tins of beans weigh 443g each. How heavy are 12 tins of beans?

5316g or 5.316kg

10 A moped travels 13km for every litre of petrol. How far can it travel using 165 litres?

2145km

11 An author writes 14 pages every day. How many pages does she write in 731 days?

10 234

12 A firm makes ladders. Each ladder has 16 rungs. How many rungs are needed to make 281 ladders?

4496

9)

		4	4	3	
	×		1	2	
		8	8	6	
+	4	4	3	0	
	5	3	1	6	
	1	1			

10)

		1	6	5	
	×		1	3	
		4_{1}	9_{1}	5	
+	1	6	5	0	
	2	1	4	5	
	1	1			

11)

		7	3	1	
	×		1	4	
	2_{2}	9_{1}	2	4	
+	7	3	1	0	
1	0	2	3	4	
1	1				

12)

		2	8	1	
	×		1	6	
	1_{1}	6_{4}	8	6	
+	2	8	1	0	
	4	4	9	6	
	1				

Total test score

Score	1	2	3	4	5	6	7	8	9	10	11	12
%	8	17	25	33	42	50	58	67	75	83	92	100

12

Step 6: Three-digit × any two-digit multiple of 10

In Step 2 you practised multiplying by 10 or 20. Multiplying by 30, 40, 50 or any other two-digit multiple of 10 is just as easy!

What to do (a reminder)

746 × 40 = ?

TTh	Th	H	T	U
		7	4	6
×			4	0
			4	**0**
			2	

1. As you are multiplying by a multiple of 10, first write zero in the units column.
2. Then multiply the three-digit number by the other digit of the multiple of 10, which is 4 here. Write the digits of the answer one place to the left. Start with the units as before: 6 × 4 = 24. Carry 2 across and write the 4.
3. Now multiply the tens digit and add the carried digit.
4. Then multiply the hundreds digit, add the carried digit and complete your answer.

		7	4	6
×			4	0
2	9	8	4	**0**
2	1	2		

Now you try

1

		3	7	8
×			4	0
1	5	1	2	**0**
1	3	3		

2

		8	2	5
×			9	0
7	4	2	5	**0**
7	2	4		

3

		9	6	7
×			3	0
2	9	0	1	**0**
2	2	2		

4

		6	8	4
×			8	0
5	4	7	2	**0**
5	6	3		

More practice

5

		6	3	2
×			6	0
3	7	9	2	0
3	1	1		

6

		7	6	1
×			7	0
5	3	2	7	0
5	4			

Set out these questions yourself to answer them.

7 469 × 80 = ?

TTh	Th	H	T	U
		4	6	9
×			8	0
3	7	5	2	0
3	5	7		

8 667 × 90 = ?

TTh	Th	H	T	U
		6	6	7
×			9	0
6	0	0	3	0
6	6	6		

Problem solving

Circle 'true' or 'false' for each question.

9 564 × 30 has the same answer as 423 × 40.

	5	6	4	
×		3	0	
1	6	9	2	0
1	1	1		

	4	2	3	
×		4	0	
1	6	9	2	0
1		1		

(true) / false

10 363 × 80 has the same answer as 967 × 30.

	3	6	3	
×		8	0	
2	9	0	4	0
2	5	2		

	9	6	7	
×		3	0	
2	9	0	1	0
2	2	2		

true / (false)

11 456 × 90 has the same answer as 684 × 60.

	4	5	6	
×		9	0	
4	1	0	4	0
4	5	5		

	6	8	4	
×		6	0	
4	1	0	4	0
4	5	2		

(true) / false

12 448 × 70 has an answer that is 400 more than 516 × 60.

	4	4	8	
×		7	0	
3	1	3	6	0
3	3	5		

	5	1	6	
×		6	0	
3	0	9	6	0
3		3		

	3	10	13	6	0
−	3	0	9	6	0
			4	0	0

(true) / false

How did I find Step 6? ☐ Easy ☐ OK ☐ Difficult

Step 7: Two- and three-digit × two-digit
no carrying in the addition

	H	T	U
	1	1	4
×		3	4

When multiplying by a two-digit number you multiply by the unit digit and the multiple of 10 separately. So, to multiply by 34, you multiply by 4 and then by 30 and then add the answers.

What to do

114 × 34 = ?

1. In the first row under the question multiply the top number by the units digit of the bottom number: 114 × 4. Remember to work from right to left and to carry if necessary.
2. In the next row multiply the top number by the multiple of 10. To multiply by 30, simply write a zero in the units column first and then multiply the top number by 3, carrying if necessary. 114 × 30 = 3420
3. Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. 456 + 3420 = 3876

	Th	H	T	U	
		1	1	4	
	×		3	4	
		4	5_1	6	← 114 × 4

		1	1	4	
	×		3	4	
		4	5_1	6	
+	3	4_1	2	**0**	← 114 × 30
	3	8	7	6	

Now you try

1

			7	2	
	×		6	3	
		2_2	1	6	← 72 × 3
+	4_4	3_1	2	**0**	← 72 × 60
	4	5	3	6	

2

			7	1	
	×		5	6	
		4_4	2	6	← 71 × 6
+	3_3	5	5	0	← 71 × 50
	3	9	7	6	

3

		1	1	6	
	×		2	3	
		3	4_1	8	← 116 × 3
+	2	3_1	2	0	← 116 × 20
	2	6	6	8	

4

		2	8	1	
	×		3	5	
	1_1	4_4	0	5	← 281 × 5
+	8_2	4	3	0	← 281 × 30
	9	8	3	5	

More practice

5

		1	0	6
	×		6	6
		6	3_{3}	6
+	6	3_{3}	6	0
	6	9	9	6

← 106 × 6
← 106 × 60

6

		2	3	4
	×		3	8
	1_{1}	8_{2}	7_{3}	2
+	7_{1}	0_{1}	2	0
	8	8	9	2

← 234 × 8
← 234 × 30

7

			6	7
	×		3	9
		6_{6}	0_{6}	3
+	2_{2}	0_{2}	1	0
	2	6	1	3

← 67 × 9
← 67 × 30

8

		1	0	4
	×		5	7
		7	2_{2}	8
+	5	2_{2}	0	0
	5	9	2	8

← 104 × 7
← 104 × 50

Set out these questions yourself to answer them.

9 71 × 66 = ?

	Th	H	T	U
			7	1
	×		6	6
		4_{4}	2	6
+	4_{4}	2	6	0
	4	6	8	6

10 203 × 43 = ?

	Th	H	T	U
		2	0	3
	×		4	3
		6	0	9
+	8	1_{1}	2	0
	8	7	2	9

Problem solving

11 If there are 52 weeks in every year, how many weeks are there in 28 years?

		5	2
×		2	8
	4_{4}	1_{1}	6
+	1_{1}	0	4	0
	1	4	5	6

1456 weeks

How did I find Step 7? ☐ Easy ☐ OK ☐ Difficult

Step 8: Two- and three-digit × two-digit with carrying in the addition

These are similar but, when you add your answers at the final stage, you might need to do some carrying.

What to do

1. First multiply the top number by the units digit of the bottom number: 251 × 6. Remember to work from right to left and to carry if necessary.
2. In the next row multiply the top number by 30. Simply write a zero in the units column first and then multiply the top number by 3. 251 × 30 = 7530
3. Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. But you might need to carry when adding. Here 5 hundreds + 5 hundreds = 10 hundreds so we carry 1 thousand. 1506 + 7530 = 9036

251 × 36 = ?

	Th	H	T	U	
		2	5	1	
	×		3	6	
	1_1	5_3	0	6	← 251 × 6

		2	5	1	
	×		3	6	
	1_1	5_3	0	6	
+	7_1	5	3	**0**	← 251 × 30
	9	0	3	6	
	1				

Now you try

1

		1	8	6	
	×		4	4	
		7_3	4_2	4	← 186 × 4
+	7_3	4_2	4	**0**	← 186 × 40
	8	1	8	4	
	1				

2

			9	4	
	×		5	7	
		6_6	5_2	8	← 94 × 7
+	4_4	7_2	0	**0**	← 94 × 50
	5	3	5	8	
	1				

3

		2	7	3	
	×		3	6	
	1_1	6_4	3_1	8	← 273 × 6
+	8_2	1	9	**0**	← 273 × 30
	9	8	2	8	
	1				

4

		1	3	8	
	×		6	9	
	1_1	2_3	4_7	2	← 138 × 9
+	8_2	2_4	8	0	← 138 × 60
	9	5	2	2	
	1				

More practice

5

		1	2	6
	×		7	6
		7_{1}	5_{3}	6
+	8_{1}	8_{4}	2	0
	9	5	7	6

← 126 × 6

← 126 × 70

6

		1	8	7
	×		2	8
	1_{1}	4_{6}	9_{5}	6
+	3_{1}	7_{1}	4	0
	5	2	3	6

← 187 × 8

← 187 × 10

Set out these questions yourself to answer them.

7 96 × 43 = ?

	Th	H	T	U
			9	6
	×		4	3
		2_{2}	8_{1}	8
+	3_{3}	8_{2}	4	0
	4	1	2	8

8 159 × 53 = ?

	Th	H	T	U
		1	5	9
	×		5	3
		4_{1}	7_{2}	7
+	7_{2}	9_{4}	5	0
	8	4	2	7

Problem solving

9 Answer each of these multiplications using this method.

11 × 99 = 1089

22 × 99 = 2178

33 × 99 = 3267

1 1	2 2	3 3
× 9 9	× 9 9	× 9 9
9 9	$1_{1}9_{1}8$	$2_{2}9_{2}7$
+ 9 9 0	+ $1_{1}9_{1}8$ 0	+ $2_{2}9_{2}7$ 0
1 0 8 9	2 1 7 8	3 2 6 7

Then look for patterns in the digits of the answers.
Can you use what you notice to predict the answer of 99 × 99?

9801

How did I find Step 8? ☐ Easy ☐ OK ☐ Difficult

Step 9: Three-digit × two-digit five-digit answers

Do these in the same way. Some of your answers may be five-digit numbers.

What to do

1 First multiply the top number by the units digit of the bottom number. 984 × 3 = 2952

2 In the next row multiply the top number by 70. 984 × 70 = 68 880

3 Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. You might need to carry when adding. 2952 + 68 880 = 71 832

984 × 73 = ?

	TTh	Th	H	T	U	
			9	8	4	
		×		7	3	
		2_2	9_2	5_1	2	← 984 × 3
+						

			9	8	4	
		×		7	3	
		2_2	9_2	5_1	2	
+	6_6	8_5	8_2	8	**0**	← 984 × 70
	7	1	8	3	2	
	1	1	1			

Now you try

1

			7	4	2	
		×		6	6	
		4_4	4_2	5_1	2	← 742 × 6
+	4_4	4_2	5_1	2	**0**	← 742 × 60
	4	8	9	7	2	

2

			3	6	5	
		×		8	9	
		3_3	2_5	8_4	5	← 365 × 9
+	2_2	9_5	2_4	0	**0**	← 365 × 80
	3	2	4	8	5	
	1					

3

			8	7	3	
		×		3	4	
		3_3	4_2	9_1	2	← 873 × 4
+	2_2	6_2	1	9	**0**	← 873 × 30
	2	9	6	8	2	
		1				

4

			9	5	8	
		×		7	8	
		7_7	6_4	6_6	4	← 958 × 8
+	6_6	7_4	0_5	6	0	← 958 × 70
	7	4	7	2	4	
	1		1			

More practice

Each of these questions has a missing digit. Can you work out which digit is missing in each?

5

			5	7	6
		×		4	6
		3_{3}	4_{4}	5_{3}	6
+	2_{2}	3_{3}	0_{2}	4	**0**
	2	6	4	9	6

6

			7	1	7
		×		8	9
		6_{6}	4_{1}	5_{6}	3
+	5_{5}	7_{1}	3_{5}	6	**0**
	6	3	8	1	3
	1		1		

Problem solving

7 Each box of pins contains 234 pins.
How many pins will be in 76 boxes?

	2	3	4	
×		7	6	
	1_{1}	4_{2}	0_{2}	4
+	1_{1}	6_{2}	3_{2}	8	0
	1	7	7	8	4

17784

8 What is 333 × 33?

	3	3	3	
×		3	3	
	9	9	9	
+	9	9	9	0
1	0	9	8	9
1	1	1		

10989

9 Which is larger: 578 × 46 or 678 × 39?

	5	7	8
×		4	6
	3_{3}	4_{4}	6_{4}	8
+	2_{2}	3_{3}	1_{3}	2	0
	2	6	5	8	8

	6	7	8
×		3	9
	6_{6}	1_{7}	0_{7}	2
+	2_{2}	0_{2}	3_{2}	4	0
	2	6	4	4	2

578 x 46, as 26588 is larger than 26442

How did I find Step 9? ☐ Easy ☐ OK ☐ Difficult

Step 10: Four- and five-digit × two-digit

Now you can try to multiply larger numbers by two-digit numbers.

What to do

1. First multiply the top number by the units digit of the bottom number, working from right to left as always. 12 504 × 3 = 37 512
2. In the next row multiply the top number by 50. 12 504 × 50 = 625 200
3. Finally add your two answers. Be careful not to add the carry marks you used when multiplying. Just add the digits of the two answers. You might need to carry when adding. 37 512 + 625 200 = 662 712

12 504 × 53 = ?

	HTh	TTh	Th	H	T	U	
		1	2	5	0	4	
	×				5	3	
		3	7_{1}	5	1_{1}	2	← 12 504 × 3
+							

		1	2	5	0	4	
	×				5	3	
		3	7_{1}	5	1_{1}	2	
+	6_{1}	2_{2}	5	2_{2}	0	**0**	← 12 504 × 50
	6	6	2	7	1	2	
		1					

Now you try

1

			3	1	4	6	
	×				2	4	
		1_{1}	2	5_{1}	8_{2}	4	← 3146 × 4
+		6	2	9_{1}	2	**0**	← 3146 × 20
		7	5	5	0	4	
			1	1			

2

			7	2	8	3	
	×				7	5	
		3_{3}	6_{1}	4_{4}	1_{1}	5	← 7283 × 5
+	5_{5}	0_{1}	9_{5}	8_{2}	1	**0**	← 7283 × 70
	5	4	6	2	2	5	
		1	1				

3

		1	1	1	1	1	
	×				3	6	
		6	6	6	6	6	← 11111 × 6
+	3	3	3	3	3	**0**	← 11111 × 30
	3	9	9	9	9	6	

4

		1	5	1	8	9	
	×				6	2	
		3_{1}	0	3_{1}	7_{1}	8	← 15 189 × 2
+	9_{3}	1_{1}	1_{5}	3_{5}	4	**0**	← 15 189 × 60
	9	4	1	7	1	8	
				1			

More practice

Set out these questions yourself to answer them.

5 1546 × 88 = ?

	HTh	TTh	Th	H	T	U
			1	5	4	6
	×				8	8
		1_{1}	2_{4}	3_{3}	6_{4}	8
+	1_{1}	2_{4}	3_{3}	6_{4}	8	0
	1	3	6	0	4	8
			1	1		

6 12463 × 33 = ?

	HTh	TTh	Th	H	T	U
		1	2	4	6	3
	×				3	3
		3	7_{1}	3_{1}	8	9
+	3	7_{1}	3_{1}	8	9	0
	4	1	1	2	7	9
	1	1	1	1		

Problem solving

7 Each letter stands for a digit in this multiplication.

Choose a digit to stand for the letter A, for example 2222 × 22 or 5555 × 55.

Find the answer and see if it matches the solution shown.

If not, using spare paper, try again with different digits.

Can you work out which digit the letter A stands for here?

			A	A	A	A
	×				A	A
		C	A	A	A	B
+	C	A	A	A	B	D
	A	C	A	A	D	B

A = 9

8 Peter earns £18423 each year. How many years will it take him to earn over one million pounds? Will it take him 33 years, 55 years or 77 years?

	1	8	4	2	3
×				3	3
	5_{2}	5_{1}	2	6	9
+	5_{2}	5_{1}	2	6	9	0
	6	0	7	9	5	9
	1			1		

	1	8	4	2	3	
×				5	5	
	9_{4}	2_{2}	1_{1}	1_{1}	5	
+	9_{4}	2_{2}	1_{1}	1_{1}	5	0
	1	0	1	3	2	6	5
	1	1					

55 years

How did I find Step 10? ☐ Easy ☐ OK ☐ Difficult

Check-up test 2 Up to five-digit × two-digit

Step 6

1

		6	8	9
×			3	0
2	0	6	7	0
	2	2	2	

2 412 × 80 = ?

		4	1	2
×			8	0
3	2	9	6	0
	3		1	

Steps 7 and 8

3

		1	2	4
	×		6	2
		2	4	8
+	7_{1}	4_{2}	4	0
	7	6	8	8

← 124 × 2

← 124 × 60

4 68 × 49 = ?

			6	8
	×		4	9
		6_{6}	1_{7}	2
+	2_{2}	7_{3}	2	0
	3	3	3	2
		1		

← 68 × 9

← 68 × 40

Step 9

5

			8	9	7
	×			5	7
		6_{6}	2_{6}	7_{4}	9
+	4_{4}	4_{4}	8_{3}	5	0
	5	1	1	2	9
	1	1	1		

6 638 × 36 = ?

			6	3	8
	×			3	6
		3_{3}	8_{2}	2_{4}	8
+	1_{1}	9_{1}	1_{2}	4	0
	2	2	9	6	8
		1			

Step 10

7

		1	5	8	6	3
	×				2	2
		3_{1}	1_{1}	7_{1}	2	6
+	3_{1}	1_{1}	7_{1}	2	6	0
	3	4	8	9	8	6

8

		1	2	4	7	2
	×				4	8
		9_{1}	9_{3}	7_{5}	7_{1}	6
+	4	9_{1}	8_{2}	8	8	0
	5	9	8	6	5	6
	1	1	1	1		

1 ☐

2 ☐

3 ☐

4 ☐

5 ☐

6 ☐

7 ☐

8 ☐

Steps 6 to 10 mixed

Use the grid below for working.

9 Lily was paid £24 per day for one month (31 days).
How much was she paid in total?

£744 ☐ 9

10 A car travels 23km for every litre of petrol.
How far can it travel using 175 litres?

4025km ☐ 10

11 Ajay worked for 246 days. He earns £56 per day.
How much did he earn?

£13776 ☐ 11

12 A bicycle factory makes 67 wheels each day.
How many wheels does it make in 365 days?

24455 ☐ 12

9)

$$\begin{array}{r} 24 \\ \times\ 31 \\ \hline 24 \\ +\ 720 \\ \hline 744 \end{array}$$

10)

$$\begin{array}{r} 175 \\ \times\ \ 23 \\ \hline 525 \\ +\ 3500 \\ \hline 4025 \\ {\scriptstyle 1} \end{array}$$

11)

$$\begin{array}{r} 246 \\ \times\ \ 56 \\ \hline 1476 \\ +\ 12300 \\ \hline 13776 \end{array}$$

12)

$$\begin{array}{r} 365 \\ \times\ \ 67 \\ \hline 2555 \\ +\ 21900 \\ \hline 24455 \\ {\scriptstyle 1} \end{array}$$

Total test score

Score	1	2	3	4	5	6	7	8	9	10	11	12
%	8	17	25	33	42	50	58	67	75	83	92	100

☐ 12

Step 11: Three-digit × three-digit multiples of 100

You learnt in Step 6 how to multiply by a multiple of 10. Here we'll look at multiplying by multiples of 100. They are just as easy!

	H	T	U
	9	7	1
×	5	0	0

What to do

971 × 500 = ?

1 When multiplying by a multiple of 100, multiply first by 100. To make a number 100 times larger we move the digits of a number two places to the left. Write two zeros in the units and tens columns first to multiply by 100.

HTh	TTh	Th	H	T	U
			9	7	1
		×	5	0	0
				0	**0**

2 Then just multiply the top number by the hundreds digit of the multiple of 100, which is 5 here. As always work from right to left and fill in the digits two places to the left.

			9	7	1
		×	5	0	0
4	8	5	5	**0**	**0**
4	3				

Now you try

1

			8	2	5
		×	3	0	0
2	4	7	5	**0**	**0**
2		1			

2

			9	6	8
		×	4	0	0
3	8	7	2	**0**	**0**
3	2	3			

3

			6	6	6
		×	9	0	0
5	9	9	4	**0**	**0**
5	5	5			

4

			3	4	7
		×	8	0	0
2	7	7	6	**0**	**0**
2	3	5			

5

			5	7	6
		×	7	0	0
4	0	3	2	0	0
4	5	4			

6

			8	0	6
		×	6	0	0
4	8	3	6	0	0
4		3			

More practice

Each of these answers has an error. Write the error that has been made and give the correct answer.

7

			8	5	3
		×	7	0	0
	5	9	7	1	0
	5	3	2		

Error: This is the answer to 853 × 70.

Correct answer: 597 100

8

			4	4	4
		×	9	0	0
3	9	6	6	0	0
3	3	3			

Error: One of the carried threes was not added on.

Correct answer: 399 600

Problem solving

9 A school receives £400 per pupil to pay for equipment. If there are 128 pupils at the school, how much does it receive altogether?

		1	2	8
	×	4	0	0
5	1	2	0	0
1	3			

£51 200

10 Which is larger: 562 × 300 or 256 × 700?

		5	6	2
	×	3	0	0
1	6	8	6	0	0
1	1				

		2	5	6
	×	7	0	0
1	7	9	2	0	0
1	3	4			

256 × 700, as 168 600 is smaller than 179 200

11 There is a long fence around an airport. Each fence panel is 500cm wide. If there are 852 panels around the airport, what is the total length of the fence?

		8	5	2
	×	5	0	0
4	2	6	0	0	0
4	2	1			

426 000cm or 4260m

12 Bags of flour weigh 800g. How heavy is 467 bags of flour altogether?

		4	6	7
	×	8	0	0
3	7	3	6	0	0
3	5	5			

373 600g or 373.6kg

How did I find Step 11? ☐ Easy ☐ OK ☐ Difficult

Step 12: Three-digit × three-digit multiples of 10

When multiplying numbers by three-digit multiples of 10 (such as 430 or 790), split the multiple into two parts (such as 30 and 400 or 90 and 700). Multiply the parts separately and add them.

	H	T	U
	3	8	5
×	7	9	0

What to do

385 × 790 = ?

1 Split the bottom number into a multiple of 10 and a multiple of 100. Think of 790 as 90 and 700. Start by multiplying the top number by 90. Simply write a zero in the units column first and multiply the top number by 9.

	HTh	TTh	Th	H	T	U	
				3	8	5	
			×	7	9	0	
			3_3	4_7	6_4	5	**0** ← 385 × 90

2 In the second row, multiply the top number by the **hundreds** digit. So here multiply 385 by 700. Simply write two zeros in the units and tens columns and then multiply the top number by 7.

3 Finally add your two answers. Be careful **not** to add the carry marks you used when multiplying. Just add the digits of the two answers. 34650 + 269500 = 304150

				3	8	5	
			×	7	9	0	
		3_3	4_7	6_4	5	**0**	
+	2_2	6_5	9_3	5	**0**	**0**	← 385 × 700
	3	0	4	1	5	0	
		1	1	1			

Now you try

1

				4	1	3	
			×	3	5	0	
		2_2	0	6_1	5	**0**	← 413 × 50
+	1_1	2	3	9	**0**	**0**	← 413 × 300
	1	4	4	5	5	0	
			1				

2

			4	8	7	
		×	6	6	0	
	2_2	9_5	2_4	2	**0**	← 487 × 60
+	2_2	9_5	2_4	2	**0**	**0** ← 487 × 600
	3	2	1	4	2	0
	1	1				

More practice

3

				3	4	2
			×	2	6	0
		2_{2}	0_{2}	5_{1}	2	0
+		6	8	4	0	0
		8	8	9	2	0

4

				5	3	9
			×	7	4	0
		2_{2}	1_{1}	5_{3}	6	0
+	3_{3}	7_{2}	7_{6}	3	0	0
	3	9	8	8	6	0

Set out these questions yourself to answer them.

5 567 × 380 = ?

	HTh	TTh	Th	H	T	U
				5	6	7
			×	3	8	0
		4_{4}	5_{5}	3_{5}	6	0
+	1_{1}	7_{2}	0_{2}	1	0	0
	2	1	5	4	6	0
	1					

6 914 × 870 = ?

	HTh	TTh	Th	H	T	U
				9	1	4
			×	8	7	0
		6_{6}	3	9_{2}	8	0
+	7_{7}	3_{1}	1_{3}	2	0	0
	7	9	5	1	8	0
			1			

Problem solving

7 A rectangular carpet has a length of 153cm and a width of 250cm. What is its area?

	1	5	3	
×	2	5	0	
7_{2}	6_{1}	5	0	
+ 3_{1}	0	6	0	0
3	8	2	5	0
	1			

38 250cm²

8 54 180 ÷ 420 = 129

Write in the missing number.

	1	2	9
×	4	2	0
2	5_{1}	8	0
+ 5_{1}	1_{3}	6	0	0
5	4	1	8	0
	1			

How did I find Step 12? ☐ Easy ☐ OK ☐ Difficult

Step 13: Multiplying two three-digit numbers
easier tables facts

	H	T	U
	2	5	1
×	2	4	3

Now you should be feeling confident to put it all together and multiply three-digit numbers. Simply split the bottom number into a one-digit number, a multiple of 10 and a multiple of 100 and multiply by each part separately.

What to do

1. Multiply the top number by the **units** digit of the bottom number: 251 × 3. Remember to work from right to left and carry if necessary.
2. In the next row multiply the top number by the **tens** digit: 251 × 40. Simply write a zero in the units column first and multiply the top number by 4.
3. In the third row, multiply the top number by the **hundreds** digit: 251 × 200. Simply write two zeros in the units and tens columns and then multiply the top number by 2.
4. Finally add your three answers.

251 × 243 = ?

	TTh	Th	H	T	U	
			2	5	1	
		×	2	4	3	
			7_{1}	5	3	← 251 × 3
		1_{1} 0_{2}	0	4	**0**	← 251 × 40
+		5_{1}	0	2	**0**	**0** ← 251 × 200
		6	0	9	9	3

Now you try

1

	TTh	Th	H	T	U	
			4	2	1	
		×	2	2	3	
		1_{1}	2	6	3	← 421 × 3
		8	4	2	**0**	← 421 × 20
+	8	4	2	**0**	**0**	← 421 × 200
	9	3	8	8	3	
	1					

2

	TTh	Th	H	T	U	
			2	5	3	
		×	1	4	4	
		1_{1}	0_{2}	1_{1}	2	← 253 × 4
	1_{1}	0_{2}	1_{1}	2	**0**	← 253 × 40
+	2	5	3	**0**	**0**	← 253 × 100
	3	6	4	3	2	

What have 421 × 20 and 421 × 200 got in common?

More practice

3

			3	2	1
		×	1	3	5
		1 1	6 1	0	5
		9	6	3	0
+	3	2	1	0	0
	4	3	3	3	5
	1	1			

4

				4	2	4
			×	3	3	3
			1 1	2	7 1	2
		1 1	2	7 1	2	0
+	1 1	2	7 1	2	0	0
	1	4	1	1	9	2
		1	1			

Set out these questions yourself to answer them.

5 543 × 245 = ?

	HTh	TTh	Th	H	T	U
				5	4	3
			×	2	4	5
			2 2	7 2	1 1	5
		2 2	1 1	7 1	2	0
+	1 1	0	8	6	0	0
	1	3	3	0	3	5
		1	2			

6 542 × 355 = ?

	HTh	TTh	Th	H	T	U
				5	4	2
			×	3	5	5
			2 2	7 2	1 1	0
		2 2	7 2	1 1	0	0
+	1 1	6 1	2	6	0	0
	1	9	2	4	1	0
		1	1			

Problem solving

7 Find the answer to 331 × 214.

	3	3	1	
×	2	1	4	
1 1	3 1	2	4	
3	3	1	0	
+ 6	6	2	0	0
7	0	8	3	4
1				

70 834

8 A factory makes 621 TVs every day.
How many TVs are made in 365 days?

		6	2	1	
×		3	6	5	
	3 3	1 1	0	5	
	3 3	7 1	2	6	0
+	1 1	8	6	3	0	0
	2	2	6	6	6	5
	1	1				

226 665

How did I find Step 13? ☐ Easy ☐ OK ☐ Difficult

Step 14: Multiplying two three-digit numbers
harder tables facts

These questions include harder tables facts but are done in the same way as in Step 13. Some people start with the multiple of 100. The order you multiply each part does not matter, as the final answer will be the same when you add the parts.

What to do

1 Remember to multiply each part separately, adding zeros and carrying as necessary.

2 Add your three answers. Be careful not to add the carry marks you used when multiplying.

879 × 676 = ?

	HTh	TTh	Th	H	T	U	
				8	7	9	
			×	6	7	6	
			5_5	2_4	7_5	4	← 879 × 6
		6_6	1_5	5_6	3	**0**	← 879 × 70
+	5_5	2_4	7_5	4	**0**	**0**	← 879 × 600
	5	9	4	2	0	4	
		1	1	1			

Now you try

1

				9	9	6
			×	5	7	3
			2_2	9_2	8_1	8
		6_6	9_6	7_4	2	**0**
+	4_4	9_4	8_3	0	**0**	**0**
	5	7	0	7	0	8
	1	2	1	1		

2

				6	7	6
			×	1	8	8
			5_5	4_6	0_4	8
		5_5	4_6	0_4	8	**0**
+		6	7	6	**0**	**0**
	1	2	7	0	8	8
	1	1	1			

3

				8	4	7
			×	6	6	9
			7_7	6_4	2_6	3
		5_5	0_2	8_4	2	**0**
+	5_5	0_2	8_4	2	**0**	**0**
	5	6	6	6	4	3
		1	1			

4

				4	9	6
			×	7	2	7
			3_3	4_6	7_4	2
			9_1	9_1	2	**0**
+	3_3	4_6	7_4	2	**0**	**0**
	3	6	0	5	9	2
		2	1			

More practice

Set out these questions yourself to answer them.

5 687 × 395 = ?

	HTh	TTh	Th	H	T	U
				6	8	7
			×	3	9	5
			3_3	4_4	3_3	5
		6_6	1_7	8_6	3	0
+	2_2	0_2	6_2	1	0	0
	2	7	1	3	6	5
		1	1			

6 617 × 577 = ?

	HTh	TTh	Th	H	T	U
				6	1	7
			×	5	7	7
			4_4	3_1	1_4	9
		4_4	3_1	1_4	9	0
+	3_3	0	8_3	5	0	0
	3	5	6	0	0	9
		1	1	1		

Problem solving

7 Find the missing number in this division: 272 205 ÷ 345 = 789
Also write the answer in words.

		7	8	9	
	×	3	4	5	
	3_3	9_4	4_4	5	
3_3	1_3	5_3	6	0	
+ 2_2	3_2	6_2	7	0	0
2	7	2	2	0	5
	1	2	1		

Two hundred and seventy-two thousand, two hundred and five.

8 A farmer has a field with a length of 653m and a width of 478m.
What is the area of the field?

		6	5	3	
	×	4	7	8	
	5_5	2_4	2_2	4	
4_4	5_3	7_2	1	0	
+ 2_2	6_2	1_1	2	0	0
3	1	2	1	3	4
	1	1	1		

312 134m²

How did I find Step 14? ☐ Easy ☐ OK ☐ Difficult

Check-up test 3 Three-digit × three-digit

Step 11

1

			6	8	4
		×	3	0	0
2	0	5	2	0	0
2	2	1			

2 458 × 800 = ?

			4	5	8
		×	8	0	0
3	6	6	4	0	0
3	4	6			

Step 12

3

				4	6	6
			×	8	3	0
		1_{1}	3_{1}	9_{1}	8	0
+	3_{3}	7_{5}	2_{4}	8	0	0
	3	8	6	7	8	0
			1			

4 917 × 570 = ?

				9	1	7
			×	5	7	0
		6_{6}	4_{1}	1_{4}	9	0
+	4_{4}	5	8_{3}	5	0	0
	5	2	2	6	9	0
	1	1				

Steps 13 and 14

5

				4	2	6
			×	3	3	3
			1_{1}	2	7_{1}	8
		1_{1}	2	7_{1}	8	0
+	1_{1}	2	7_{1}	8	0	0
	1	4	1	8	5	8
		1	1	1		

6 687 × 862 = ?

				6	8	7
			×	8	6	2
			1_{1}	3_{1}	7_{1}	4
		4_{4}	1_{5}	2_{4}	2	0
+	5_{5}	4_{6}	9_{5}	6	0	0
	5	9	2	1	9	4
		1	1			

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6

Steps 11 to 14 mixed

Use the grid below for working.

7 There are 586 pupils in a school. Each raises £180 for charity. How much is raised in total?

£105 480 ☐ 7

8 A concert venue sells 450 tickets per performance. If there are 246 performances in a year and all the tickets are sold, how many tickets are sold in total?

110 700 ☐ 8

9 A fishing boat is allowed to catch 476kg of fish per day. How many kilograms of fish is it allowed to catch each year (365 days)?

173 740kg ☐ 9

10 On a mobile phone network 412 mobiles made 306 minutes of calls each. How many minutes in total is this?

126 072 mins ☐ 10

7)				5	8	6				8)				2	4	6	
			×	1	8	0							×	4	5	0	
		4_4	6_6	8_4	8	0						1_1	2_2	3_3	0	0	
	+	5	8	6	0	0					+	9_1	8_2	4	0	0	
	1	0	5	4	8	0					1	1	0	7	0	0	
	1	1		1							1	1					
9)					4	7	6			10)					4	1	2
				×	3	6	5							×	3	0	6
				2_2	3_3	8_3	0							2_2	4	7_1	2
			2_2	8_4	5_3	6	0				+	1_1	2	3	6	0	0
	+	1_1	4_2	2_1	8	0	0					1	2	6	0	7	2
		1	7	3	7	4	0							1			
			1	1	1												

Total test score

Score	1	2	3	4	5	6	7	8	9	10
%	10	20	30	40	50	60	70	80	90	100

10

Step 15: Simple decimals × one-digit

Now that you can multiply whole numbers, multiplying decimals is almost as easy! All you need to do is to remember how many times smaller a decimal is than its related whole number.

6.8 × 3

What to do

1. Write the multiplication question as a new question **without** a decimal point.
2. Answer the new whole number question. 68 × 3 = 204
3. Decide how many times smaller the decimal question is than the new whole number question. Here 6.8 is ten times smaller than 68. So the answer to the decimal question will be ten times smaller than the whole number question.
4. Finally adjust the answer so that it matches the original question. To divide a number by 10, move the digits one place to the right. To divide by 100, move the digits two places to the right.

6.8 × 3 = ?

68 × 3 = ?

	H	T	U
		6	8
×			3
	2	0	4
	2	2	

6.8 × 3 is ten times smaller than 68 × 3, so 6.8 × 3 = 20.4

Now you try

1 4.7 × 3 = ?

		4	7
×			3
	1	4	1
	1	2	

4.7 × 3 is [10] times smaller than 47 × 3,

so 4.7 × 3 = [14.1]

2 0.35 × 5 = ?

		3	5
×			5
	1	7	5
	1	2	

0.35 × 5 is [100] times smaller than 35 × 5,

so 0.35 × 5 = [1.75]

3 43 × 0.4 = ?

		4	3
×			4
	1	7	2
	1	1	

43 × 0.4 is [10] times smaller than 43 × 4,

so 43 × 0.4 = [17.2]

More practice

Set out these questions yourself to answer them.

4 0.36 × 6 = ?

		3	6
×			6
	2	1	6
	2	3	

0.36 × 6 is 100 times smaller than 36 × 6, so 0.36 × 6 = 2.16

5 9.7 × 7 = ?

		9	7
×			7
	6	7	9
	6	4	

9.7 × 7 is 10 times smaller than 97 × 7, so 9.7 × 7 = 67.9

6 29 × 0.8 = ?

		2	9
×			8
	2	3	2
	2	7	

29 × 0.8 is 10 times smaller than 29 × 8, so 29 × 0.8 = 23.2

Problem solving

7 A bottle can hold 0.7 litres of water. How many litres would 18 of these bottles hold?

	1	8
×		7
1	2	6
1	5	

18 × 0.7 is ten times smaller than 18 × 7, so 18 × 0.7 = 12.6

12.6 litres

8 A car travels 9.3km on a litre of petrol. How far will it travel on 8 litres of petrol?

	9	3
×		8
7	4	4
7	2	

9.3 × 8 is ten times smaller than 93 × 8, so 9.3 × 8 = 74.4

74.4km

9 It takes a printer 6.7 seconds to print a photo. How many seconds will it take to print five of these photos?

	6	7
×		5
3	3	5
3	3	

6.7 × 5 is ten times smaller than 67 × 5, so 6.7 × 5 = 33.5

33.5 seconds

10 Each fence panel is 0.89 metres long. How long are eight of these panels altogether?

	8	9
×		8
7	1	2
7	7	

0.89 × 8 is 100 times smaller than 89 × 8, so 0.89 × 8 = 7.12

7.12m

How did I find Step 15? ☐ Easy ☐ OK ☐ Difficult

Step 16: Simple decimals × two-digit

In the same way, you can now multiply decimals using long multiplication. 7.4 × 34

What to do

1 Write the multiplication question as a new question without a decimal point.

2 Use the written method to answer the new whole number question. 74 × 34 = 2516

3 Decide how many times smaller the decimal question is than the new whole number question. Here 7.4 is ten times smaller than 74, so the answer to the decimal question will be ten times smaller than the whole number question.

4 Finally adjust the answer so that it matches the original question. Here make 2516 ten times smaller than the whole number question. 2516 ÷ 10 = 251.6

7.4 × 34 = ?

74 × 34 = ?

	Th	H	T	U	
			7	4	
	×		3	4	
		2_2	9_1	6	← 74 × 4
+	2_2	2_1	2	**0**	← 74 × 30
	2	5	1	6	← 296 + 2220
		1			

7.4 × 34 is ten times smaller than 74 × 34, so 7.4 × 34 = 251.6

Now you try

1 4.5 × 38 = ?

			4	5
	×		3	8
		3_3	6_4	0
+	1_1	3_1	5	**0**
	1	7	1	0
		1		

4.5 × 38 is [10] times smaller than 45 × 38, so 4.5 × 38 = [171]

2 0.81 × 56 = ?

			8	1
	×		5	6
		4_4	8	6
+	4_4	0	5	0
	4	5	3	6
		1		

0.81 × 56 is [100] times smaller than 81 × 56, so 0.81 × 56 = [45.36]

More practice

Set out these questions yourself to answer them.

3 7.2 × 63 = ?

			7	2
	×		6	3
		2_2	1	6
+	4_4	3_1	2	0
	4	5	3	6

7.2 × 63 is [10] times smaller than 72 × 63, so 7.2 × 63 = [453.6]

4 27 × 8.4 = ?

			2	7
	×		8	4
		1_1	0_2	8
+	2_2	1_5	6	0
	2	2	6	8

27 × 8.4 is [10] times smaller than 27 × 84, so 27 × 8.4 = [226.8]

Problem solving

5 71 × 6.6 = ?

			7	1
	×		6	6
		4_4	2	6
+	4_4	2	6	0
	4	6	8	6

71 × 6.6 is [10] times smaller than 71 × 66, so 71 × 6.6 = [468.6]

6 2.03 × 43 = ?

		2	0	3
	×		4	3
		6	0	9
+	8	1_1	2	0
	8	7	2	9

2.03 × 43 is [100] times smaller than 203 × 43, so 2.03 × 43 = [87.29]

How did I find Step 16? ☐ Easy ☐ OK ☐ Difficult

Step 17: Multiplying two decimals with one decimal place

When multiplying two decimals together, adjust the answer in the same way. For example, 5.1 × 3.6 is 100 times smaller than 51 × 36. So you find the answer to 51 × 36 and then divide by 100.

5.1 × 3.6

What to do

1. Write the question without the decimal points.
2. Answer the new whole number question.
3. Decide how many times smaller the original question is and adjust the answer.
4. A useful way to check if you have put the decimal point in the correct place is to count up the number of digits after the decimal points in the question and then check that the same number of digits are after the decimal point in the answer: 5.1 × 3.6 = 18.36

5.1 × 3.6 = ?

51 × 36 = ?

	Th	H	T	U
			5	1
	×		3	6
		3_3	0	6
+	1_1	5	3	**0**
	1	8	3	6

5.1 × 3.6 is 100 times smaller than 51 × 36, so 5.1 × 3.6 = 18.36

Now you try

1 2.5 × 5.6 = ?

			2	5
	×		5	6
		1_1	5_3	0
+	1_1	2_2	5	**0**
	1	4	0	0

1

2.5 × 5.6 is 100 times smaller than 25 × 56, so 2.5 × 5.6 = 14.00 or 14

2 3.2 × 9.8 = ?

			3	2
	×		9	8
		2_2	5_1	6
+	2_2	8_1	8	0
	3	1	3	6

1 1

3.2 × 9.8 is 100 times smaller than 32 × 98, so 3.2 × 9.8 = 31.36

More practice

Set out these questions yourself to answer them.

3 8.1 × 3.7 = ?

	Th	H	T	U
			8	1
	×		3	7
		5_{5}	6	7
+	2_{2}	4	3	0
	2	9	9	7

8.1 × 3.7 is [100] times smaller than 81 × 37, so 8.1 × 3.7 = [29.97]

4 7.6 × 4.3 = ?

	Th	H	T	U
			7	6
	×		4	3
		2_{2}	2_{1}	8
+	3_{3}	0_{2}	4	0
	3	2	6	8

7.6 × 4.3 is [100] times smaller than 76 × 43, so 7.6 × 4.3 = [32.68]

Problem solving

5 Find the product of 6.3 and 3.9.

	6	3	
×	3	9	
5_{5}	6_{2}	7	
+ 1_{1}	8	9	0
2	4	5	7

6.3 x 3.9 is 100 times smaller than 63 x 39, so 6.3 x 3.9 = 24.57

24.57

6 A rug has a length of 4.3m and a width of 2.8m. What is the area of the rug?

	4	3	
×	2	8	
3_{3}	4_{2}	4	
+	8	6	0
1	2	0	4

4.3 x 2.8 is 100 times smaller than 43 x 28, so 4.3 x 2.8 = 12.04

12.04m²

How did I find Step 17? ☐ Easy ☐ OK ☐ Difficult

Step 18: Multiplying two decimals with one or two decimal places

Well done – you are at the last step! These questions are similar to the last few steps, but sometimes may involve numbers that are 1000 times smaller than the whole number questions, for example 9.84 × 7.3 is 1000 times smaller than 984 × 73.

9.84 × 7.3

What to do

9.84 × 7.3 = ?

1 Write the question without the decimal points.

984 × 73 = ?

2 Answer the whole number question.

3 Decide how many times smaller the original question is and adjust the answer.

4 Count up the number of digits after the decimal points in the question and check that the answer has the same number: 9.84 × 7.3 = 71.832

	TTh	Th	H	T	U
			9	8	4
		×		7	3
		2_2	9_2	5_1	2
+	6_6	8_5	8_2	8	**0**
	7	1	8	3	2
	1	1	1		

9.84 × 7.3 is 1000 times smaller than 984 × 73, so 9.84 × 7.3 = 71.832

Now you try

1 1.24 × 5.6 = ?

		1	2	4
	×		5	6
		7_1	4_2	4
+	6_1	2_2	0	**0**
	6	9	4	4

1.24 × 5.6 is [1000] times smaller than 124 × 56, so 1.24 × 5.6 = [6.944]

2 3.35 × 9.8 = ?

			3	3	5
		×		9	8
		2_2	6_2	8_4	0
+	3_3	0_3	1_4	5	0
	3	2	8	3	0
			1		

3.35 × 9.8 is [1000] times smaller than 335 × 98, so 3.35 × 9.8 = [32.830 or 32.83]

More practice

Write the missing decimal in each question using these whole number calculations to help.

			5	7	6
		×		4	6
		3_3	4_4	5_3	6
+	2_2	3_3	0_2	4	**0**
	2	6	4	9	6

			7	1	7
		×		8	9
		6_6	4_1	5_6	3
+	5_5	7_1	3_5	6	**0**
	6	3	8	1	3

3 5.76 × 4.6 = 26.496

4 7.17 × 8.9 = 63.813

5 57.6 × 4.6 = 264.96

6 71.7 × 8.9 = 638.13

7 576 × 4.6 = 2649.6

8 71.7 × 89 = 6381.3

Problem solving

9 Which is larger: 57.8 × 4.6 or 6.78 × 3.9?

57.8 × 4.6, as 265.88 is larger than 26.442

		5	7	8
	×		4	6
		3_3	4_4	6_4	8
+	2_2	3_3	1_3	2	0
	2	6	5	8	8

		6	7	8
	×		3	9
		6_6	1_7	0_7	2
+	2_2	0_2	3_2	4	0
	2	6	4	4	2

10 What is 3.33 × 3.3?

		3	3	3
	×		3	3
		9	9	9
+	9	9	9	0
	1	0	9	8	9

10.989

11 What is 6.66 × 6.6?

		6	6	6
	×		6	6
		3_3	9_3	9_3	6
+	3_3	9_3	9_3	6	0
	4	3	9	5	6

43.956

How did I find Step 18? ☐ Easy ☐ OK ☐ Difficult

Final test Long multiplication of whole numbers and decimals

Steps 15 to 18

1 2.7 × 6 = ?

		2	7
×			6
	1	6	2
	1	4	

2.7 × 6 is [10] times smaller than 27 × 6,

so 2.7 × 6 = [16.2]

2 0.38 × 5 = ?

		3	8
×			5
	1	9	0
	1	4	

0.38 × 5 is [100] times smaller than 38 × 5,

so 0.38 × 5 = [1.90 or 1.9]

[ ] 1
[ ] 2

3 27 × 2.6 = ?

			2	7
	×		2	6
		1_1	6_4	2
+		5_1	4	0
		7	0	2

27 × 2.6 is [10] times smaller than 27 × 26,

so 27 × 2.6 = [70.2]

4 8.35 × 6.1 = ?

			8	3	5
		×		6	1
			8	3	5
+	5_5	0_2	1_3	0	0
	5	0	9	3	5

8.35 × 6.1 is [1000] times smaller than 835 × 61,

so 8.35 × 6.1 = [50.935]

[ ] 3
[ ] 4

Steps 1 to 18 mixed

Use spare paper for working.

5 Find the product of 5137 and 20.

102 740 ☐ 5

6 A cinema has 66 seats in each row. If there are 38 rows, how many seats are there in total?

2508 ☐ 6

7 There are 16 biscuits in each pack. How many biscuits are there in 86 packs?

1376 ☐ 7

8 Chloe runs on 143 days. If each run is 13km, how far does she run in total?

1859km ☐ 8

9 How many hours are there in 365 days?

8760 hours ☐ 9

10 What is 444 × 44?

19 536 ☐ 10

11 A plane travels an average of 756km each day for 230 days a year. How many kilometres is this?

173 880km ☐ 11

12 A farmer has a field with a length of 654m and a width of 448m. What is the area of the field?

292 992m^2 ☐ 12

13 Find the product of 3.62 and 3.1.

11.222 ☐ 13

14 A shop sold 37 computers in one month. Each computer sold for £389. How much did the shop get for them?

£14 393 ☐ 14

15 What is 637 × 588?

374 556 ☐ 15

16 What is 5.55 × 5.5?

30.525 ☐ 16

Total test score

Score	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
%	6	13	19	25	31	38	44	50	56	63	69	75	81	88	94	100

☐ 16