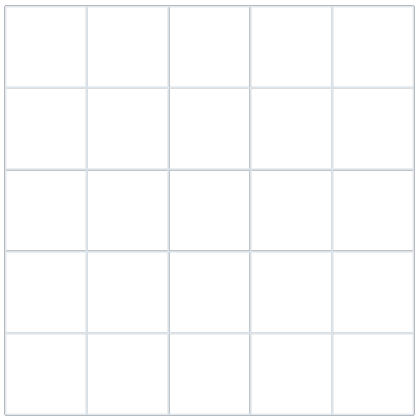
Year 4 - Column Addition — Lesson Guide

Step 1

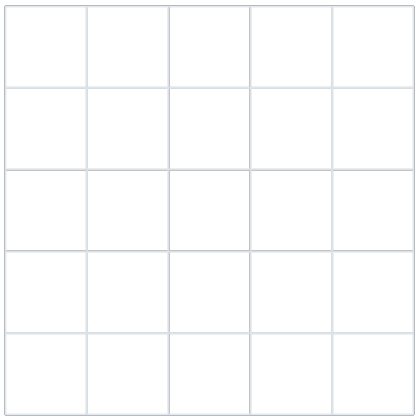
2,346 + 578 = ☐



First, we circle the plus sign so we know to add the two parts and find their sum.

Step 2

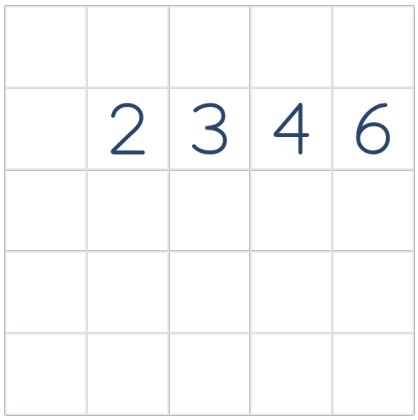
2,346 + 578 = ☐



First, check whether a mental method would be quicker. Look at the ones. 6 ones and 8 ones make 14 ones. We can exchange 10 ones for 1 ten. Column addition keeps the place values lined up.

Step 3

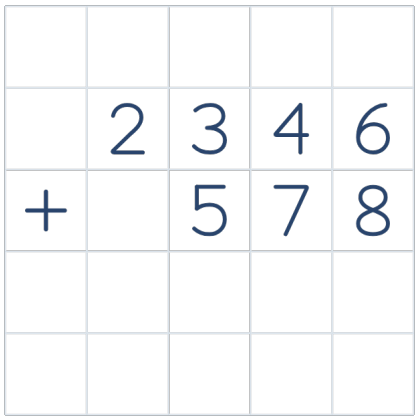
2,346 + 578 = ☐



The first digit of 2,346, 2, is in the thousands column, so we start there. Now, we write 2,346 in the correct columns, with one digit in each box.

Step 4

2,346 + 578 = ☐

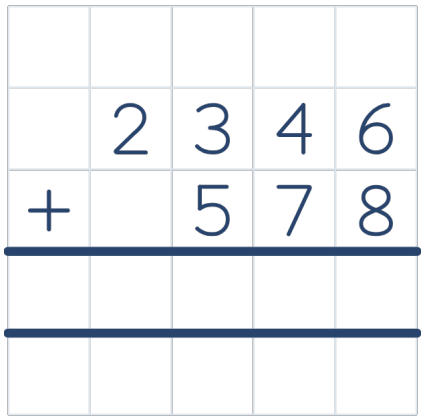


Remember: There must always be a digit in the ones column, even if it is a 0.

Then, we write a plus sign on the left of the calculation. 578 has three digits, so we start with 5 in the hundreds column. We write 578 in the correct columns, with one digit in each box.

Step 5

2,346 + 578 = ☐



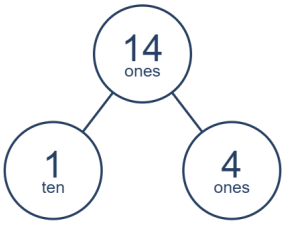
Draw a line under 578. Leave one row for the sum, then draw the second line below that row. Write exchanges below the second line.

Step 6

2,346 + 578 = ☐

	2	3	4	6
+		5	7	8

First, we add the ones, the smallest place-value column. 6 ones + 8 ones = 14 ones. As we can only write one digit per box, we partition 14 ones into 1 ten and 4 ones.



Step 7

2,346 + 578 = ☐

	2	3	4	6
+		5	7	8
				4
			1	

We write the 1 ten in the tens column underneath the answer, ready for the next step. Then we write the remaining 4 ones in the ones answer box.

Step 8

2,346 + 578 = ☐

	2	3	4	6
+		5	7	8
				4
			1	

Remember: Check both places. Keep the small 1 below the tens column and the 4 in the ones answer square.

The small 1 below the tens column stands for 1 ten. The 4 in the ones answer square stands for 4 ones. Together, they make 14 ones.

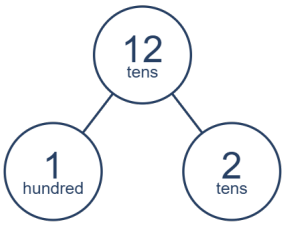
Step 9

2,346 + 578 = ☐

	2	3	4	6
+		5	7	8
				4
			1	

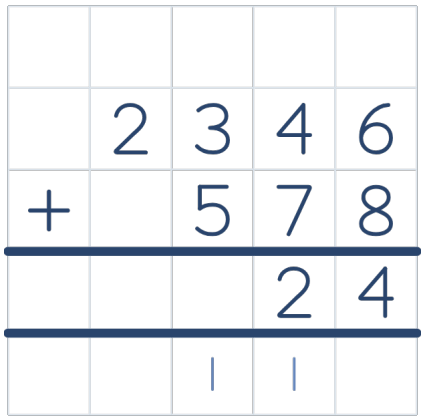
Remember: Look below the column you are working on. Add the exchanged amount written there.

Next, we add the tens. 4 tens + 7 tens = 11 tens. Add the 1 exchanged ten shown by the small 1 below the tens column. 11 tens + 1 exchanged ten = 12 tens. As we can only write one digit per box, we partition 12 tens into 1 hundred and 2 tens.



Step 10

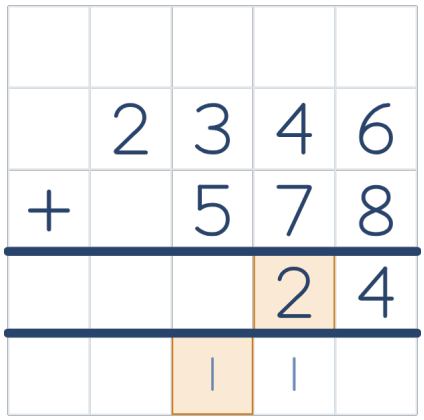
2,346 + 578 = ☐



We write the 1 hundred in the hundreds column underneath the answer, ready for the next step. Then we write the remaining 2 tens in the tens answer box.

Step 11

2,346 + 578 = ☐

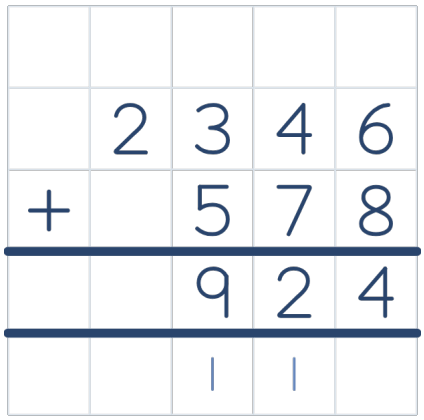


Remember: Check both places. Keep the small 1 below the hundreds column and the 2 in the tens answer square.

The small 1 below the hundreds column stands for 1 hundred. The 2 in the tens answer square stands for 2 tens. Together, they make 12 tens.

Step 12

2,346 + 578 = ☐

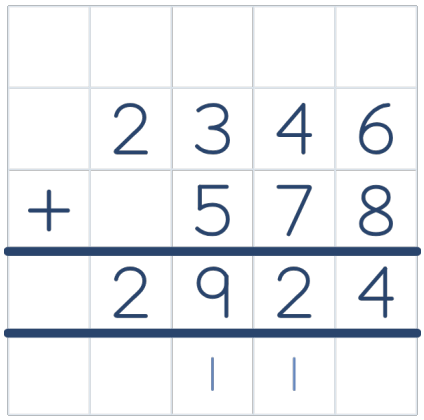


Remember: Look below the column you are working on. Add the exchanged amount written there.

Next, we add the hundreds. 3 hundreds + 5 hundreds = 8 hundreds. Add the 1 exchanged hundred shown by the small 1 below the hundreds column. 8 hundreds + 1 exchanged hundred = 9 hundreds. We write 9 in the hundreds column. No exchange is needed this time.

Step 13

2,346 + 578 = ☐

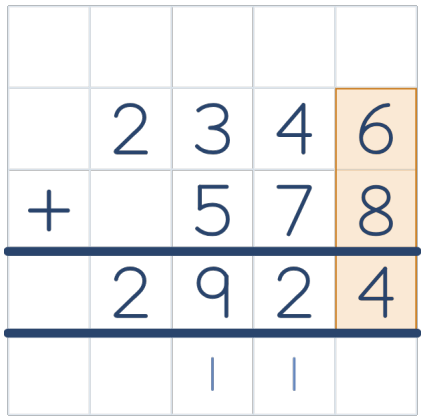


Remember: Check whether there is an exchange to add from the previous column. Include it before writing this answer.

Look at the thousands column. The lower square is empty because 578 has no thousands. Use 0 thousands for 578. 2 thousands + 0 thousands = 2 thousands. We write 2 in the thousands column. No exchange is needed this time.

Step 14

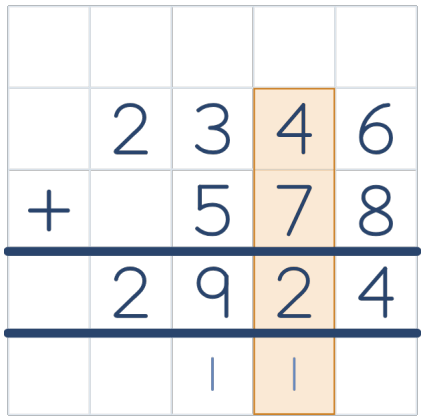
2,346 + 578 = ☐



Our sum is 2,924. Before we copy our answer into the answer box, let's check each column, including the exchanges. First, we check the ones: 6 + 8 = 14. We have correctly recorded 1 ten underneath the answer and 4 ones in the ones answer box.

Step 15

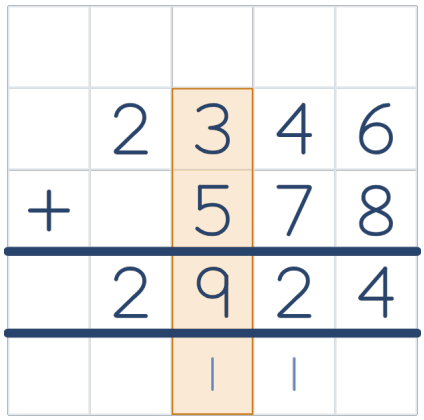
2,346 + 578 = ☐



Next, we check the tens, including the exchanged ten: 4 + 7 + 1 = 12. We have correctly recorded 1 hundred underneath the answer and 2 tens in the tens answer box.

Step 16

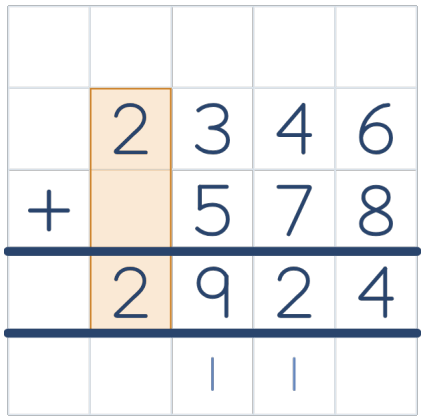
2,346 + 578 = ☐



Then, we check the hundreds, including the exchanged hundred: 3 + 5 + 1 = 9. We have correctly included the exchanged hundred and written 9 in the hundreds answer box.

Step 17

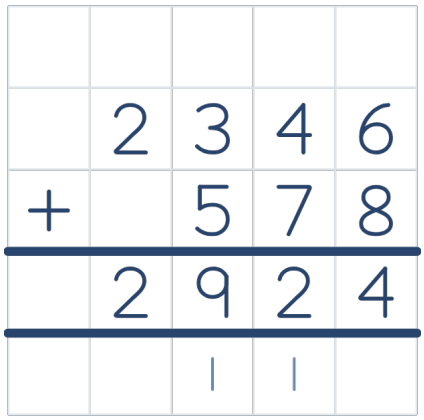
2,346 + 578 = ☐



Finally, we check the thousands: 2 + 0 = 2. We have correctly written 2 in the thousands answer box.

Step 18

2,346 + 578 = **2924**

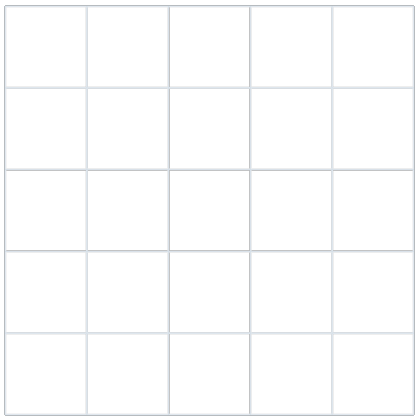


The sum is 2924. Copy 2924 into the answer box. Make sure you copy the answer correctly.

Year 4 - Column Subtraction — Lesson Guide

Step 1

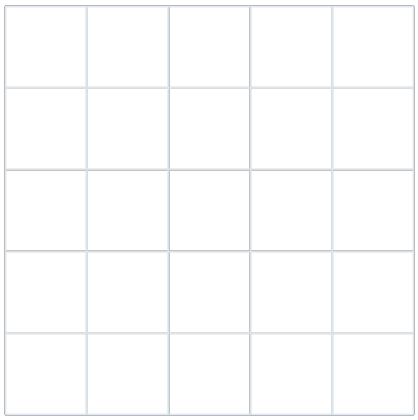
2,051 – 1,684 = ☐



First, we circle the minus sign so we know to subtract and find the difference.

Step 2

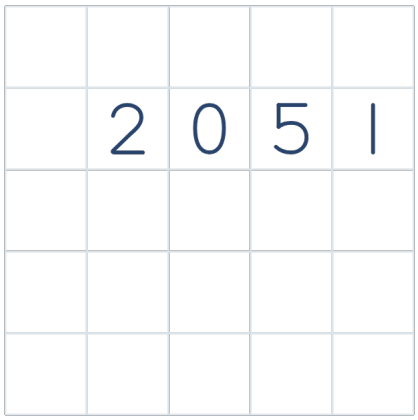
2,051 – 1,684 = ☐



First, check whether a mental method would be quicker. Look at the ones. We have 1 one and need to subtract 4 ones. Column subtraction helps us record the exchange.

Step 3

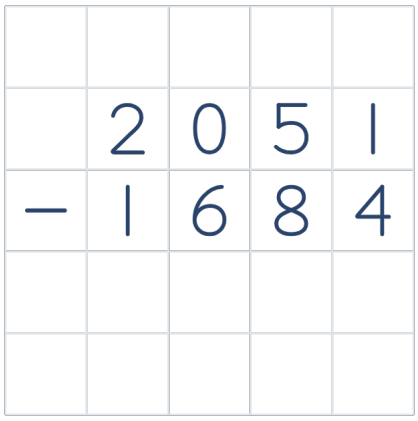
2,051 – 1,684 = ☐



The first digit of 2,051, 2, is in the thousands column, so we start there. Now, we write 2,051 in the correct columns, with one digit in each box.

Step 4

2,051 – 1,684 = ☐

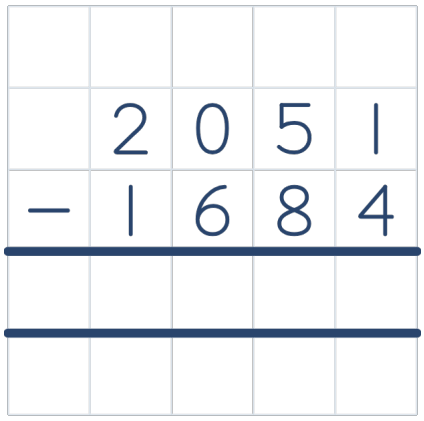


Remember: There must always be a digit in the ones column, even if it is a 0.

Then, we write a minus sign on the left of the calculation. The first digit of 1,684, 1, is in the thousands column, so we start there. We write 1,684 in the correct columns, with one digit in each box.

Step 5

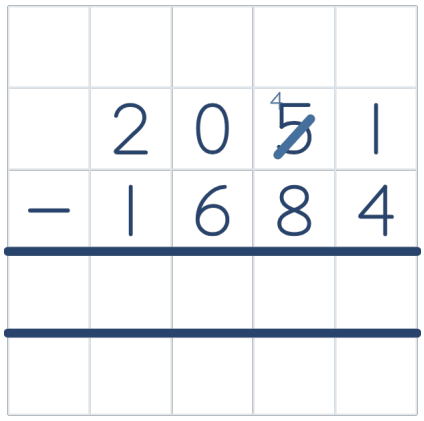
2,051 – 1,684 = ☐



Draw a line under 1,684. Leave one row for the difference, then draw the second line below that row.

Step 6

2,051 – 1,684 = ☐



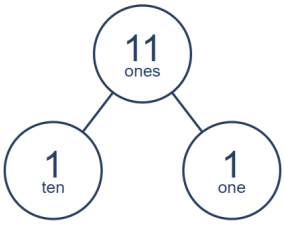
We have 1 one and need to subtract 4 ones. Exchange 1 ten from the 5 tens for 10 ones. Cross out the 5 and write a small 4 at the top left of the tens square. We now have 4 tens in that column.

Step 7

2,051 – 1,684 = ☐

	2	0	4 5	1 1
–	1	6	8	4

Write a small 1 at the top left of the ones square, beside the 1 already there. The small 1 stands for 10 more ones. Read the two digits together as 11 ones. Keep the original 1 in its place.



Step 8

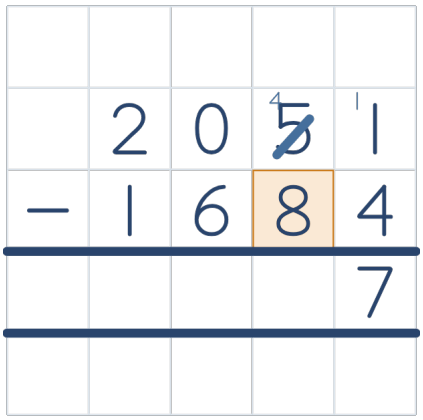
2,051 – 1,684 = ☐

	2	0	4 5	1 1
–	1	6	8	4
				7

11 ones – 4 ones = 7 ones, so we write 7 in the ones column.

Step 9

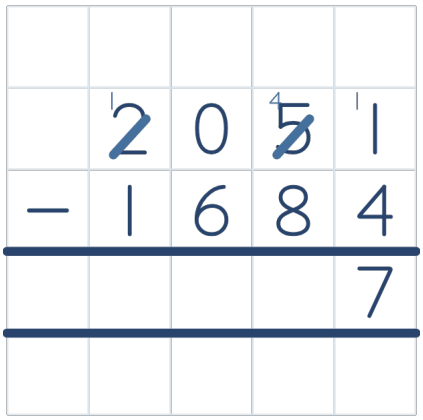
2,051 − 1,684 = ☐



The earlier exchange left 4 tens, so we use that current value instead of the crossed-out 5.

Step 10

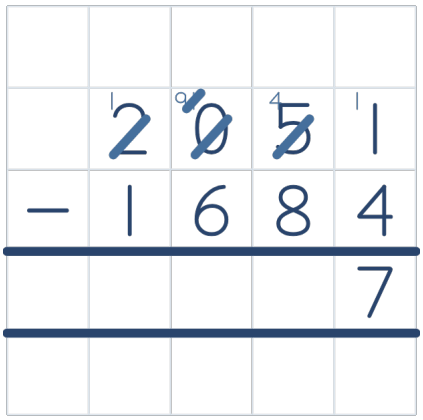
2,051 − 1,684 = ☐



We have 4 tens and need to subtract 8 tens. The hundreds column has 0, so we cannot exchange there. We move left to the thousands column. Exchange 1 thousand from the 2 thousands for 10 hundreds. Cross out the 2 and write a small 1 at the top left of the thousands square. We now have 1 thousand in that column.

Step 11

2,051 − 1,684 = ☐

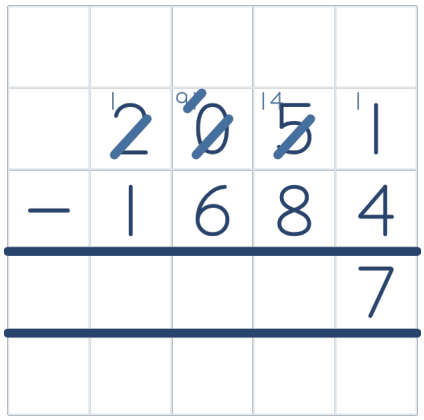


Remember: The hundreds square shows 10 briefly. After the exchange, use the 9 hundreds that remain.

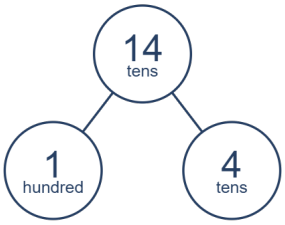
Show 10 hundreds by writing a small 1 beside the 0 at the top left of the hundreds square. Exchange 1 hundred for 10 tens. Cross out the 10 hundreds and write a small 9 to its left. That leaves 9 hundreds. Record the 10 tens in the next step.

Step 12

2,051 – 1,684 = ☐

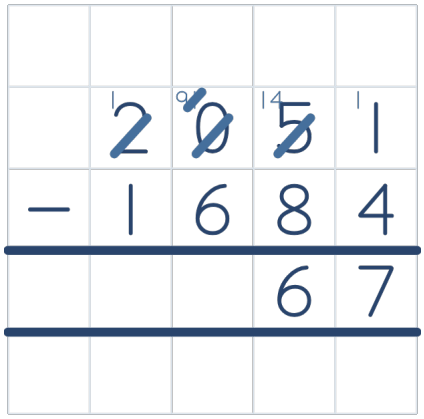


Write a small 1 at the top left of the tens square, beside the 4 already there. The small 1 stands for 10 more tens. Read the two digits together as 14 tens. Keep the original 4 in its place.



Step 13

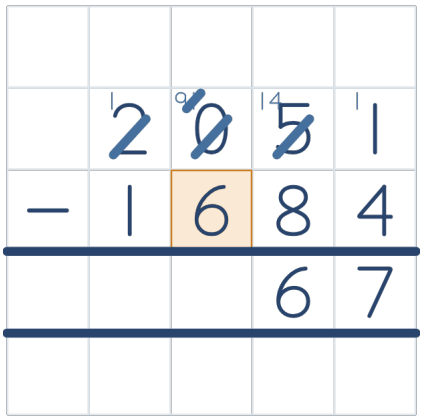
2,051 – 1,684 = ☐



14 tens – 8 tens = 6 tens, so we write 6 in the tens column.

Step 14

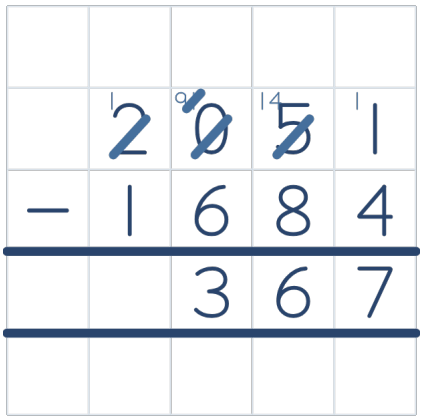
2,051 – 1,684 = ☐



The earlier exchange left 9 hundreds, so we use that current value instead of the crossed-out 0.

Step 15

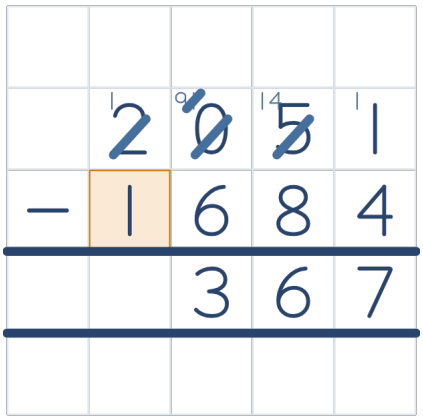
2,051 – 1,684 = ☐



Next, we subtract the hundreds, which is 9 hundreds – 6 hundreds. 9 hundreds – 6 hundreds = 3 hundreds, so we write 3 in the hundreds column. No exchange is needed this time.

Step 16

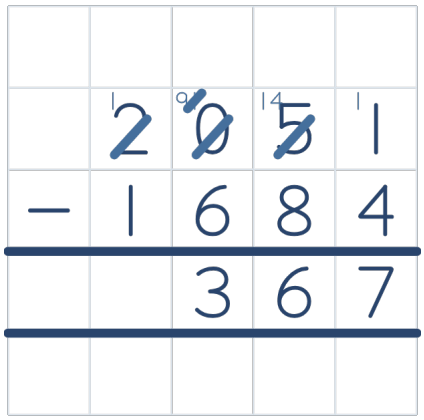
2,051 – 1,684 = ☐



The earlier exchange left 1 thousand, so we use that current value instead of the crossed-out 2.

Step 17

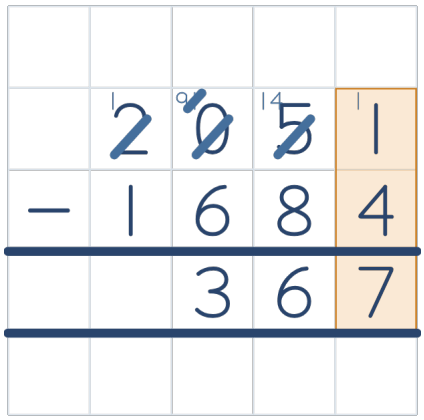
2,051 – 1,684 = ☐



Finally, we subtract the thousands, which is 1 thousand – 1 thousand. 1 thousand – 1 thousand = 0 thousands. Leave this unused leading square empty. No exchange is needed this time.

Step 18

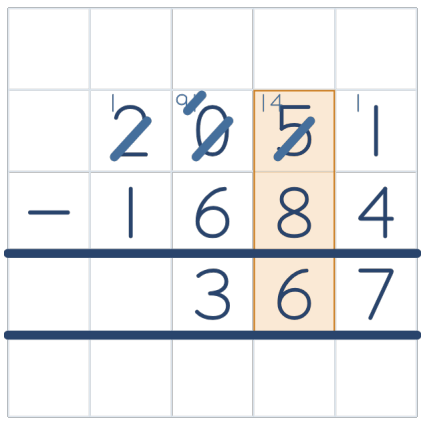
2,051 – 1,684 = ☐



Our difference is 367. Before we copy our answer into the answer box, let's check each column, including the exchanges. First, we check the ones: 11 ones – 4 ones = 7 ones. We have correctly written 7 in the ones answer box.

Step 19

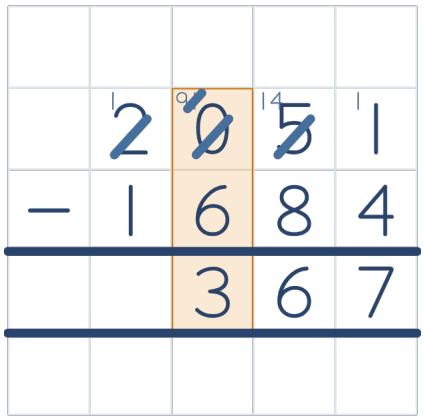
2,051 – 1,684 = ☐



Next, we check the tens: 14 tens – 8 tens = 6 tens. We have correctly written 6 in the tens answer box.

Step 20

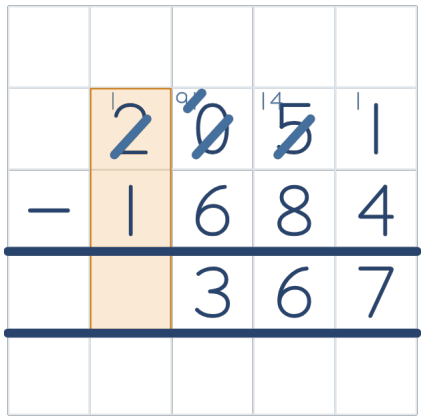
2,051 – 1,684 = ☐



Then, we check the hundreds: 9 hundreds – 6 hundreds = 3 hundreds. We have correctly written 3 in the hundreds answer box.

Step 21

2,051 – 1,684 = ☐

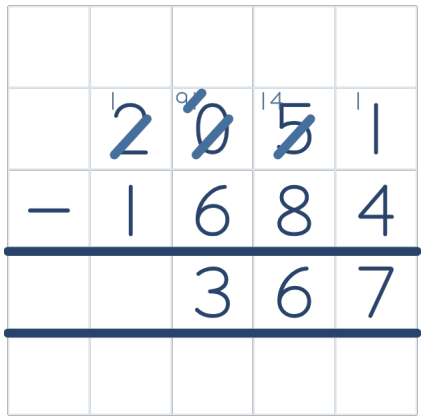


Remember: Leave unused squares before the first answer digit empty. Keep any zero needed inside the answer.

Finally, we check the thousands: 1 thousand – 1 thousand = 0 thousands. The thousands answer square stays empty. Read the difference from the hundreds square. The difference is 367.

Step 22

2,051 – 1,684 = **367**

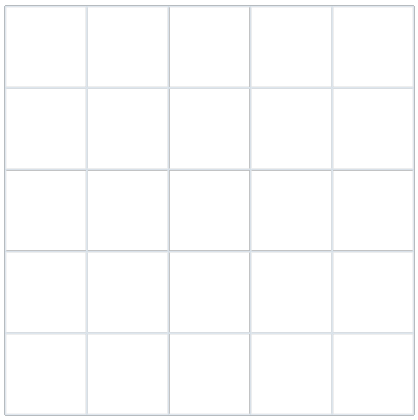


The difference is 367. Copy 367 into the answer box. Make sure you copy the answer correctly.

Year 4 - Column Multiplication — Lesson Guide

Step 1

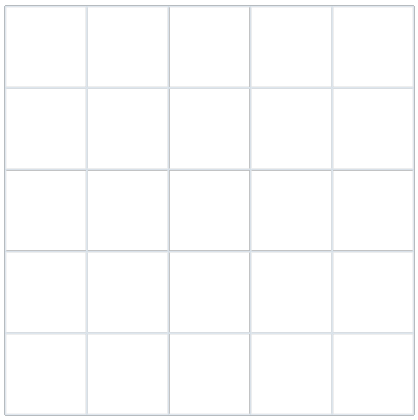
235 × 7 = ☐



First, we circle the multiplication sign so we know to multiply the two factors and find their product.

Step 2

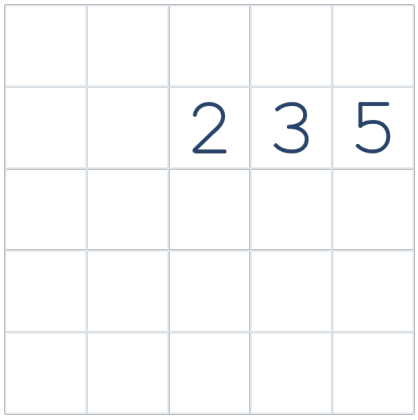
235 × 7 = ☐



First, check whether a mental method would be quicker. I can see two exchanges, so I think column multiplication will help.

Step 3

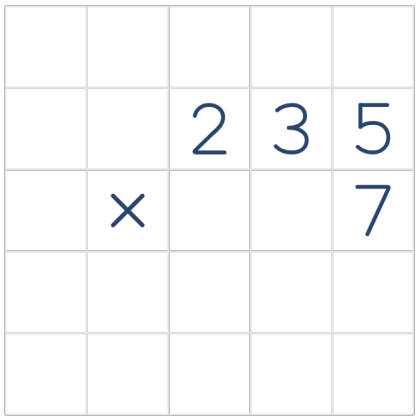
235 × 7 = ☐



The first digit of 235, 2, is in the hundreds column, so we start there. Now, we write 235 in the correct columns, with one digit in each box.

Step 4

235 × 7 = ☐

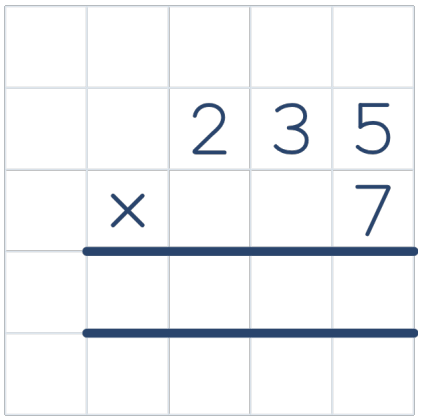


Remember: There must always be a digit in the ones column, even if it is a 0.

Then, we write the multiplication sign on the left and 7 in the ones column. We are multiplying by 7 ones.

Step 5

235 × 7 = ☐



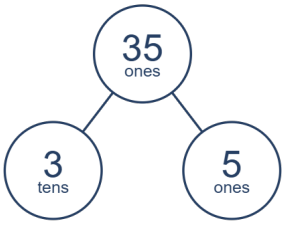
Draw a line under 7. Leave one row for the product, then draw the second line below that row. Write exchanges below the second line.

Step 6

235 × 7 = ☐

		2	3	5
	×			7

First, we multiply the ones, the smallest place-value column. 5 ones × 7 = 35 ones. As we can only write one digit per box, we partition 35 ones into 3 tens and 5 ones.



Step 7

235 × 7 = ☐

		2	3	5
	×			7
				5
			3	

We write the 3 tens in the tens column underneath the answer, ready for the next step. Then we write the remaining 5 ones in the ones answer box.

Step 8

235 × 7 = ☐

		2	3	5
	×			7
				5
			3	

Remember: Check both places. Keep the small 3 below the tens column and the 5 in the ones answer square.

The small 3 below the tens column stands for 3 tens. The 5 in the ones answer square stands for 5 ones. Together, they make 35 ones.

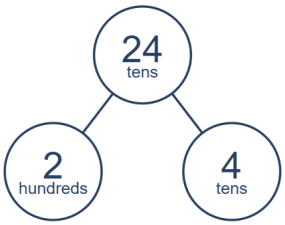
Step 9

235 × 7 = ☐

		2	3	5
	×			7
				5
			3	

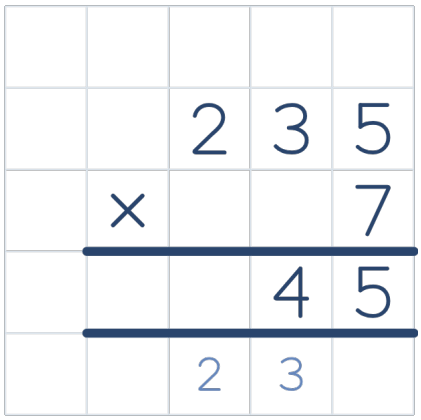
Remember: Look below the column you are working on. Add the exchanged amount written there.

Next, we multiply the tens. 3 tens × 7 = 21 tens. Add the 3 exchanged tens shown by the small 3 below the tens column. 21 tens + 3 exchanged tens = 24 tens. As we can only write one digit per box, we partition 24 tens into 2 hundreds and 4 tens.



Step 10

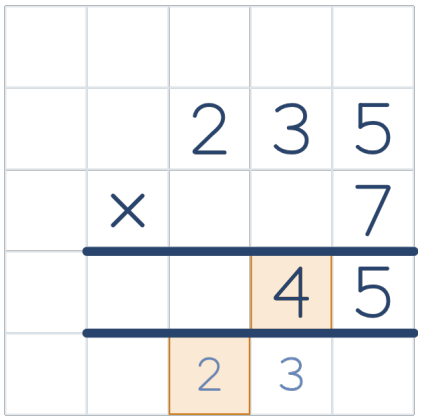
235 × 7 = ☐



We write the 2 hundreds in the hundreds column underneath the answer, ready for the next step. Then we write the remaining 4 tens in the tens answer box.

Step 11

235 × 7 = ☐

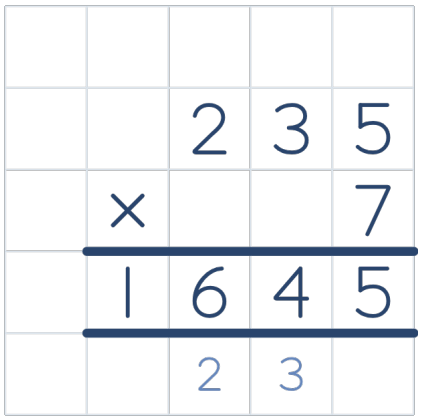


Remember: Check both places. Keep the small 2 below the hundreds column and the 4 in the tens answer square.

The small 2 below the hundreds column stands for 2 hundreds. The 4 in the tens answer square stands for 4 tens. Together, they make 24 tens.

Step 12

235 × 7 = ☐

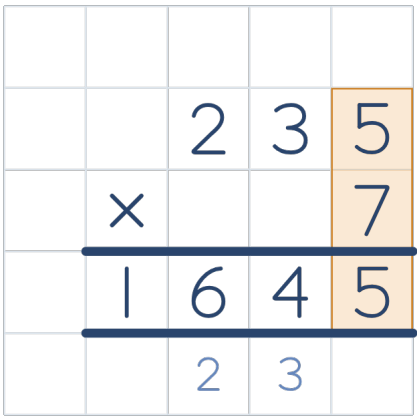


Remember: Look below the column you are working on. Add the exchanged amount written there.

Finally, we multiply the hundreds. 2 hundreds × 7 = 14 hundreds. Add the 2 exchanged hundreds shown by the small 2 below the hundreds column. 14 hundreds + 2 exchanged hundreds = 16 hundreds. This is the last column, so we write 1 thousand and 6 hundreds directly in the answer row, with one digit in each box.

Step 13

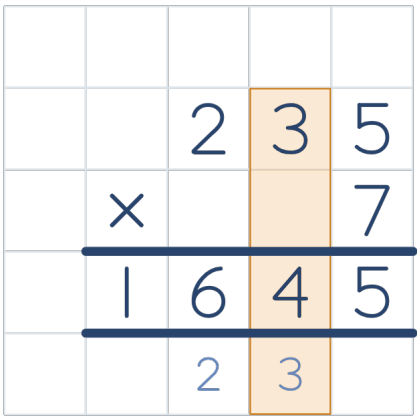
235 × 7 = ☐



Our product is 1,645. Before we copy our answer into the answer box, let's check each column, including the exchanges. First, we check the ones: 5 ones × 7 = 35 ones. We have correctly written 3 tens underneath and 5 ones in the answer row.

Step 14

235 × 7 = ☐

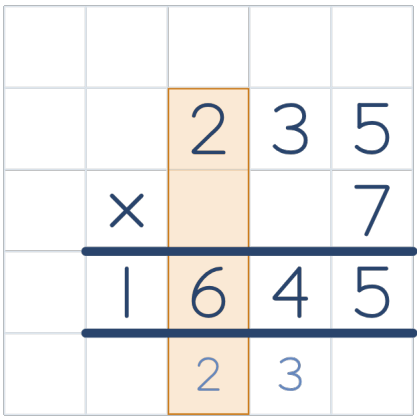


Remember: Look below the column you are working on. Add the exchanged amount written there.

Next, we check the tens: 3 tens × 7 = 21 tens. Add the 3 exchanged tens shown by the small 3 below the tens column. 21 tens + 3 exchanged tens = 24 tens. We have correctly written 2 hundreds underneath and 4 tens in the answer row.

Step 15

235 × 7 = ☐

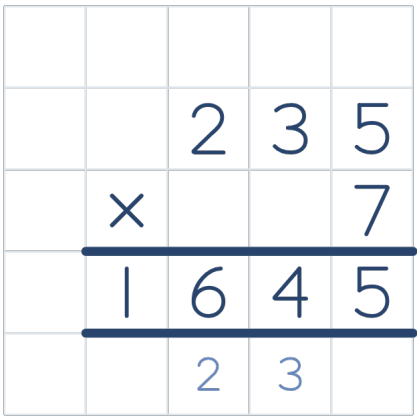


Remember: Look below the column you are working on. Add the exchanged amount written there.

Finally, we check the hundreds: 2 hundreds × 7 = 14 hundreds. Add the 2 exchanged hundreds shown by the small 2 below the hundreds column. 14 hundreds + 2 exchanged hundreds = 16 hundreds. We have correctly written 16 in the answer row, using the correct place-value columns.

Step 16

235 × 7 = **1645**



The product is 1645. Copy 1645 into the answer box. Make sure you copy the answer correctly.

Year 4 - Short Division — Lesson Guide

Step 1

426 ÷ 3 = ☐

First, we circle the division sign so we know to divide and find the quotient.

Step 2

426 ÷ 3 = ☐

First, check whether a mental method would be quicker. I can see one exchange, so I think short division will help.

Step 3

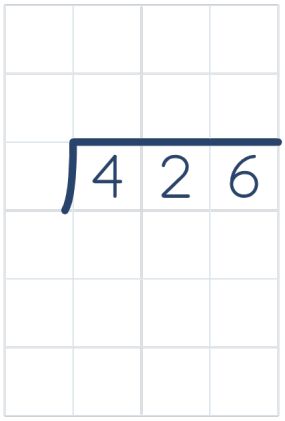
426 ÷ 3 = ☐



The dividend is 426, the number we are dividing. We leave a row above the dividend for the quotient, our answer. The first digit of 426, 4, is in the hundreds column, so we start there. We write 426 in the correct columns, with one digit in each box.

Step 4

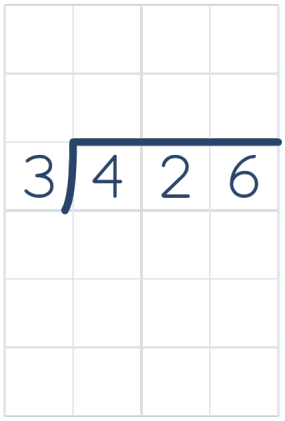
426 ÷ 3 = ☐



After that, we draw a short curved line on the left of the dividend and a straight line above it. We have kept the row above the line for our quotient.

Step 5

426 ÷ 3 = ☐

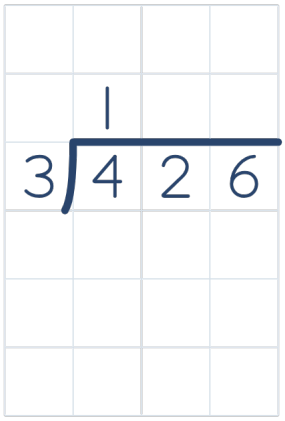


Remember: The divisor goes outside the bracket. The quotient goes above the line.

Then, we write 3 on the left of the curved line. This is the divisor, the number we are dividing by.

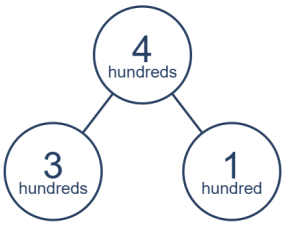
Step 6

426 ÷ 3 = ☐



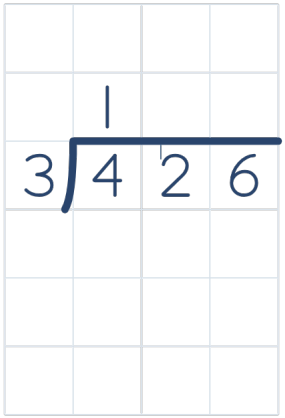
Remember: A digit above the hundreds column tells us how many hundreds are in each group.

Start at the hundreds. Share 4 hundreds equally into 3 groups. Each group gets 1 hundred and 1 hundred is left over. Write 1 in the hundreds answer square above the line. We will exchange the 1 hundred left over in the next step.



Step 7

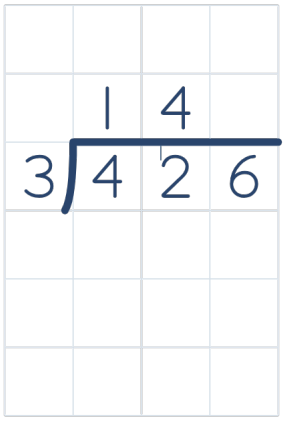
426 ÷ 3 = ☐



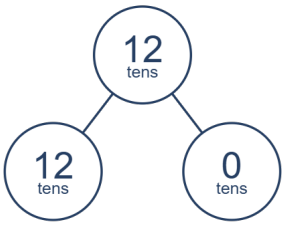
Now, we exchange the 1 hundred left over for 10 tens. We write a smaller 1 at the top left of the next square, to the left of the 2 already there. Together they show 12 tens, ready for the next step.

Step 8

426 ÷ 3 = ☐

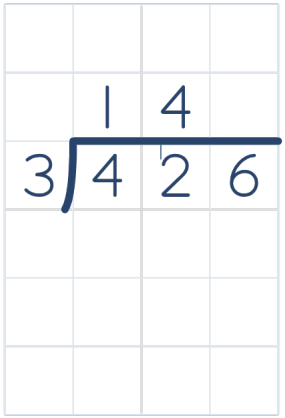


Read the small 1 and the 2 together as 12 tens. The small 1 stands for 10 tens exchanged from the hundreds column. Divide 12 tens by 3. Each group gets 4 tens. Write 4 in the tens answer square above the line.



Step 9

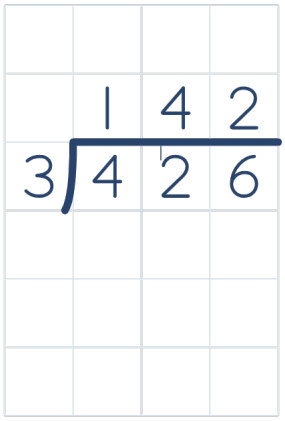
426 ÷ 3 = ☐



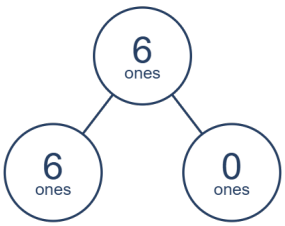
We have shared all 12 tens equally into 3 groups. There are no tens left to exchange. Move to the 6 in the ones column.

Step 10

426 ÷ 3 = ☐

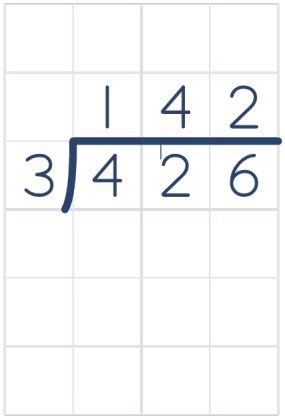


Share 6 ones equally into 3 groups. Each group gets 2 ones. Write 2 in the ones answer square above the line.



Step 11

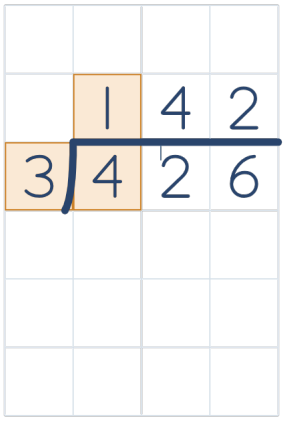
426 ÷ 3 = ☐



Nothing is left over, so we have finished dividing. Our quotient is 142.

Step 12

426 ÷ 3 =



Our quotient is 142. Before we copy our answer into the answer box, let's check each column, including the exchanges. First, we check the hundreds. We ask again, "How many 3s are in 4?" 1 group of 3 makes 3, with 1 left over. We have written 1 above this column. We have exchanged the 1 hundred left over into the next column.

Step 13

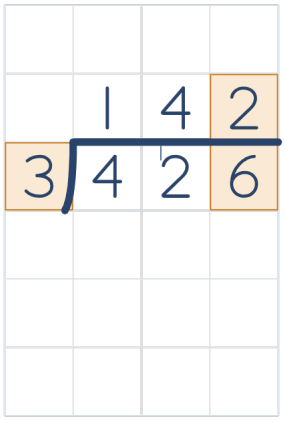
426 ÷ 3 =



Next, we check the tens. We ask again, "How many 3s are in 12?" 4 groups of 3 make 12. We have written 4 above this column. There is nothing left over in this column.

Step 14

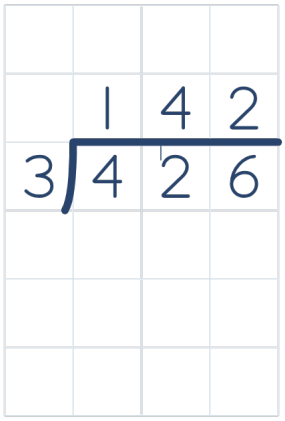
426 ÷ 3 = ☐



Finally, we check the ones. We ask again, “How many 3s are in 6?” 2 groups of 3 make 6. We have written 2 above this column. There is nothing left over in this column.

Step 15

426 ÷ 3 = **142**

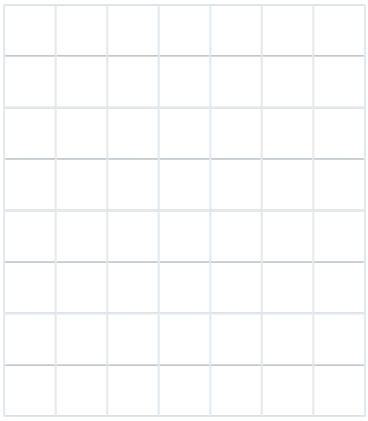


The quotient is 142. Copy 142 into the answer box. Make sure you copy the answer correctly.

Year 4 - Finding Missing Numbers (+ and –) — Lesson Guide

Step 1

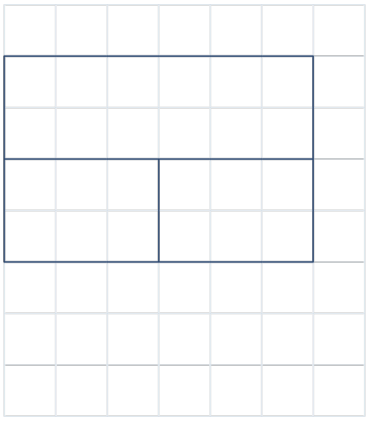
□ – 415 = 312



First, we circle the minus sign. We look at the operation in the question before choosing how to find the missing number.

Step 2

□ – 415 = 312

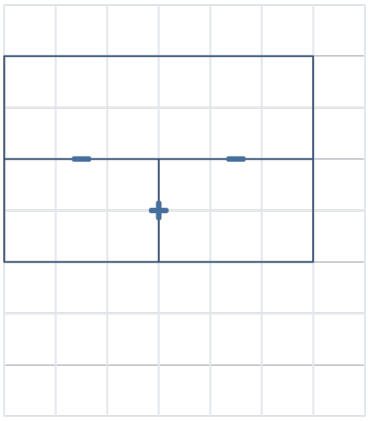


Remember: The box asks for a missing number. Put it back in the same place to check.

Read the calculation with the blank. Something take away 415 leaves 312. We are finding the whole we started with, called the minuend. Draw the whole bar above the two parts.

Step 3

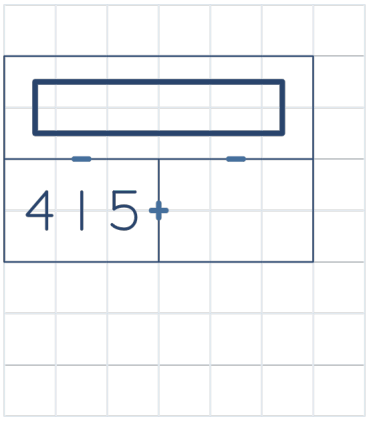
□ – 415 = 312



Next, we draw bold minus signs between the whole and its parts, and a bold plus sign between the two parts. This shows us that the two parts add to make the whole and, to find a part, we subtract the other part from the whole.

Step 4

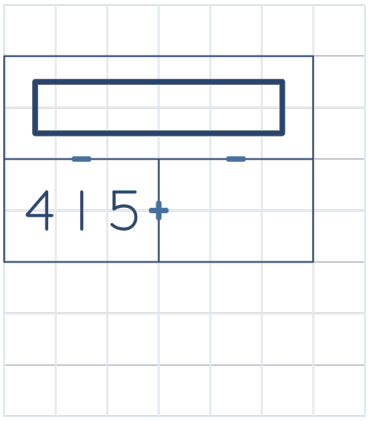
□ – 415 = 312



Draw an empty box in the whole bar for the missing number. Write 415 in the left part.

Step 5

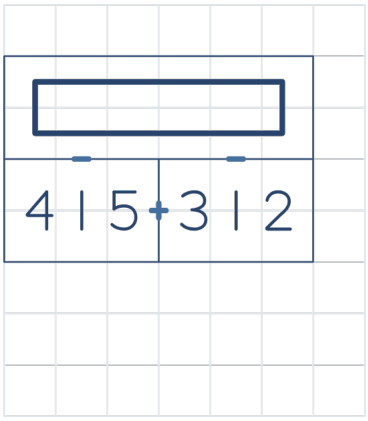
□ – 415 = 312



Check the two entries before filling the last space. Read the question up to the equals sign as something take away 415. In the bar model, the blank in the whole bar and 415 in the left part should read as something take away 415. If the entries match, fill the last space. If they differ, correct the model first.

Step 6

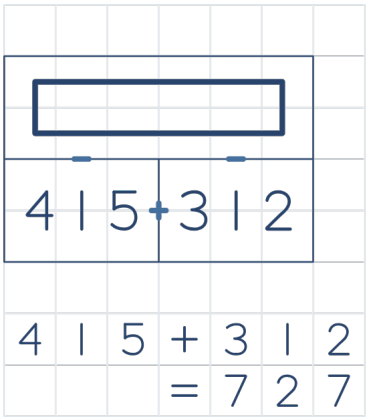
□ – 415 = 312



Write 312 in the right part.

Step 7

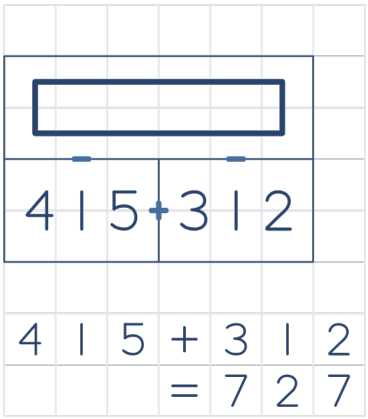
□ – 415 = 312



We add the two parts to find the whole. I can partition 312 into 300 and 10 and 2. I am going to add these parts mentally, starting with the greatest place value. 415 + 312 = 727.

Step 8

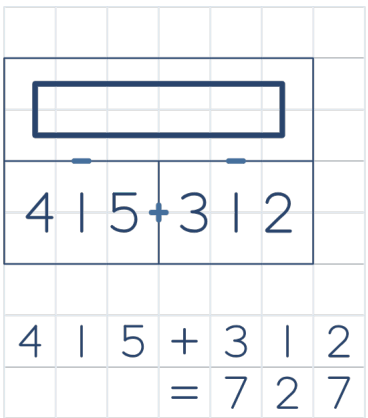
727 – 415 = 312



Now, we put 727 into the blank in the original question. Make sure you copy the answer correctly.

Step 9

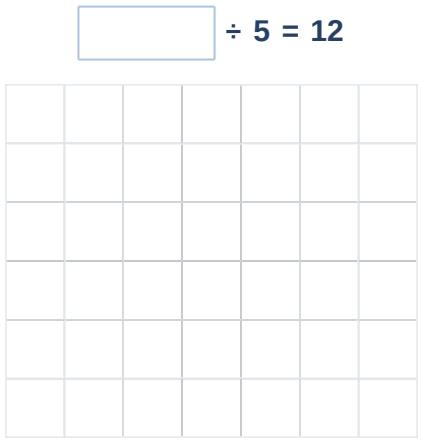
727 – 415 = 312



Put 727 in the blank and use the operation in the question. Work out 727 – 415. That gives 312. The result matches 312 on the right. If you get a different number, check that you used the operation in the question. Then work it out again.

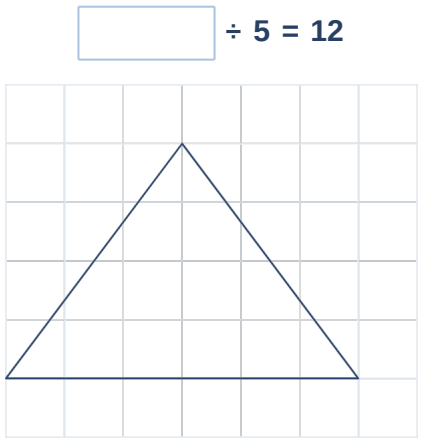
Year 4 - Finding Missing Numbers (× and ÷) — Lesson Guide

Step 1



First, we circle the division sign. We look at the operation in the question before choosing how to find the missing number.

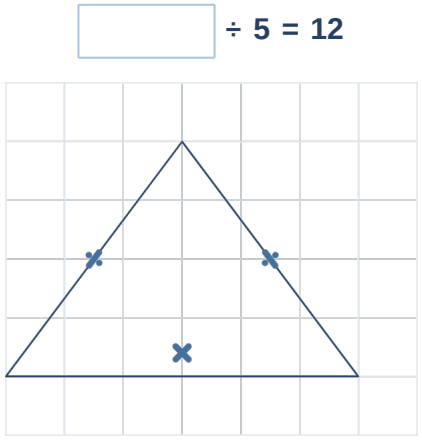
Step 2



Remember: The product goes at the top. The factors go at the bottom.

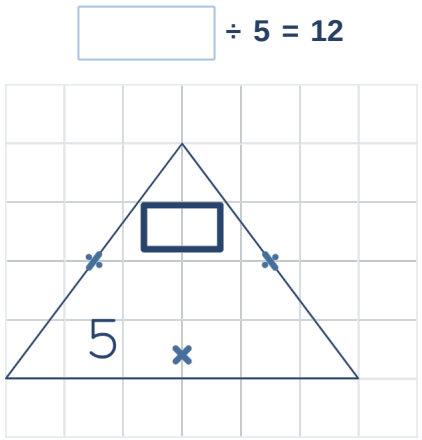
We are finding the amount we started with. Sharing that amount into 5 equal groups gives 12 in each group. Draw the product-factor triangle. The missing whole goes at the top. The two known factors go at the bottom.

Step 3



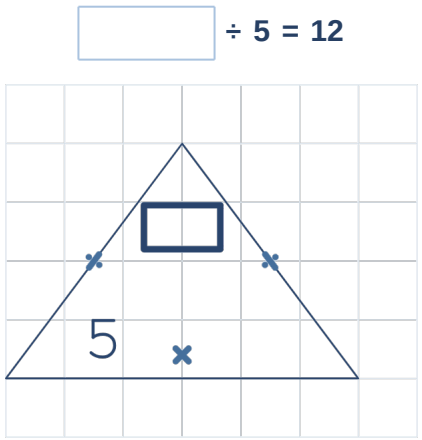
Next, we draw bold division signs over the two sloping sides and a bold multiplication sign just above the base. The factors multiply to make the product. To find a factor, we divide the product by the other factor.

Step 4



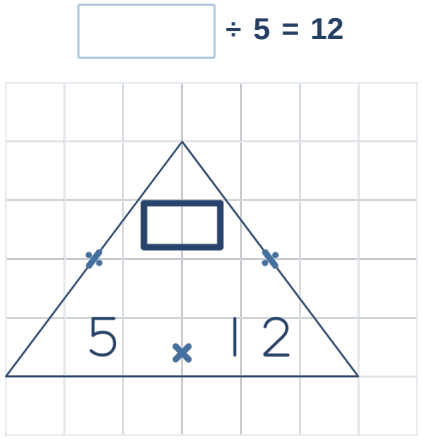
Next, we use our product-factor triangle to show something divided by 5. Our first two entries are on either side of the division sign. The first is the dividend, the product in the related multiplication. The second is the divisor, one of the factors. We draw a small rectangle at the top, in the product position for the missing dividend. We write 5 in the bottom-left corner.

Step 5



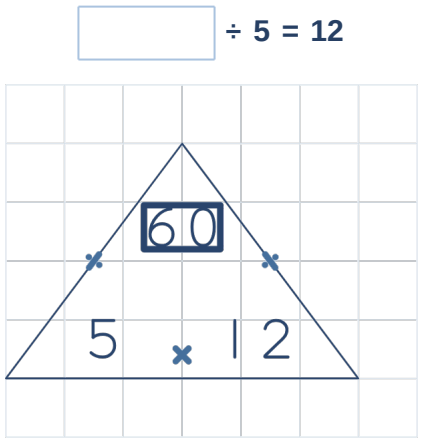
Before moving on, let's make sure our first two entries are in the right places. First, we read the calculation: something divided by 5. Then, we read the matching calculation in our product-factor triangle: something divided by 5. If they match, well done. If they do not, edit the model and check it again.

Step 6



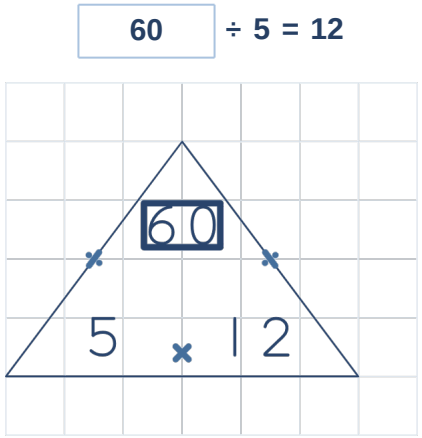
Now the calculation is in the correct place, we can look at our quotient, 12. We write 12 in the bottom-right corner.

Step 7



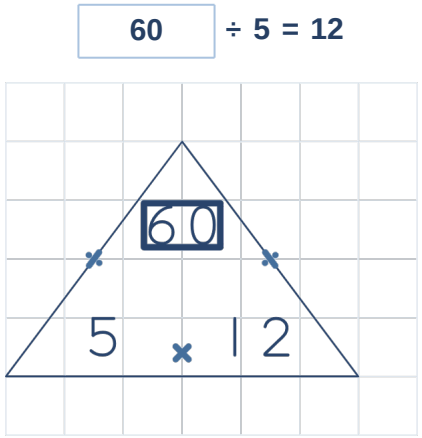
The top of the triangle is blank, so we multiply the two factors at the bottom. 5 × 12 = 60. The missing product is 60.

Step 8



Now, we put 60 into the blank in the original question. Make sure you copy the answer correctly.

Step 9

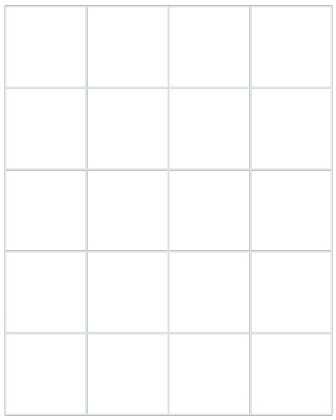


Put 60 back in the blank. Use the product-factor triangle to check the calculation. Multiply the factors. 5 × 12 = 60. So 60 shared into 5 equal groups gives 12 in each group. If you get a different number, check that you used the operation in the question. Then work it out again.

Year 4 - Dividing by 10 and 100 — Lesson Guide

Step 1

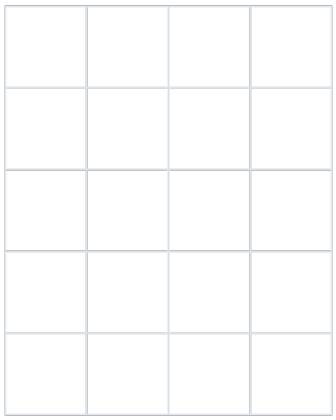
36 ÷ 100 = ☐



First, we circle the division sign so we know which operation is in the question.

Step 2

36 ÷ 100 = ☐



Remember: The decimal point stays between the ones and tenths.

Next, we underline the 100 so we do not accidentally divide by the wrong amount. We are dividing by 100, so we can use place value instead of a column method. We are making 36 one hundredth of the size. Each digit becomes worth one hundredth as much.

Step 3

36 ÷ 100 = ☐



Next, we write the headings H, T and O below the question, with one heading in each box. We are dividing by 100, so we include the hundreds column. These stand for hundreds, tens and ones.

Step 4

36 ÷ 100 = ☐

	H	T	O
		3	6

Now, we write 36 in the correct columns, with one digit in each box. We keep its original place values.

Step 5

36 ÷ 100 = 0.

	H	T	O
		3	6

Remember: There must always be a digit in the ones column, even if it is a 0.

The hundreds column in 36 is empty. After dividing, that empty place gives us 0 ones. Write 0 in the ones place, then put a decimal point straight after the ones digit in our answer box. Each digit is worth one hundredth as much.

Step 6

36 ÷ 100 = 0.3

	H	T	O
		3	6

The 3 in the tens column stands for 3 tens. Dividing by 100 makes it 3 tenths. Write 3 in the tenths place, straight after the decimal point. Each digit is worth one hundredth as much.

Step 7

36 ÷ 100 = 0.36

	H	T	O
		3	6

The 6 in the ones column stands for 6 ones. Dividing by 100 makes it 6 hundredths. Write 6 in the hundredths place. Each digit is worth one hundredth as much.

Step 8

36 ÷ 100 = 0.36

	H	T	O
		3	6

Read the answer as 0.36. The 3 is in the tenths place and the 6 is in the hundredths place. The 0 shows there are no whole ones.

Step 9

36 ÷ 100 = 0.36

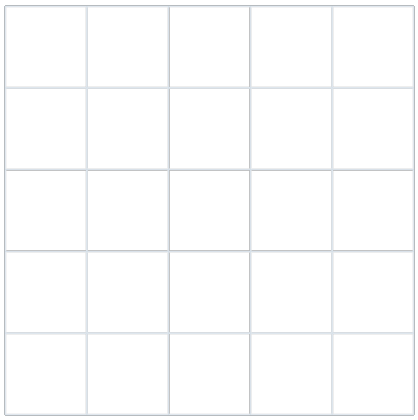
	H	T	O
		3	6

Our answer is 0.36. Check each digit and the decimal point in the answer box to finish the question.

Year 4 - Multiplying by 10 and 100 — Lesson Guide

Step 1

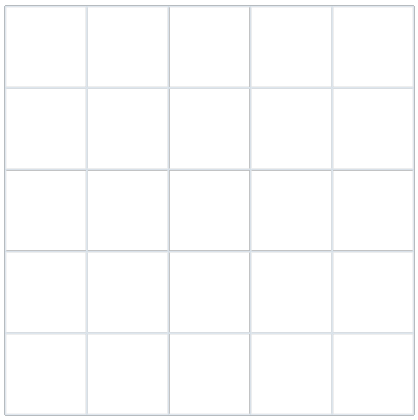
24 × 100 = ☐



First, we circle the multiplication sign so we know which operation is in the question.

Step 2

24 × 100 = ☐

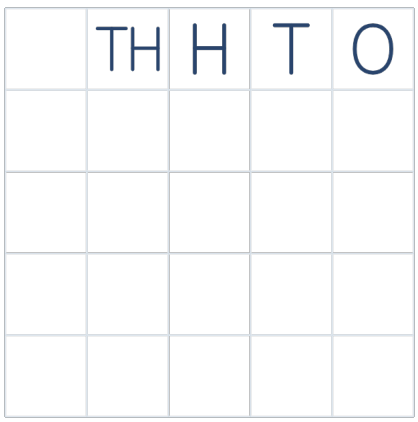


Remember: The decimal point stays between the ones and tenths.

Next, we underline the 100 so we do not accidentally multiply by the wrong amount. We are multiplying by 100, so we can use place value instead of a column method. We are making 24 100 times the size. Each digit becomes worth 100 times as much.

Step 3

24 × 100 = ☐



Next, we write the headings TH, H, T and O below the question, with one heading in each box. Our answer will use the thousands column, so we leave room for it. These stand for thousands, hundreds, tens and ones.

Step 4

$24 \times 100 = \square$

	TH	H	T	O
		4		

Remember: Move every digit the same number of places. The order of the digits stays the same.

The 4 in the ones column stands for 4 ones. Multiplying by 100 makes it 4 hundreds. Write 4 in the hundreds column.

Step 5

$24 \times 100 = \square$

	TH	H	T	O
	2	4		

Remember: Move every digit the same number of places. The order of the digits stays the same.

The 2 in the tens column stands for 2 tens. Multiplying by 100 makes it 2 thousands. Write 2 in the thousands column. The 4 is already in the hundreds column.

Step 6

$24 \times 100 = \square$

	TH	H	T	O
	2	4	0	0

Remember: Use place value to decide where digits and zeros belong.

We have written the 2 in the thousands column and the 4 in the hundreds column. The tens and ones columns are empty. Write 0 in each of those squares to hold the place. Read the product as 2,400.

Step 7

24 × 100 = ☐

	TH	H	T	O
	2	4	0	0

Remember: There must always be a digit in the ones column, even if it is a 0.

Now, we check the place values. 4 ones × 100 = 4 hundreds. 2 tens × 100 = 2 thousands. We read the complete product as 2,400. Check every digit and any zero placeholders before copying it.

Step 8

24 × 100 = 2400

	TH	H	T	O
	2	4	0	0

The product is 2400. Copy 2400 into the answer box. Make sure you copy the answer correctly.

Year 4 - Finding Fractions of Amounts (Unit) — Lesson Guide

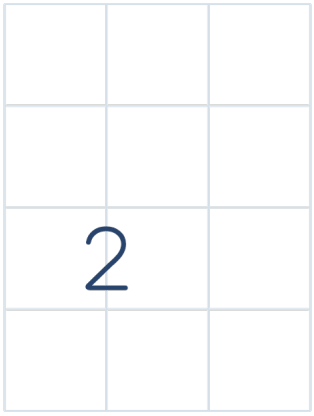
Step 1

Find $\frac{1}{3}$ of 6 = ☐

1/3 means we want 1 out of 3 equal parts. The denominator, 3, tells us how many equal parts make the whole. The numerator, 1, tells us how many of those parts we want. We want fewer than all 3 equal parts, so our answer must be less than 6.

Step 2

Find $\frac{1}{3}$ of 6 = ☐

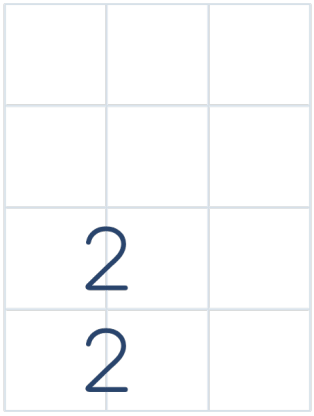


Remember: The denominator tells us how many equal parts to make. Use the numerator in the next step.

Divide the whole amount, 6, by the denominator, which is 3. Tick 6 and the denominator, 3, as you use them. 6 ÷ 3 = 2. One equal part contains 2. Keep that amount for the next step. You can work this out mentally or on the squares.

Step 3

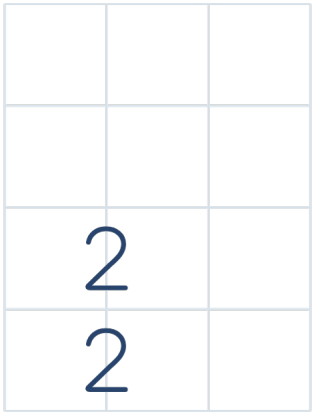
Find $\frac{1}{3}$ of 6 = ☐



We found 2 in one equal part. Multiply 2 by the numerator, which is 1. 2 × 1 = 2. Tick the numerator, 1. The fraction amount is 2. You can work this out mentally or on the squares.

Step 4

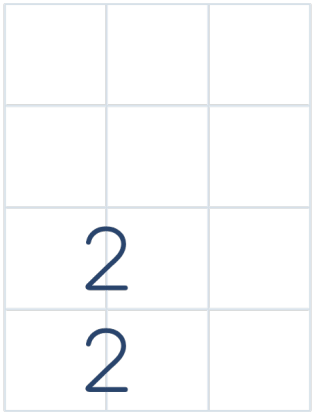
Find $\frac{1}{3}$ of 6 = ☐



Now, we check all three ticks. We started with 6. We divided by 3. Then, we multiplied by 1.

Step 5

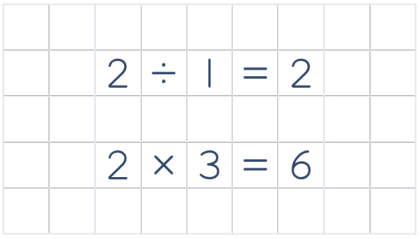
Find $\frac{1}{3}$ of 6 = **2**



The fraction amount is 2. Copy 2 into the answer box. Make sure you copy the answer correctly.

Step 6

Find $\frac{1}{3}$ of 6 = **2**



Divide 2 by the numerator, 1, to get one equal part. 2 ÷ 1 = 2. Multiply 2 by the denominator, 3, to put the equal parts back together. 2 × 3 = 6. We got back to the original whole amount, 6. That checks our answer of 2.

Year 4 - Finding Fractions of Amounts (Non-unit) — Lesson Guide

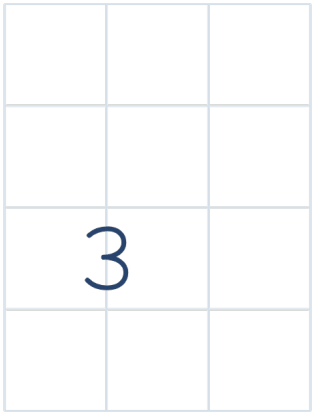
Step 1

Find $\frac{3}{4}$ of 12 = ☐

3/4 means we want 3 out of 4 equal parts. The denominator, 4, tells us how many equal parts make the whole. The numerator, 3, tells us how many of those parts we want. We want fewer than all 4 equal parts, so our answer must be less than 12.

Step 2

Find $\frac{3}{4}$ of 12 = ☐

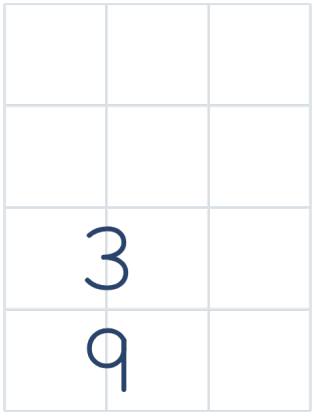


Remember: The denominator tells us how many equal parts to make. Use the numerator in the next step.

Divide the whole amount, 12, by the denominator, which is 4. Tick 12 and the denominator, 4, as you use them. 12 ÷ 4 = 3. One equal part contains 3. Keep that amount for the next step. You can work this out mentally or on the squares.

Step 3

Find $\frac{3}{4}$ of 12 = ☐

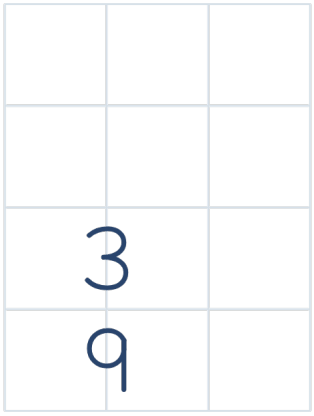


Remember: Always multiply by the numerator, even when it is 1. Keep the same habit for every fraction of an amount.

We found 3 in one equal part. Multiply 3 by the numerator, which is 3. 3 × 3 = 9. Tick the numerator, 3. The fraction amount is 9. You can work this out mentally or on the squares.

Step 4

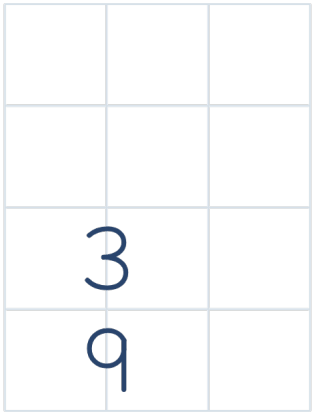
Find $\frac{3}{4}$ of 12 =



Now, we check all three ticks. We started with 12. We divided by 4. Then, we multiplied by 3.

Step 5

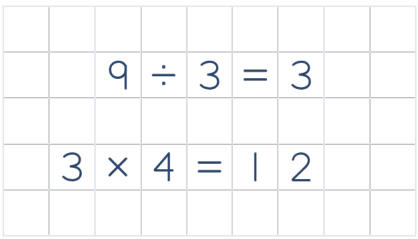
Find $\frac{3}{4}$ of 12 = 9



The fraction amount is 9. Copy 9 into the answer box. Make sure you copy the answer correctly.

Step 6

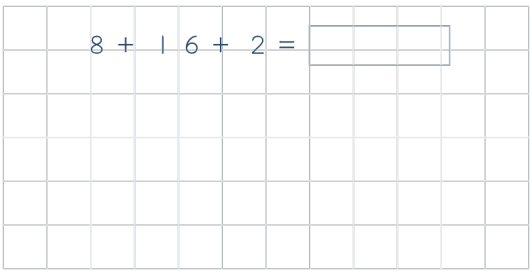
Find $\frac{3}{4}$ of 12 = 9



Divide 9 by the numerator, 3, to get one equal part. 9 ÷ 3 = 3. Multiply 3 by the denominator, 4, to put the equal parts back together. 3 × 4 = 12. We got back to the original whole amount, 12. That checks our answer of 9.

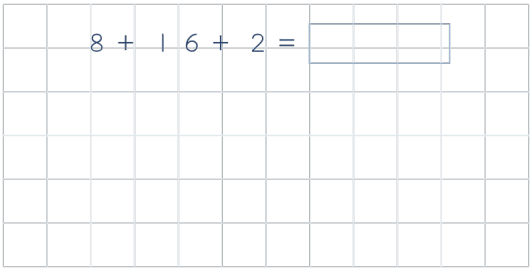
Year 4 - Adding 3 Numbers — Lesson Guide

Step 1



First, we circle both plus signs in the question. There are two additions, so we will calculate in two steps.

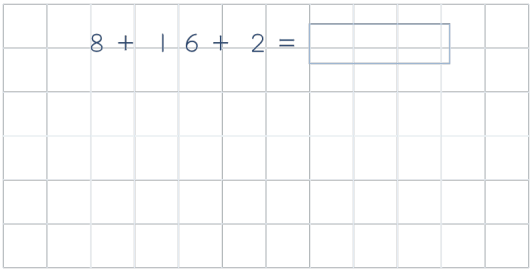
Step 2



Remember: Look at all three numbers. Use each original number once.

Addition is commutative, which means we can add the numbers in any order and get the same sum. Let's look for a pair that is easy to work out first.

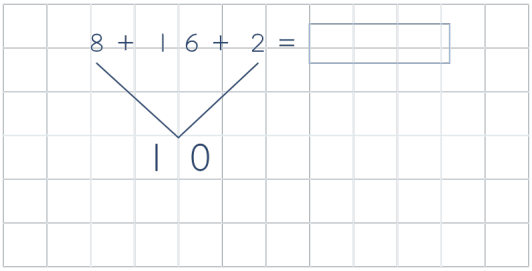
Step 3



Remember: Use each original number once.

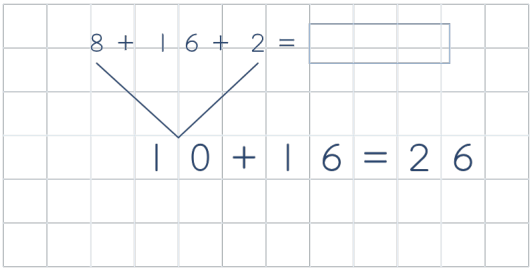
Use number bonds, doubles and other number facts to choose a helpful pair. A useful pair here is 8 and 2. 8 + 2 = 10. That gives us a multiple of 10, which is easy to add to. Draw a line from each chosen number to where we will write the first result. Keep 16 for the next step. Other pairs can still give the same sum.

Step 4



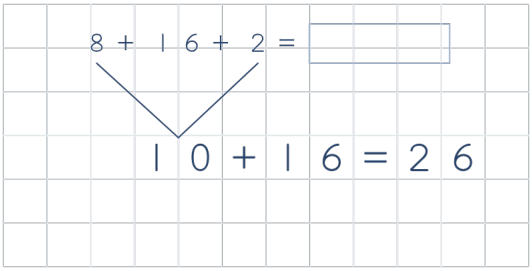
First, we add the chosen pair. 8 + 2 = 10. We write 10 on the squares, in the middle below the two chosen numbers. We still need the remaining addend, 16.

Step 5



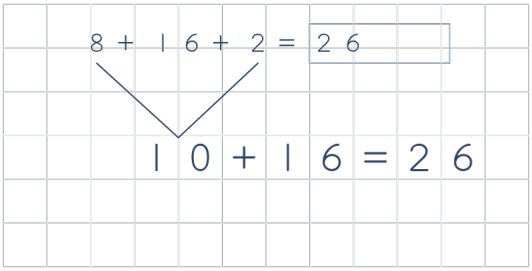
Next, we add the remaining addend to our first result. 10 + 16 = 26. There are no exchanges in this addition, so we can work it out mentally. We could use a column method if needed. We have now used all three original numbers once.

Step 6



Now, we check that we have used all three original addends once. First, 8 + 2 = 10. Then, 10 + 16 = 26. All three original numbers have been used once.

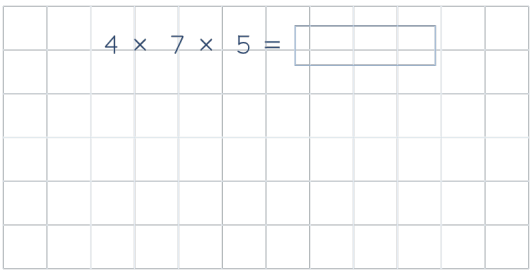
Step 7



The sum is 26. Copy 26 into the answer box. Make sure you copy the answer correctly.

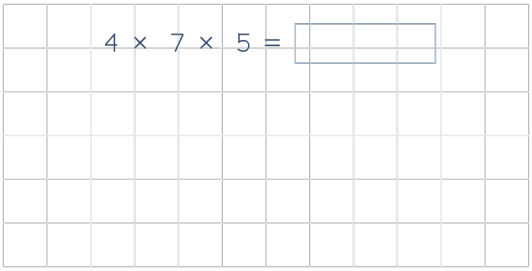
Year 4 - Multiplying 3 Numbers — Lesson Guide

Step 1



First, we circle both multiplication signs in the question. There are two multiplications, so we will calculate in two steps.

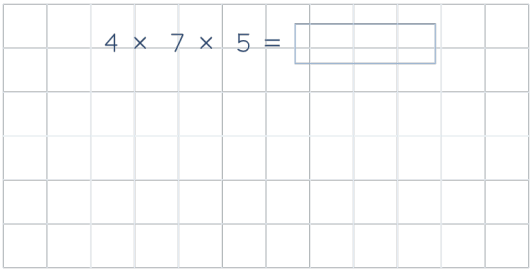
Step 2



Remember: Look at all three numbers. Use each original number once.

Multiplication is commutative, which means we can multiply the numbers in any order and get the same product. Let’s look for a pair that is easy to work out first.

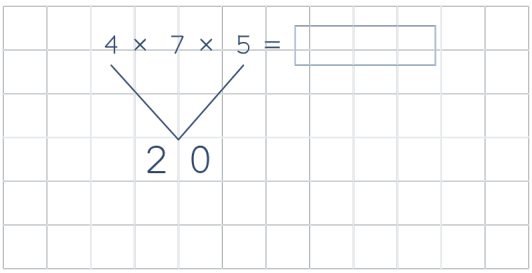
Step 3



Remember: Use each original number once.

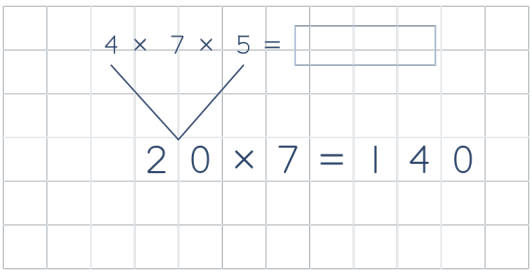
Use multiplication facts to choose a helpful pair. A useful pair here is 4 and 5. 4 × 5 = 20. 20 is 2 tens. We can use 2 × 7 to find the number of tens in the product. Draw a line from each chosen number to where we will write the first result. Keep 7 for the next step. Other pairs can still give the same product.

Step 4



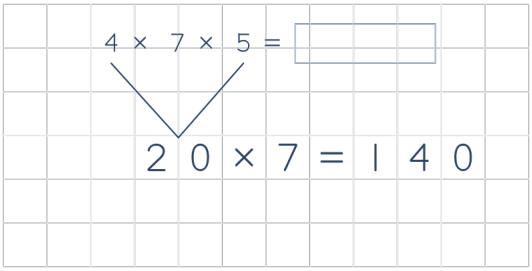
First, we multiply the chosen pair. 4 × 5 = 20. We write 20 on the squares, in the middle below the two chosen numbers. We still need the remaining factor, 7.

Step 5



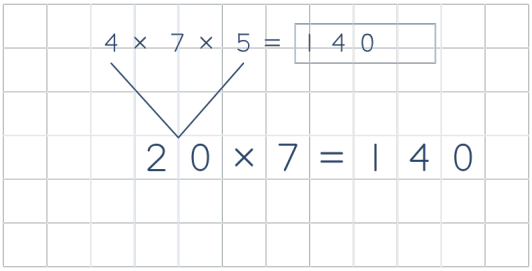
Next, we multiply our first result by the remaining factor. 20 is 2 tens. We know 2 × 7 = 14, so the product is 14 tens. 20 × 7 = 140. We can use our number facts mentally or choose a suitable written method if needed. We have now used all three original numbers once.

Step 6



Now, we check that we have used all three original factors once. First, 4 × 5 = 20. Then, 20 × 7 = 140. All three original numbers have been used once.

Step 7



The product is 140. Copy 140 into the answer box. Make sure you copy the answer correctly.

Year 4 - Adding Fractions with the Same Denominator — Lesson Guide

Step 1

$\frac{3}{7} + \frac{2}{7} =$ ☐

First, we circle the plus sign so we know to add the fractions and find their sum.

Step 2

$\frac{3}{7}$ ✓ + $\frac{2}{7}$ ✓ = $\frac{}{7}$

Remember: The denominator stays the same because the size of each part stays the same.

Next, we check both denominators. Both are 7, so the parts are the same size. We tick both denominators to show they match. Then, we draw the fraction line and write 7 underneath it in the answer box.

Step 3

$\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$

Remember: The denominator tells us the size of each part. Keep it the same when you add or subtract these parts.

Both fractions use sevenths of the same whole. Add 2 sevenths to 3 sevenths to make 5 sevenths. Write 5 above the fraction line.

Step 4

$\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$

Now, we check all three denominators. The first denominator is 7. The second denominator is 7. Our answer denominator is 7. All three are the same. We also check that 3 + 2 = 5, our numerator.

Year 4 - Subtracting Fractions with the Same Denominator — Lesson Guide

Step 1

$\frac{5}{6} - \frac{4}{6} =$ ☐

First, we circle the minus sign so we know to subtract the fractions and find their difference.

Step 2

$\frac{5}{6} - \frac{4}{6} =$ $\frac{\square}{6}$

Remember: The denominator stays the same because the size of each part stays the same.

Next, we check both denominators. Both are 6, so the parts are the same size. We tick both denominators to show they match. Then, we draw the fraction line and write 6 underneath it in the answer box.

Step 3

$\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$

Remember: The denominator tells us the size of each part. Keep it the same when you add or subtract these parts.

Both fractions use sixths of the same whole. Take 4 sixths away from 5 sixths to leave 1 sixth. Write 1 above the fraction line.

Step 4

$\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$

Now, we check all three denominators. The first denominator is 6. The second denominator is 6. Our answer denominator is 6. All three are the same. We also check that 5 – 4 = 1, our numerator.

Year 4 - Rounding Whole Numbers — Lesson Guide

Step 1

135 to the nearest 10 = ☐

First, we read the question: 135 to the nearest 10. We underline 10 so we do not accidentally round to the wrong amount. As we are rounding to the nearest 10, our answer will be a multiple of 10, ending in at least one zero.

Step 2

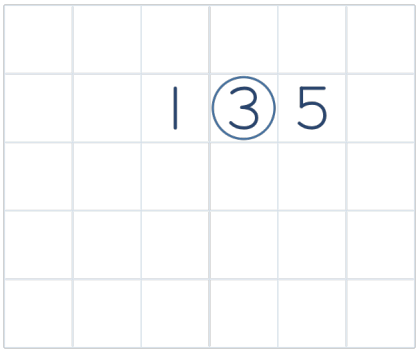
135 to the nearest 10 = ☐



Now, we write 135 in the correct columns, with one digit in each box. The first digit of 135, 1, is in the hundreds column, so we start there.

Step 3

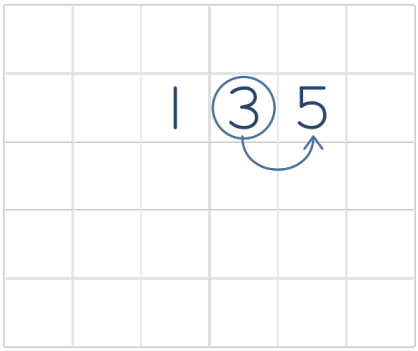
135 to the nearest 10 = ☐



Now, we circle the tens digit because we are rounding to the nearest 10.

Step 4

135 to the nearest 10 = ☐

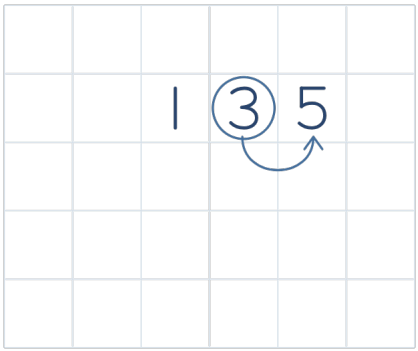


Remember: The circled digit marks the place to round to. The digit at the arrow tells us whether to round up.

The circled 3 marks the tens place. Draw a curved arrow from there to the 5 in the ones place. That digit decides which way to round. Zero to four, stay on the floor. Five to nine, climb the vine.

Step 5

135 to the nearest 10 = ☐

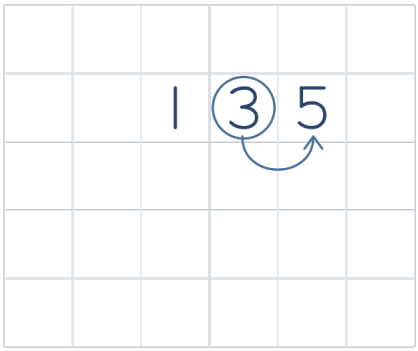


Remember: When we round down, the circled digit stays the same. When we round up, it increases by 1. If it reaches 10, write 0 and exchange into the next place.

5 is between 5 and 9, so we climb the vine and round up. We increase the tens place by one ten. All the digits to the right of the rounded place become 0.

Step 6

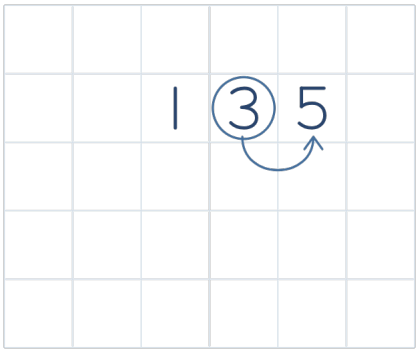
135 to the nearest 10 = **140**



Now, we write 140 directly in the answer box. 135 rounded to the nearest 10 is 140. Make sure you copy the answer correctly.

Step 7

135 to the nearest 10 = **140**

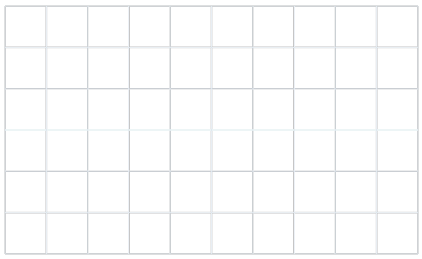


Check the rounding marks. The underline shows the nearest 10. The circle marks the 3 in the tens place. The arrow ends at the 5. The neighbouring multiples are 130 and 140. The halfway point is 135. We are exactly halfway, so we choose 140. That agrees with our rounded answer of 140.

Year 4 - Solving Calculations on Either Side — Lesson Guide

Step 1

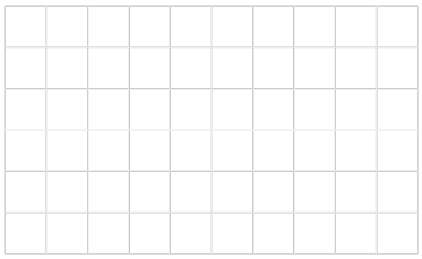
$27 + 13 = \square + 4$



First, we circle the operation sign on the left. Then, we circle the operation sign on the right. The equals sign tells us that both sides must have the same value.

Step 2

$27 + 13 = \square + 4$

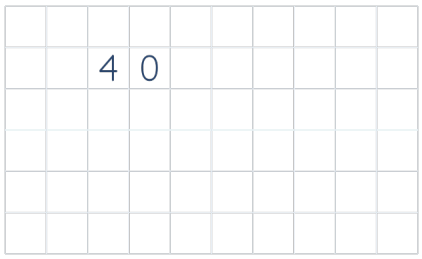


Remember: Both sides of the equals sign must have the same value.

Next, we look for the side with no missing number. We underline 27 + 13. We will work out this complete calculation first.

Step 3

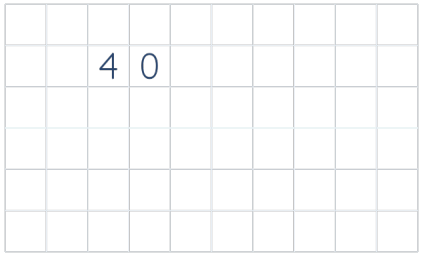
$27 + 13 = \square + 4$



I can partition 13 into 10 and 3. I am going to add these parts mentally, starting with the greatest place value. 27 + 13 = 40. We write 40 directly underneath this calculation, with one digit in each square.

Step 4

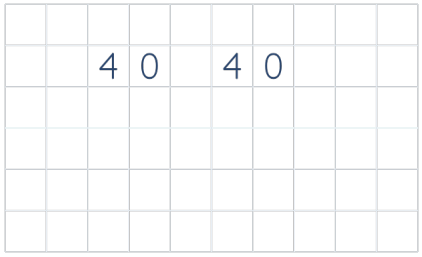
27 + 13 = ____ + 4



The equals sign tells us that both sides have the same value. We underline something + 4 on the other side.

Step 5

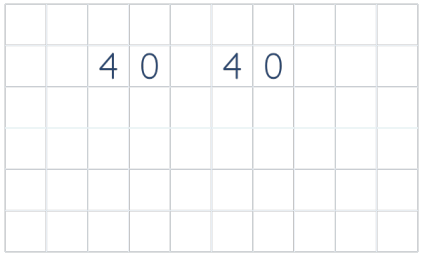
27 + 13 = ____ + 4



The left side, 27 + 13, equals 40. The right side must also equal 40. Write 40 directly under the right side, with one digit in each square.

Step 6

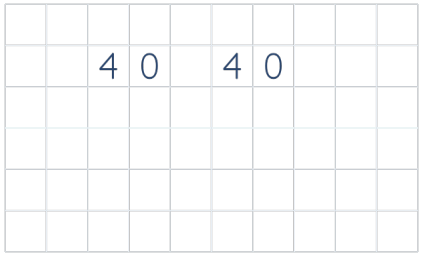
27 + 13 = ____ + 4



Now we need something + 4 to equal 40. We can use our missing-number method to find the missing addend.

Step 7

27 + 13 = ☐ + 4

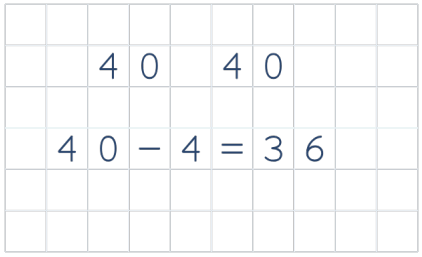


Remember: Work out the complete side first, wherever it appears. Use its value to find the missing number.

Look at the right side of the equals sign. It says something plus 4. This side needs a value of 40. The box is for the number we add to 4.

Step 8

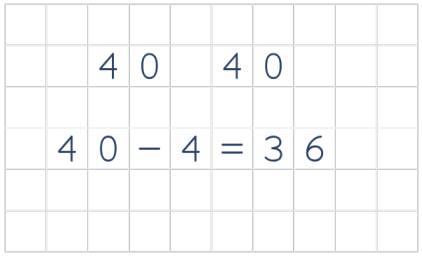
27 + 13 = ☐ + 4



The side with the blank must also equal 40. Subtract 4 from 40 to find the missing part. Write 40 – 4 = 36 below the two totals.

Step 9

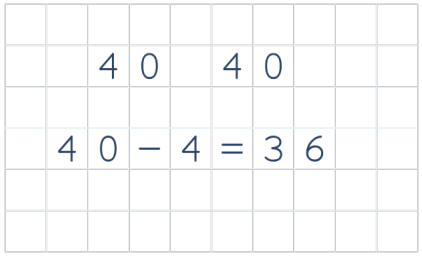
27 + 13 = 36 + 4



Now, we put 36 into the blank in the original question. Make sure you copy the answer correctly.

Step 10

27 + 13 = 36 + 4



Read the completed equation. 27 + 13 = 36 + 4. The left side is 27 + 13, which makes 40. The right side is 36 + 4, which also makes 40. Both sides have the same value, so 36 works.

Year 4 - Bridge Through a Multiple of 10

When to choose this strategy

When adding takes us past a multiple of 10, add enough to reach it first. Then add the rest.

Worked example

960 + 80

1,000 + 40 = 1,040

1. We can add 40 to reach 1,000 from 960. Split 80 into 40 and 40. Start at 960 and add 40 to reach 1,000.

2. Add the remaining 40 to get 1,040. Check that 40 and 40 make the original 80.

> **Remember:** The first jump uses part of the number you are adding. Add only the part that is left.

Check understanding

5,860 + 300

Which multiple of 10 will you reach first? How much of the number is left to add?

Expected answer 5,860 + 300 = 6160

Year 4 - Bridge Through a Multiple of 10

When to choose this strategy

When subtracting takes us past a multiple of 10, subtract enough to reach it first. Then subtract the rest.

Worked example

1,030 − 70



1. We can subtract 30 to reach 1,000 from 1,030. Split 70 into 30 and 40. Start at 1,030 and subtract 30 to reach 1,000.

2. Subtract the remaining 40 to get 960. Check that 30 and 40 make the original 70.

> **Remember:** The first jump uses part of the number you are subtracting. Subtract only the part that is left.

Check understanding

6,130 − 300
Which multiple of 10 will you reach first? How much is left to subtract?

Expected answer 6,130 − 300 = 5830

Year 4 - Change an Addend When Close to a Clear Multiple

When to choose this strategy

Use this when one number is close to a multiple of 10 or 100. That nearby number can make the addition easier to do mentally.

Worked example

264 + 299

Add the nearby number

$$264 + 300 = 564$$

Subtract the extra

$$564 - 1 = 563$$

$$264 + 299 = 563$$

1. The addend, the number we add, is 299. It is close to 300, an easier number to work with. Add 300 to 264 to get 564.

2. We added 1 too much, so subtract 1. The sum is 563.

3. So 264 + 299 = 563. We used 300 and then adjusted by 1.

> **Remember:** If you added too much, subtract the extra. If you added too little, add the amount still needed.

Check understanding

48 + 29

What multiple will you add first? How will you adjust the total?

Expected answer 48 + 29 = 77

Year 4 - Change the Subtrahend When Close to a Clear Multiple

When to choose this strategy

Use this when the amount we subtract is close to a multiple of 10 or 100. In this question, 299 is only 1 less than 300. We can subtract 300, but that takes 1 too many, so we add 1 back. If we were subtracting 305 instead, we could subtract 300 and then the remaining 5.

Worked example

764 − 299

Subtract the nearby number

764 − 300 = 464

Add back the extra

464 + 1 = 465

The difference

764 − 299 = 465

1. The subtrahend, the number we subtract, is 299. It is close to 300, an easier number to work with. Subtract 300 from 764 to get 464.

2. We took away 1 too much, so add 1. The difference is 465.

3. So 764 − 299 = 465. We used 300 and then adjusted by 1.

> **Remember:** If you took away too much, add the extra back. If you took away too little, subtract the amount still needed.

Check understanding

648 − 29

What multiple will you subtract first? How much will you add back or still need to subtract?

Expected answer 648 − 29 = 619

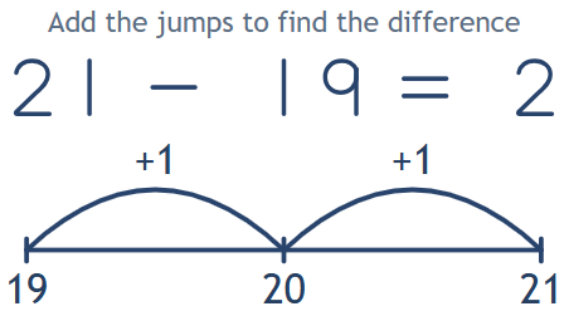
Year 4 - Count Up to Find the Difference

When to choose this strategy

When two numbers are close together, count up from the smaller number to the larger number. The amount we add is the difference.

Worked example

21 − 19



1. 21 and 19 are close together, so count up to find the difference. We count up from 19 to 21. First, we add 1 to reach 20: 19 + 1 = 20.

2. Then, we add 1 to reach 21: 20 + 1 = 21.

3. Altogether, we added 1 + 1 = 2. So 21 − 19 = 2. The difference is 2.

> **Remember:** The difference is the total of the jumps between the two numbers.

Check understanding

£8.00 − £6.49
Where will you start counting up? How do your jumps give the difference?

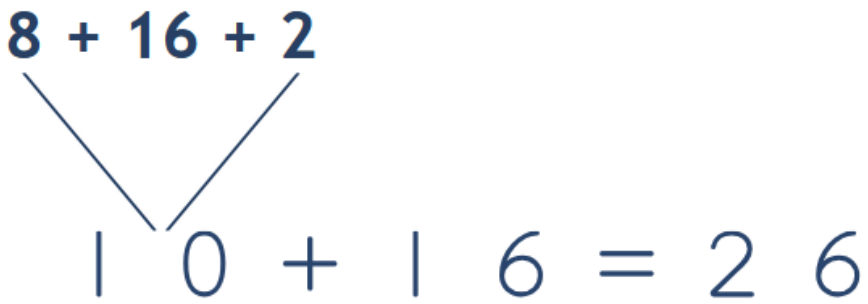
Expected answer £8.00 − £6.49 = 1.51

Year 4 - Choose a Pair to Add Three Numbers

When to choose this strategy

When adding three numbers, look at all three before choosing a pair. Use number bonds or doubles to make the next step easier. The useful pair can be anywhere in the question. Use the remaining number once after the first calculation.

Worked example



1. Choose 8 and 2 because 8 plus 2 makes 10, which is easy to add to. Keep 16 for the next step.

2. First, add 8 and 2 to get 10. Show the two numbers we chose and record their sum.

3. Next, 10 + 16 = 26. We have used all three original numbers once.

4. Now, we check using subtraction, the inverse. 26 − 16 − 2 = 8. We get back to the addend we started with.

> **Remember:** Use each of the three numbers once. After adding your pair, add the remaining number.

Check understanding

6 + 9 + 6
Which pair gives you a helpful total? What will you add to that total?

Expected answer 6 + 9 + 6 = 21

Year 4 - Use a Related Fact

When to choose this strategy

When both numbers are multiples of 10, 100 or 1,000, use place value and a number fact you know. For 500 + 200, think of 5 hundreds and 2 hundreds.

Worked example

500 + 200

Known fact: ones

$$5 + 2 = 7$$

Use it: hundreds

$$500 + 200 = 700$$

1. 500 is 5 hundreds. 200 is 2 hundreds. Use the known fact 5 + 2 = 7.

2. The result is 7 hundreds, which is 700.

> **Remember:** Name the unit in the answer. For example, seven tens is seventy.

Check understanding

60 + 20

Which fact will you use? What place value does your answer have?

Expected answer 60 + 20 = 80

Year 4 - Use a Related Fact

When to choose this strategy

When both numbers are multiples of 10, 100 or 1,000, use place value and a subtraction fact you know. For 500 − 200, think of 5 hundreds and 2 hundreds.

Worked example

500 − 200

Known fact: ones

$$5 - 2 = 3$$

Use it: hundreds

$$500 - 200 = 300$$

1. 500 is 5 hundreds. 200 is 2 hundreds. Use the known fact 5 − 2 = 3.

2. The result is 3 hundreds, which is 300.

> **Remember:** Name the unit in the answer. For example, three tens is thirty.

Check understanding

90 − 40

Which subtraction fact helps? How do you turn that fact into the answer?

Expected answer 90 − 40 = 50

Year 4 - Partition to Add Without Exchanges

When to choose this strategy

When the digits add without an exchange, partition the number you add. Add one part at a time.

Worked example

4,206 + 2,003



1. The matching digits in 4,206 and 2,003 add to less than 10 in each place, so we can add without exchanging. Partition 2,003 into 2,000 and 3. When we partition to work mentally, we start with the largest place value. Add 2,000 to 4,206 to get 6,206.

2. Then add 3 to 6,206. The sum is 6,209. Check that the two parts make 2,003.

> **Remember:** Add each part once. Start with the largest place value.

Check understanding

5,379 + 4,020
How will you partition the number you add? Which part will you add first?

Expected answer 5,379 + 4,020 = 9399

Year 4 - Partition to Subtract Without Exchanges

When to choose this strategy

When there is enough to subtract in each place, partition the number you subtract. Subtract one part at a time.

Worked example

8,530 − 3,020



1. In each place, the digit in 8,530 is large enough to subtract the matching digit in 3,020 without exchanging. Partition 3,020 into 3,000 and 20. When we partition to work mentally, we start with the largest place value. Subtract 3,000 from 8,530 to get 5,530.

2. Then subtract 20 from 5,530. The difference is 5,510. Check that the two parts make 3,020.

> **Remember:** Check that each place has enough to subtract. Start with the largest part when you partition the number you subtract.

Check understanding

8,678 − 1,008
How will you partition the number you subtract? Which part will you subtract first?

Expected answer 8,678 − 1,008 = 7670

Year 4 - Use a Near Double

When to choose this strategy

When the two numbers are one apart, double the smaller number and add 1.

Worked example

37 + 38



1. 38 is one more than 37. Start with double 37, which is 74.

2. Add the extra 1 from 38 to 74. The sum is 75.

> **Remember:** Add 1 to the double of the smaller number because the larger number is 1 more.

Check understanding

35 + 36
Which number will you double? Why will you add 1?

Expected answer 35 + 36 = 71

Year 4 - Use a Related Fact

When to choose this strategy

When a factor is a multiple of 10, 100 or 1,000, use place value and a multiplication fact you know. For 300 × 4, think of 3 hundreds multiplied by 4.

Worked example

300 × 4

A number fact we know

3 × 4 = 12

Use the hundreds

300 × 4 = 1200

1. 300 is 3 hundreds. Use the known fact 3 × 4 = 12.

2. The result is 12 hundreds, which is 1,200.

> **Remember:** Keep the unit from the known fact. For example, twelve tens is one hundred and twenty.

Check understanding

500 × 7

Which multiplication fact will you use? What place value does the answer have?

Expected answer 500 × 7 = 3500

Year 4 - Use a Related Fact

When to choose this strategy

When the dividend is a multiple of 10, 100 or 1,000, use place value and a division fact you know. For 800 ÷ 4, think of 8 hundreds divided by 4.

Worked example

800 ÷ 4

A number fact we know

$$8 \div 4 = 2$$

Use the hundreds

$$800 \div 4 = 200$$

1. 800 is 8 hundreds. Use the known fact 8 ÷ 4 = 2.

2. The result is 2 hundreds, which is 200.

> **Remember:** Keep track of what one group contains when you divide the tens or hundreds.

Check understanding

700 ÷ 7

Which place-value unit gives you a related division fact? What is one group worth?

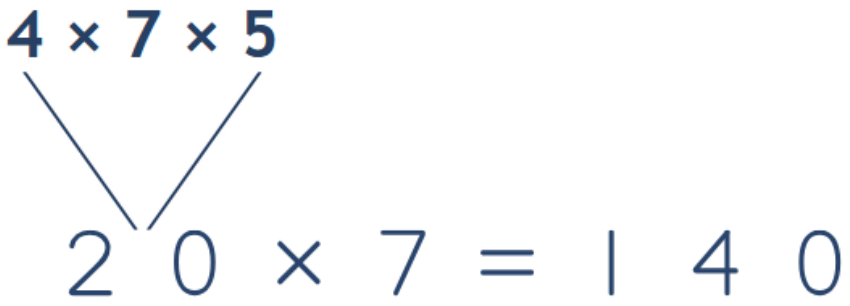
Expected answer 700 ÷ 7 = 100

Year 4 - Choose a Pair to Multiply Three Numbers

When to choose this strategy

When multiplying three numbers, look at all three before choosing a pair. Use multiplication facts to make the next step easier. The useful pair can be anywhere in the question. Use the remaining number once after the first calculation.

Worked example



1. Choose 4 and 5 because 4 times 5 makes 20, which is easy to multiply by. Keep 7 for the next step.

2. First, multiply 4 by 5 to get 20. Show the two numbers we chose and record their product.

3. Next, 20 is 2 tens. We know 2 × 7 = 14, so the product is 14 tens. 20 × 7 = 140. We have used all three original numbers once.

4. Now, we check using division, the inverse. 140 ÷ 7 ÷ 5 = 4. We get back to the factor we started with.

> **Remember:** Multiply the product of your pair by the remaining factor.

Check understanding

8 × 4 × 5
Which pair gives a product that is easy to multiply by? Which factor will you use next?

Expected answer 8 × 4 × 5 = 160

Year 4 - Double Twice

When to choose this strategy

To multiply by 4, double twice. This is helpful when both doubles are easy to find.

Worked example

23 × 4



1. Four is two times two, so we can double twice. Double 23 first to get 46.

2. Now double 46, the result of the first step, to get 92.

> **Remember:** Double the result of the first doubling.

Check understanding

32 × 4

What is the first double? Which number will you double next?

Expected answer 32 × 4 = 128

Year 4 - Halve Twice

When to choose this strategy

To divide by 4, halve twice. This is helpful when both halves are easy to find.

Worked example

84 ÷ 4

42 ÷ 2 = 21

1. Four is two times two, so we can halve twice. Halve 84 first to get 42.

2. Now halve 42, the result of the first step, to get 21. Check that four equal shares of 21 make 84.

> **Remember:** Halve the result of the first halving.

Check understanding

36 ÷ 4

What is the first half? Which number will you halve next?

Expected answer 36 ÷ 4 = 9

Year 4 - Partition to Multiply Using Known Facts

When to choose this strategy

When the tens and ones give you multiplication facts you know, partition the number. Multiply each part, then add the products.

Worked example

23 × 3



1. We know the facts for 20 times 3 and 3 times 3. Split 23 into 20 and 3. When we partition to work mentally, we start with the largest place value. Multiply 20 by 3 to get 60.

2. Multiply 3 by 3 to get 9.

3. We multiplied both parts by 3. Add the products 60 and 9 to get 69.

> **Remember:** Multiply every part by the same factor, starting with the largest place value. Add the products.

Check understanding

33 × 2

How will you partition the number? Which part will you multiply first?

Expected answer 33 × 2 = 66

Year 4 - Use a Factor Pair

When to choose this strategy

Split one factor into two smaller factors when multiplying by them in turn is easier.

Worked example

18 × 6



1. 6 is 2 times 3. Double 18 first to get 36.

2. Then multiply 36 by 3. Multiplying by 2 and then by 3 is the same as multiplying by 6. The product is 108.

> **Remember:** The two smaller factors must multiply to make the original factor.

Check understanding

13 × 6

Which factor will you split? What will you multiply by first and then second?

Expected answer 13 × 6 = 78

Year 4 - Multiply by 5 Using 10

When to choose this strategy

Five is half of ten. Multiply by 10 and halve the product.

Worked example

48 × 5

480 ÷ 2 = 240

1. Five groups are half as many as ten groups. Multiply 48 by 10 first to get 480.

2. Now halve 480. Five groups of 48 make 240.

> **Remember:** Halve the product you get after multiplying by 10.

Check understanding

34 × 5

What will you get after multiplying by 10? Why do you halve that amount?

Expected answer 34 × 5 = 170

Year 4 - Close to a Multiple

When to choose this strategy

If one factor is close to a multiple of 10, use that multiple first. Then add or subtract the extra groups.

Worked example

39 × 7

$$280 - 7 = 273$$

1. 39 is close to 40. Use 40 groups of 7 first to get 280.

2. We counted one group of 7 too many. Subtract 7 to get 273.

> **Remember:** Each extra or missing group is worth the other factor.

Check understanding

19 × 6

Which multiple will you use? What is one group worth, and how will you use it to adjust?

Expected answer 19 × 6 = 114

Year 4 - Change the Minuend When Close to a Clear Multiple

When to choose this strategy

If the minuend, the starting number, is close to an easy multiple, start at the multiple and subtract the same number. Then correct the difference.

Worked example

398 − 175

225 − 2 = 223

1. The minuend, the number we start with, is 398. It is close to 400, an easier number to work with. Start at 400 and still subtract 175 to get 225.

2. We started with 2 too much, so subtract 2. The difference is 223.

> **Remember:** Keep the number you subtract the same. If you started too high, subtract the extra. If you started too low, add the difference back.

Check understanding

199 − 54

What easier number will you start from? How will you correct the difference?

Expected answer 199 − 54 = 145