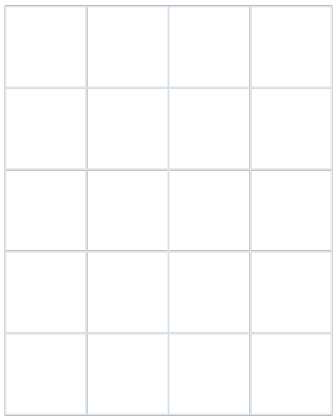
Year 3 - Column Addition — Lesson Guide

Step 1

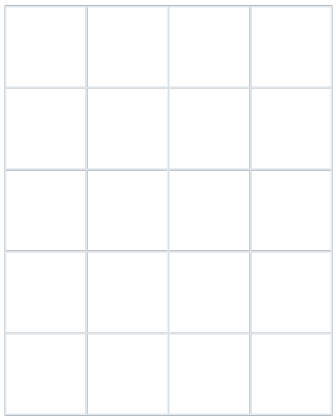
225 + 17 = ☐



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

Step 2

225 + 17 = ☐



First, check whether a mental method would be quicker. Look at the ones. 5 ones and 7 ones make 12 ones. We can exchange 10 ones for 1 ten. Column addition keeps the place values lined up.

Step 3

225 + 17 = ☐



Next, our largest number has 3 digits, so we neatly write the headings H, T and O below the question, with one heading in each box. These stand for hundreds, tens and ones.

Step 4

225 + 17 = ☐

	H	T	O
	2	2	5

The first digit of 225, 2, is in the hundreds column, so we start there. Now, we write 225 in the correct columns, with one digit in each box.

Step 5

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7

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. 17 has two digits, so we start with 1 in the tens column. We write 17 in the correct columns, with one digit in each box.

Step 6

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7

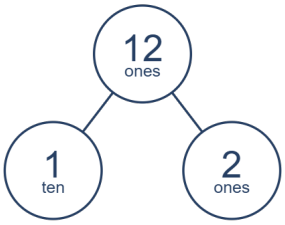
Draw a line under 17. Leave one row for the sum, then draw the second line below that row. Write exchanges below the second line.

Step 7

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7

First, we add the ones, the smallest place-value column. 5 ones + 7 ones = 12 ones. As we can only write one digit per box, we partition 12 ones into 1 ten and 2 ones.



Step 8

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
			2
		1	

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

Step 9

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
			2
		1	

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

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

Step 10

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
		4	2
		1	

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

Next, we add the tens. 2 tens + 1 ten = 3 tens. Add the 1 exchanged ten shown by the small 1 below the tens column. 3 tens + 1 exchanged ten = 4 tens. We write 4 in the tens column. No exchange is needed this time.

Step 11

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
	2	4	2
		1	

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

Look at the hundreds column. The lower square is empty because 17 has no hundreds. Use 0 hundreds for 17. 2 hundreds + 0 hundreds = 2 hundreds. We write 2 in the hundreds column. No exchange is needed this time.

Step 12

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
	2	4	2
		1	

Our sum is 242. Before we copy our answer into the answer box, let's check each column, including the exchanges. First, we check the ones: 5 + 7 = 12. We have correctly recorded 1 ten underneath the answer and 2 ones in the ones answer box.

Step 13

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
	2	4	2
		1	

Next, we check the tens, including the exchanged ten: 2 + 1 + 1 = 4. We have correctly included the exchanged ten and written 4 in the tens answer box.

Step 14

225 + 17 = ☐

	H	T	O
	2	2	5
+		1	7
	2	4	2
		1	

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

Step 15

225 + 17 = 242

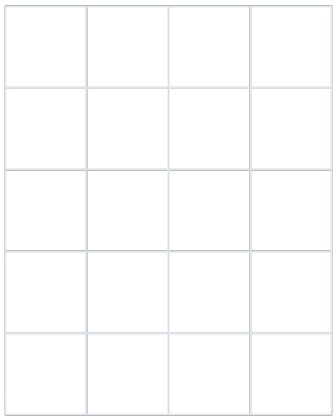
	H	T	O
	2	2	5
+		1	7
	2	4	2
		1	

The sum is 242. Copy 242 into the answer box. Make sure you copy the answer correctly.

Year 3 - Column Subtraction — Lesson Guide

Step 1

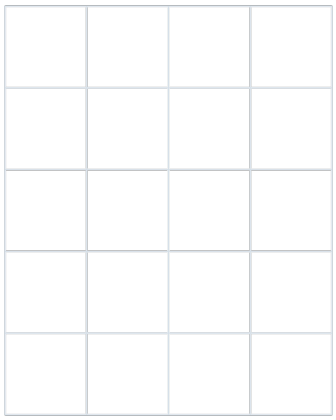
351 – 24 = ☐



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

Step 2

351 – 24 = ☐



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

351 – 24 = ☐



Next, our largest number has 3 digits, so we neatly write the headings H, T and O below the question, with one heading in each box. These stand for hundreds, tens and ones.

Step 4

351 – 24 = ☐

	H	T	O
	3	5	1

The first digit of 351, 3, is in the hundreds column, so we start there. Now, we write 351 in the correct columns, with one digit in each box.

Step 5

351 – 24 = ☐

	H	T	O
	3	5	1
–		2	4

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 24, 2, is in the tens column, so we start there. We write 24 in the correct columns, with one digit in each box.

Step 6

351 – 24 = ☐

	H	T	O
	3	5	1
–		2	4

Draw a line under 24. Leave one row for the difference, then draw the second line below that row.

Step 7

351 – 24 = ☐

	H	T	O
	3	4 ~~5~~	1
–		2	4

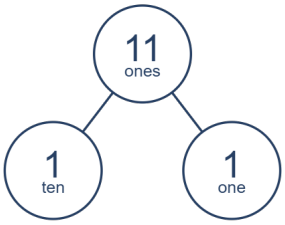
We have 1 one and need to subtract 4 ones. Exchange 1 ten from the 5 tens for 10 ones. Cross out the 5 and write a small 4 at the top left of the tens square. We now have 4 tens in that column.

Step 8

351 – 24 = ☐

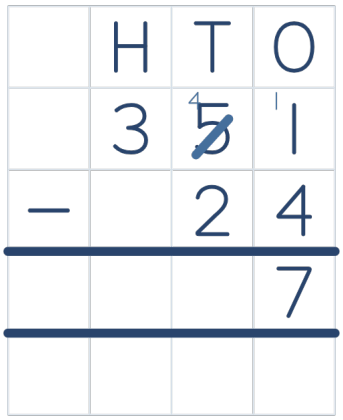
	H	T	O
	3	4 ~~5~~	1 1
–		2	4

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 9

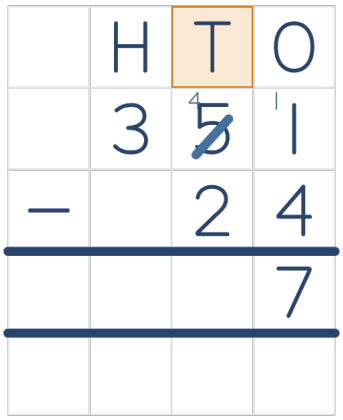
351 – 24 = ☐



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

Step 10

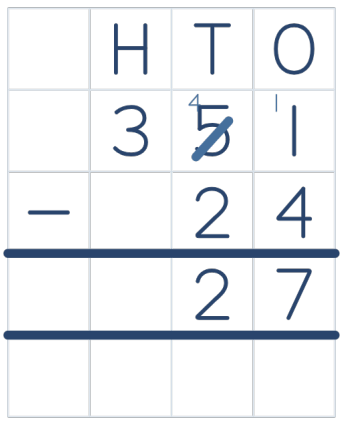
351 – 24 = ☐



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

Step 11

351 – 24 = ☐



Next, we subtract the tens, which is 4 tens – 2 tens. 4 tens – 2 tens = 2 tens, so we write 2 in the tens column. No exchange is needed this time.

Step 12

351 – 24 = ☐

	H	T	O
	3	4 5	1 1
–		2	4
	3	2	7

Look at the hundreds column. The lower square is empty because 24 has no hundreds. Use 0 hundreds for 24. 3 hundreds – 0 hundreds = 3 hundreds, so we write 3 in the hundreds column. No exchange is needed this time.

Step 13

351 – 24 = ☐

	H	T	O
	3	4 5	1 1
–		2	4
	3	2	7

Our difference is 327. 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 14

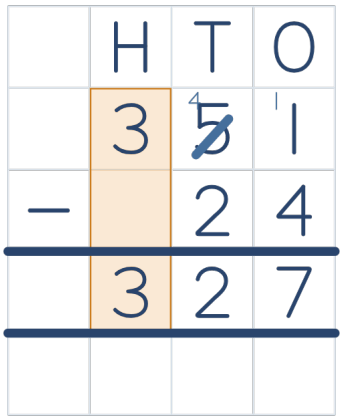
351 – 24 = ☐

	H	T	O
	3	4 5	1 1
–		2	4
	3	2	7

Next, we check the tens: 4 tens – 2 tens = 2 tens. We have correctly written 2 in the tens answer box.

Step 15

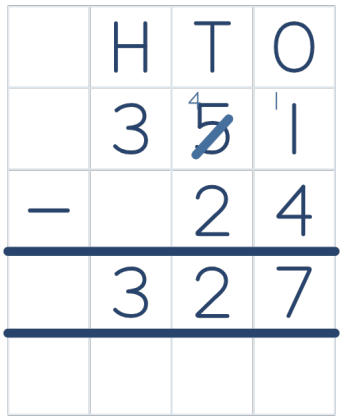
351 – 24 = ☐



Finally, we check the hundreds: 3 hundreds – 0 hundreds = 3 hundreds. We have correctly written 3 in the hundreds answer box.

Step 16

351 – 24 = 327

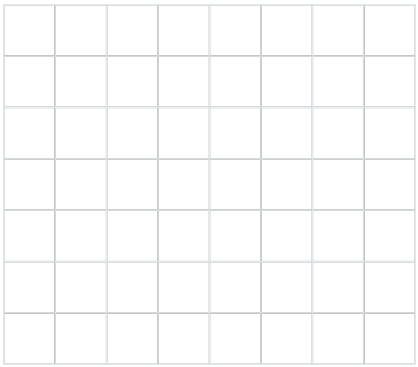


The difference is 327. Copy 327 into the answer box. Make sure you copy the answer correctly.

Year 3 - Expanded Column Multiplication — Lesson Guide

Step 1

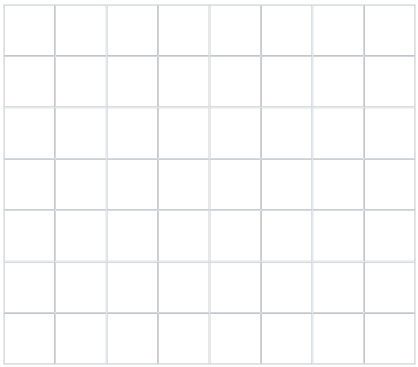
$35 \times 7 =$ ☐



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

Step 2

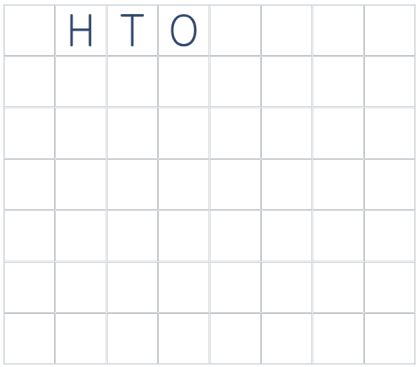
$35 \times 7 =$ ☐



First, check whether a mental method would be quicker. Expanded column multiplication gives us a row for each product. Split 35 into 30 and 5. Multiply each part by 7, then add the two products.

Step 3

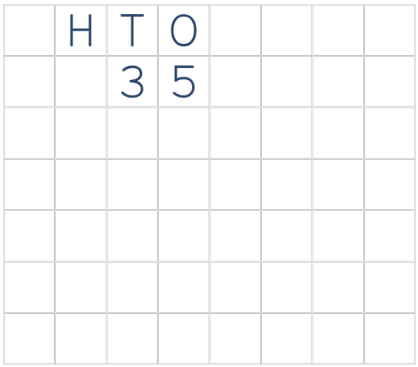
$35 \times 7 =$ ☐



Next, our largest number has 2 digits, so we neatly write the headings T and O below the question, with one heading in each box. Our answer needs another place-value column, so we also write H. These stand for hundreds, tens and ones.

Step 4

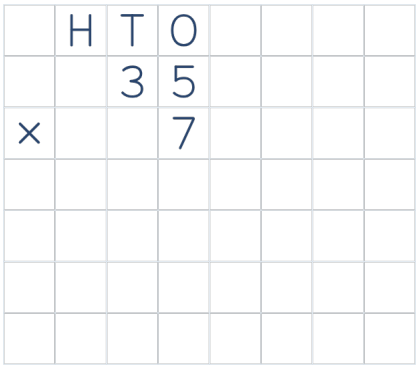
35 × 7 = ☐



The first digit of 35, 3, is in the tens column, so we start there. Now, we write 35 in the correct columns, with one digit in each box.

Step 5

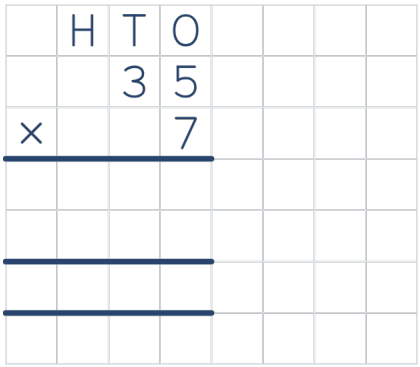
35 × 7 = ☐



Next, we write the multiplication sign to the left. 7 is a one-digit factor, so we write 7 in the ones column.

Step 6

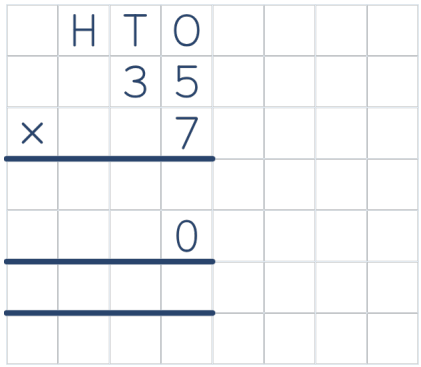
35 × 7 = ☐



Draw a line below the factors. Leave the first row for 5 × 7 and the second row for 30 × 7. Draw a line below those two rows. Leave one row for the sum, then draw the second answer line below that row. Write exchanges below the second answer line.

Step 7

35 × 7 = ☐

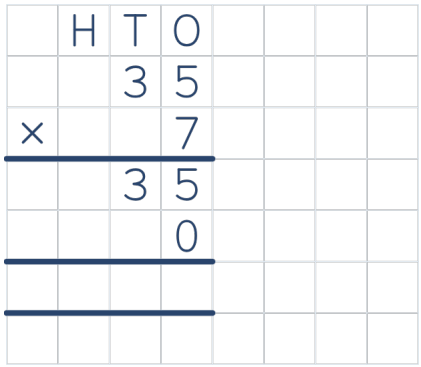


Remember: The zero holds the ones place in the tens product row.

Write 0 in the ones square of the tens product row. Multiplying tens by 7 gives a multiple of 10, so the tens product has no ones.

Step 8

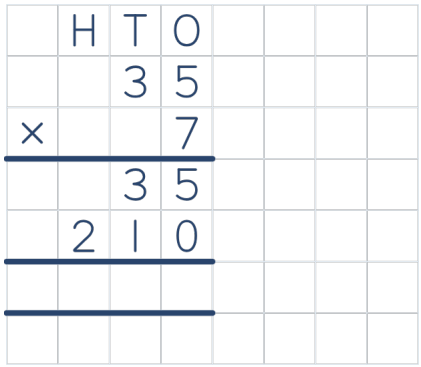
35 × 7 = ☐



First, we multiply the ones. 5 ones × 7 = 35 ones. That is 3 tens and 5 ones. Write 5 in the ones square of the first product row. Write 3 in the tens square of the first product row.

Step 9

35 × 7 = ☐



Next, we multiply the tens. 3 tens × 7 = 21 tens, which is 210. That is 2 hundreds and 1 ten. Keep the 0 in the ones square. Write 1 in the tens square of the second product row. Write 2 in the hundreds square of the second product row.

Step 10

35 × 7 = ☐

	H	T	O				
		3	5				
×			7				
		3	5				
	2	1	0				
			5				

Now, we add the two products, starting with the ones, the smallest place-value column. 5 ones + 0 ones = 5 ones. We write 5 in the ones answer box. No exchange is needed this time.

Step 11

35 × 7 = ☐

	H	T	O				
		3	5				
×			7				
		3	5				
	2	1	0				
		4	5				

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

Next, we add the tens. 3 tens + 1 ten = 4 tens. We write 4 in the tens answer box. No exchange is needed this time.

Step 12

35 × 7 = ☐

	H	T	O				
		3	5				
×			7				
		3	5				
	2	1	0				
	2	4	5				

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

Next, we add the hundreds. 0 hundreds + 2 hundreds = 2 hundreds. We write 2 in the hundreds answer box. No exchange is needed this time.

Step 13

35 × 7 = ☐

	H	T	O				
		3	5				
×			7				
		3	5				
	2	1	0				
	2	4	5				

Now, we check the whole method. 5 × 7 = 35. 30 × 7 = 210. The second product has a 0 in the ones column because we multiplied tens. 35 + 210 = 245. We check that the digits are in the correct columns.

Step 14

35 × 7 = **245**

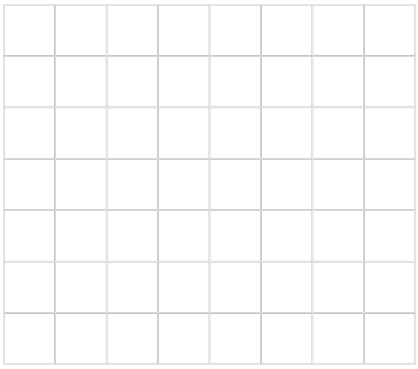
	H	T	O				
		3	5				
×			7				
		3	5				
	2	1	0				
	2	4	5				

The product is 245. Copy 245 into the answer box. Make sure you copy the answer correctly.

Year 3 - Division by Partitioning — Lesson Guide

Step 1

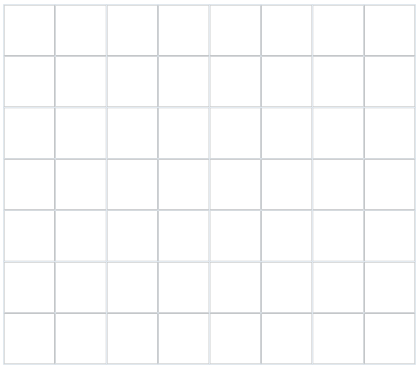
$72 \div 3 =$ ☐



First, we circle the division sign so we know to divide the whole amount.

Step 2

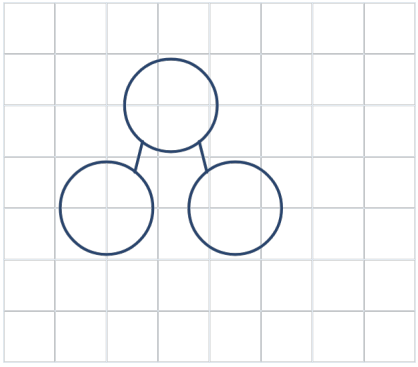
$72 \div 3 =$ ☐



We are sharing 72 equally into 3 groups to find the amount in each group. Split 72 into two parts that both divide exactly by 3.

Step 3

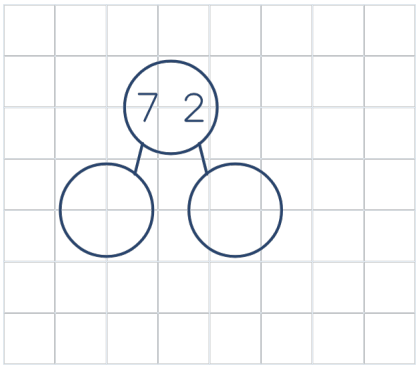
$72 \div 3 =$ ☐



A part–whole model helps us see how two parts make a whole. We draw a circle at the top for the whole and two circles below for the parts.

Step 4

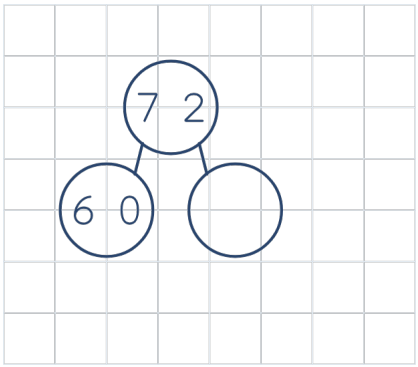
72 ÷ 3 = ☐



We write 72 in the whole circle. We will keep both parts together equal to this whole.

Step 5

72 ÷ 3 = ☐

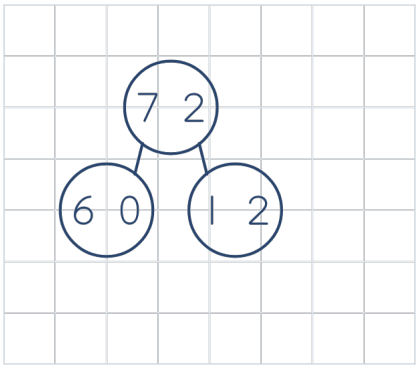


Remember: Both parts must divide exactly by 3.

Start with the 7 tens in 72. Each of the 3 groups can get 2 tens. That uses 6 tens altogether. There is 1 ten left. We need 3 tens to give one more ten to each group. Write 60 in the left circle.

Step 6

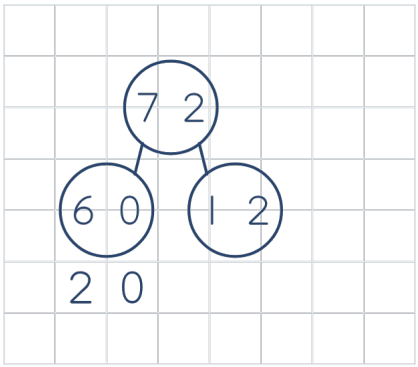
72 ÷ 3 = ☐



Next, we find how much is left. 72 – 60 = 12. We have 1 ten left. We exchange it for 10 ones. 10 ones and 2 ones make 12 ones. We write 12 in the other part. 60 + 12 = 72, so the parts still make the whole.

Step 7

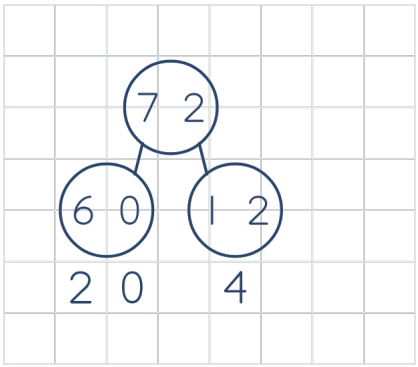
72 ÷ 3 = ☐



Share the 6 tens from the left circle equally into 3 groups. Each group gets 2 tens. 60 ÷ 3 = 20. Write 20 below the left circle.

Step 8

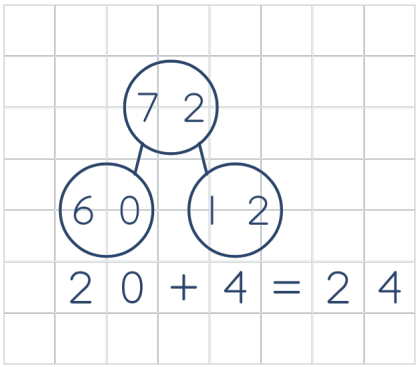
72 ÷ 3 = ☐



Share the 12 ones from the right circle equally into the same 3 groups. Each group gets 4 ones. 12 ÷ 3 = 4. Write 4 below the right circle.

Step 9

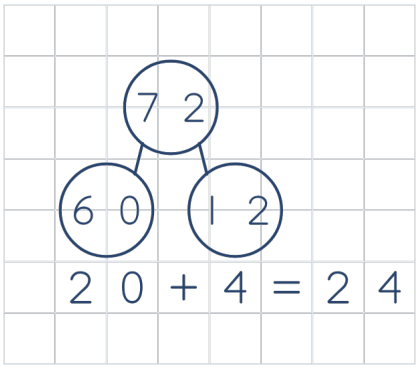
72 ÷ 3 = ☐



Each group gets 20 from the first part and 4 from the second part. 20 + 4 = 24. Each of the 3 groups gets 24.

Step 10

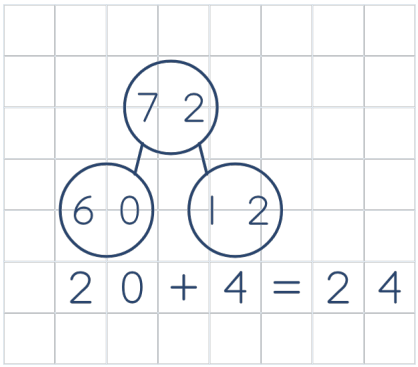
72 ÷ 3 = ☐



Check that 60 and 12 make the whole, 72. Then check the amount in one group. It gets 20 from 60 and 4 from 12. That makes 24 in each of the 3 groups.

Step 11

72 ÷ 3 = **24**

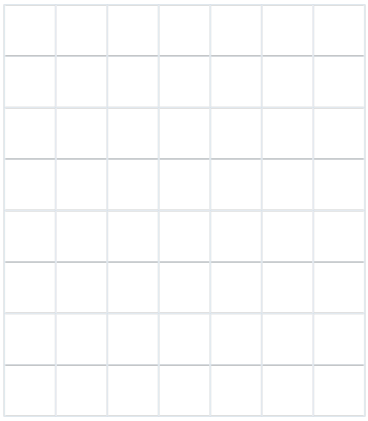


The quotient is 24. Copy 24 into the answer box. Make sure you copy the answer correctly.

Year 3 - Finding Missing Numbers (+ and –) — Lesson Guide

Step 1

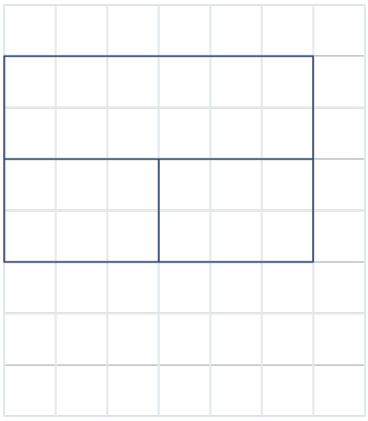
□ – 415 = 312



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

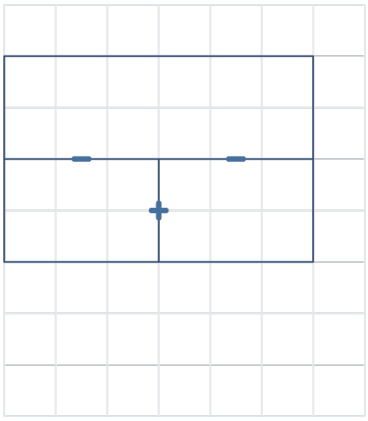


Remember: The box asks for a missing number. Put it back in the same place to check.

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

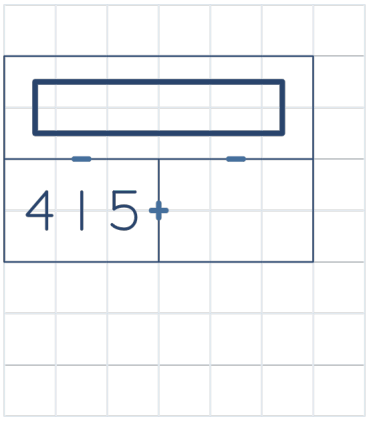
□ – 415 = 312



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

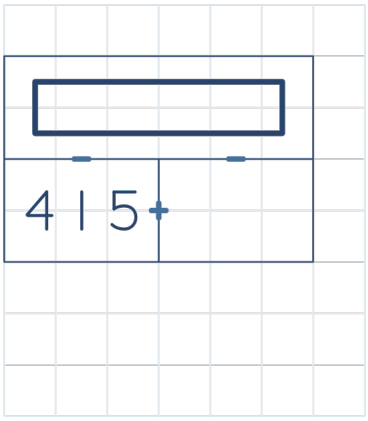
□ – 415 = 312



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

Step 5

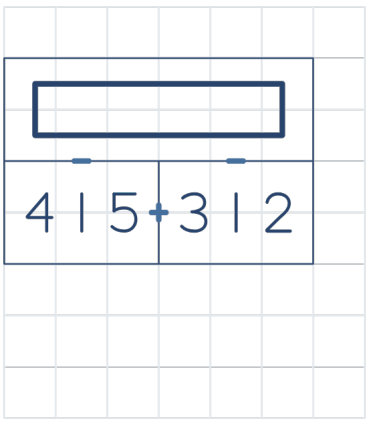
□ – 415 = 312



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

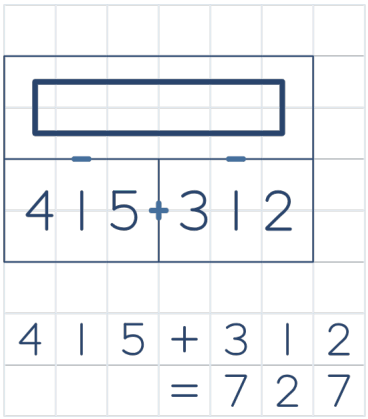
□ – 415 = 312



Write 312 in the right part.

Step 7

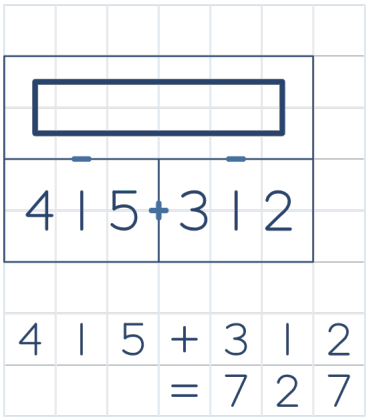
□ – 415 = 312



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

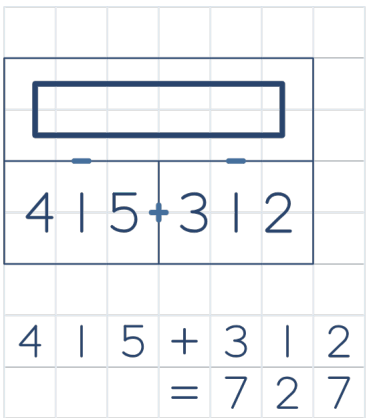
727 – 415 = 312



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

Step 9

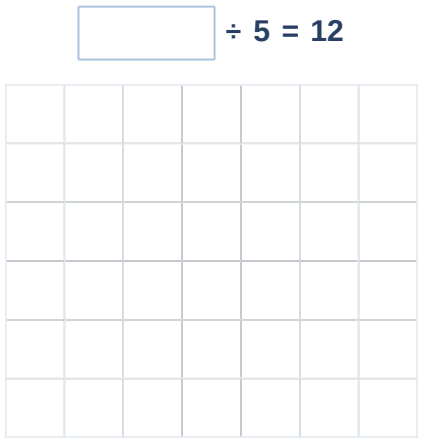
727 – 415 = 312



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.

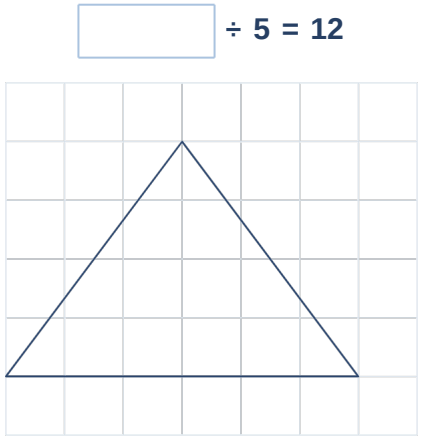
Year 3 - Finding Missing Numbers (× and ÷) — Lesson Guide

Step 1



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

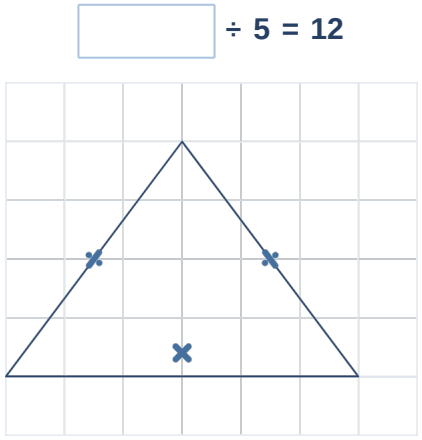
Step 2



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

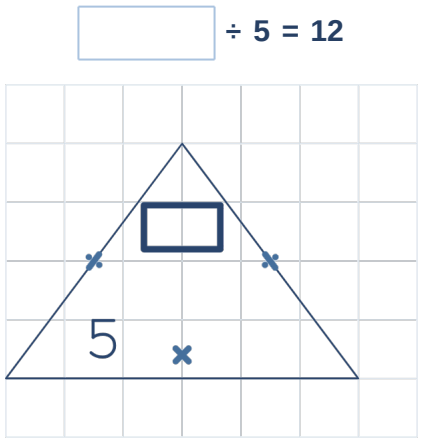
We are finding the amount we started with. Sharing that amount into 5 equal groups gives 12 in each group. Draw the product-factor triangle. The missing whole goes at the top. The two known factors go at the bottom.

Step 3



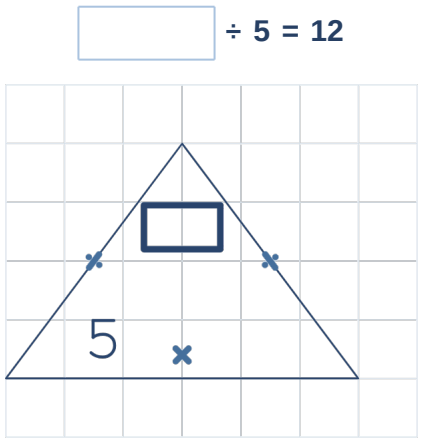
Next, we draw bold division signs over the two sloping sides and a bold multiplication sign just above the base. The factors multiply to make the product. To find a factor, we divide the product by the other factor.

Step 4



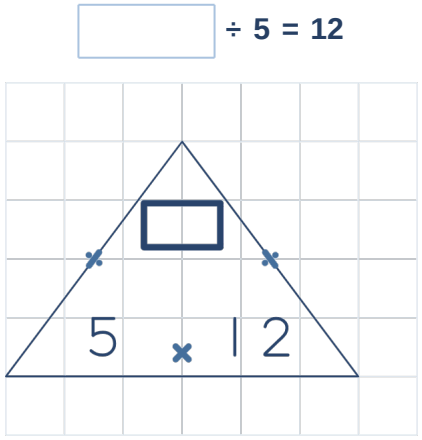
Next, we use our product-factor triangle to show something divided by 5. Our first two entries are on either side of the division sign. The first is the dividend, the product in the related multiplication. The second is the divisor, one of the factors. We draw a small rectangle at the top, in the product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

Step 5



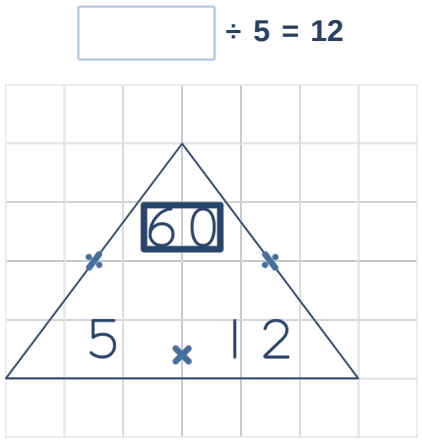
Before moving on, let's make sure our first two entries are in the right places. First, we read the calculation: something divided by 5. Then, we read the matching calculation in our product-factor triangle: something divided by 5. If they match, well done. If they do not, edit the model and check it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

Step 6



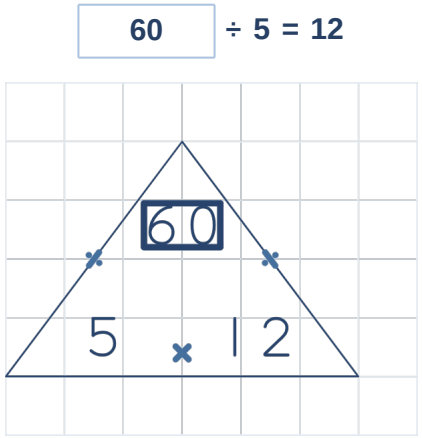
Now the calculation is in the correct place, we can look at our quotient, 12. We write 12 in the bottom-right corner.

Step 7



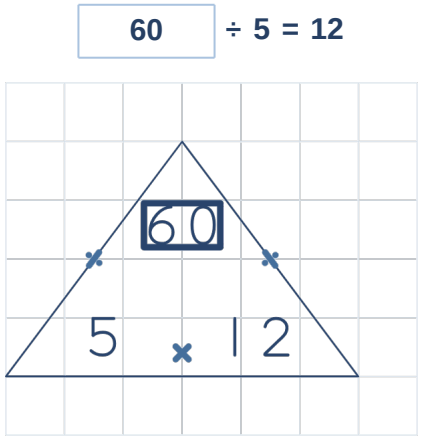
The top of the triangle is blank, so we multiply the two factors at the bottom. 5 × 12 = 60. The missing product is 60.

Step 8



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

Step 9

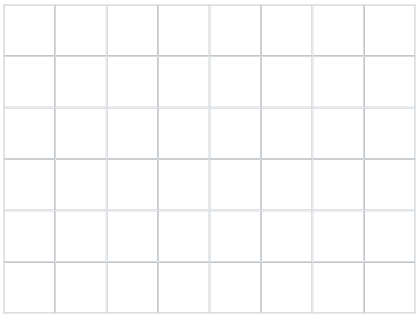


Put 60 back in the blank. Use the product-factor triangle to check the calculation. Multiply the factors. 5 × 12 = 60. So 60 shared into 5 equal groups gives 12 in each group. If you get a different number, check that you used the operation in the question. Then work it out again.

Year 3 - Finding Fractions of Amounts (Unit) — Lesson Guide

Step 1

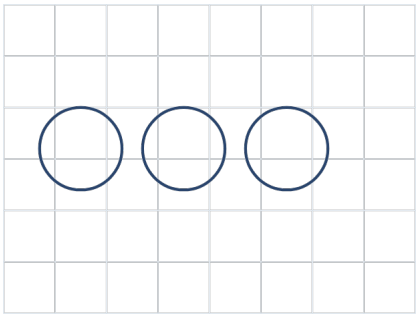
Find $\frac{1}{3}$ of 6 = ☐



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.

Step 2

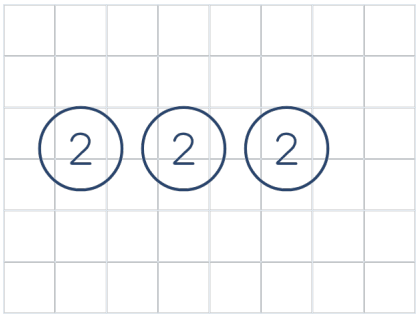
Find $\frac{1}{3}$ ✓ of 6 = ☐



Circles help us show the equal parts. We draw 3 circles of the same size, one for each part. Then, we tick the denominator, 3, because we have drawn that many equal parts.

Step 3

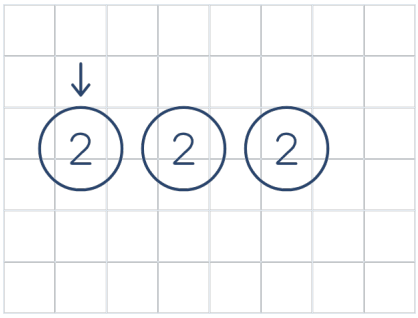
Find $\frac{1}{3}$ ✓ of 6 ✓ = ☐



Next, we share the whole amount equally between the circles. 6 ÷ 3 = 2. We write 2 in every circle. Each circle holds one equal part. Then, we tick the whole amount, 6, because we have shared all of it.

Step 4

Find $\frac{1}{3}$ of 6 = ☐

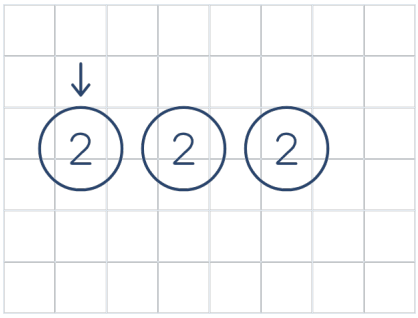


Remember: One arrow goes to each chosen circle. Use the amounts in the circles to find the answer.

The numerator, which is 1, tells us to choose 1 equal part. Draw one arrow to the circle we want. Check that you drew one arrow. Tick the numerator, 1.

Step 5

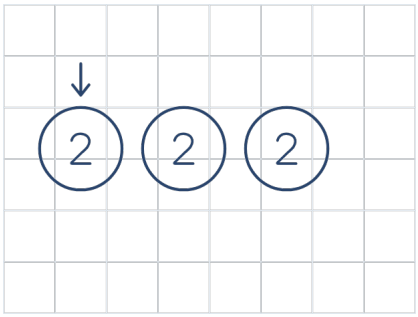
Find $\frac{1}{3}$ of 6 = ☐



Follow the arrow to its circle. That circle holds 2. So one third of 6 is 2.

Step 6

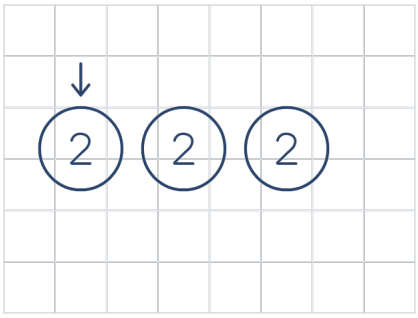
Find $\frac{1}{3}$ of 6 = ☐



Check the denominator. There are 3 equal groups. Check the whole amount. 3 groups of 2 make 6. Check the numerator. One circle has an arrow. The chosen part gives 2.

Step 7

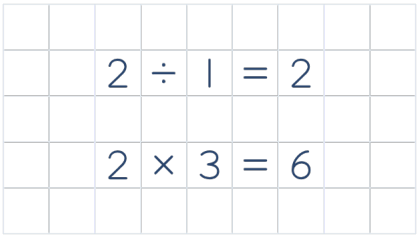
Find $\frac{1}{3}$ of 6 = 2



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

Step 8

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

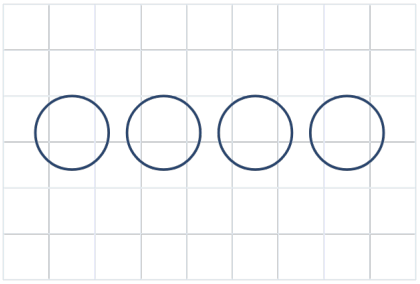
Step 1

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.

Step 2

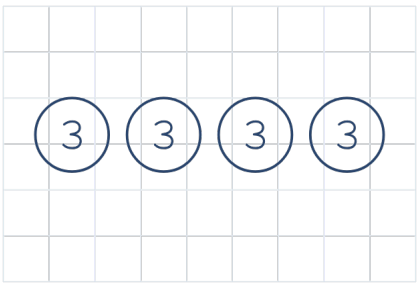
Find $\frac{3}{4}$ ✓ of 12 = ☐



Circles help us show the equal parts. We draw 4 circles of the same size, one for each part. Then, we tick the denominator, 4, because we have drawn that many equal parts.

Step 3

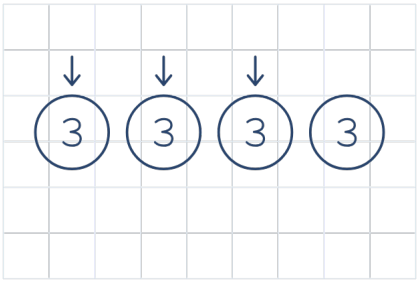
Find $\frac{3}{4}$ ✓ of 12 ✓ = ☐



Next, we share the whole amount equally between the circles. 12 ÷ 4 = 3. We write 3 in every circle. Each circle holds one equal part. Then, we tick the whole amount, 12, because we have shared all of it.

Step 4

Find $\frac{3}{4}$ of 12 = ☐

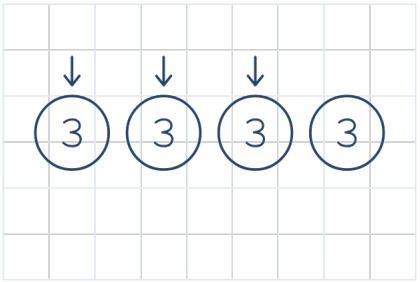


Remember: One arrow goes to each chosen circle. Use the amounts in the circles to find the answer.

The numerator, which is 3, tells us to choose 3 equal parts. Draw one arrow to each of 3 different circles. Count the 3 arrows. Tick the numerator, 3.

Step 5

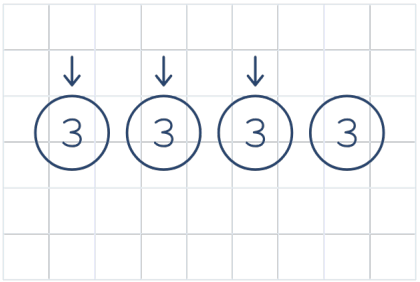
Find $\frac{3}{4}$ of 12 = ☐



Each selected circle contains 3. We selected 3 circles, so we have 3 lots of 3. 3 × 3 = 9. So 3 quarters of 12 is 9.

Step 6

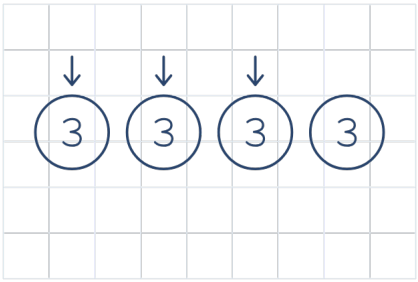
Find $\frac{3}{4}$ of 12 = ☐



Check the denominator. There are 4 equal groups. Check the whole amount. 4 groups of 3 make 12. Check the numerator. 3 circles have arrows. The chosen parts give 9.

Step 7

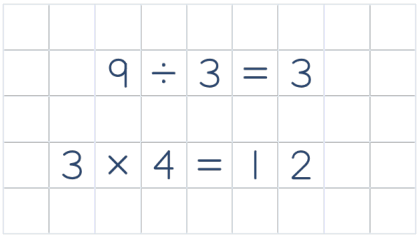
Find $\frac{3}{4}$ of 12 = **9**



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

Step 8

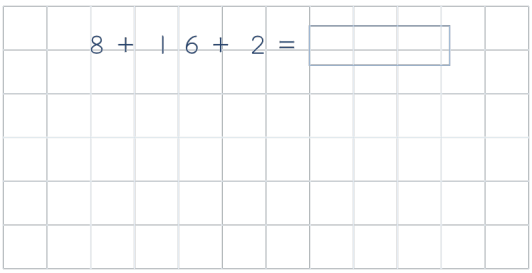
Find $\frac{3}{4}$ of 12 = **9**



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.

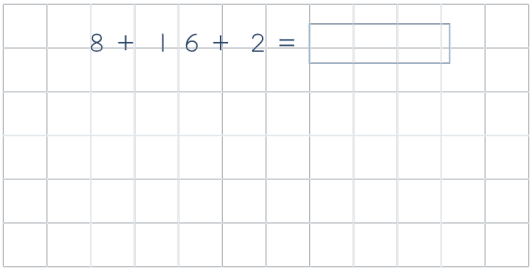
Year 3 - Adding 3 Numbers — Lesson Guide

Step 1



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

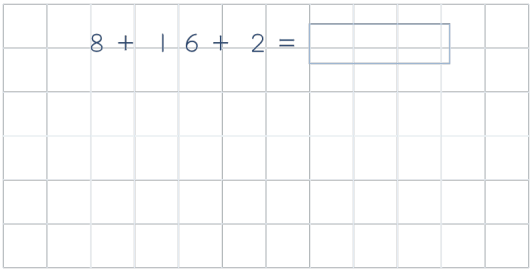
Step 2



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.

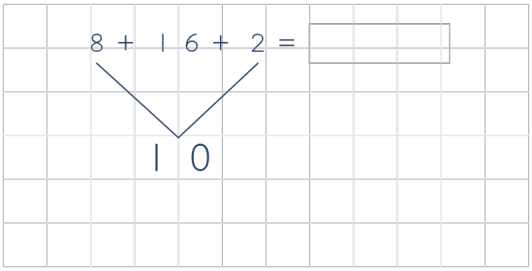
Step 3



Remember: Use each original number once.

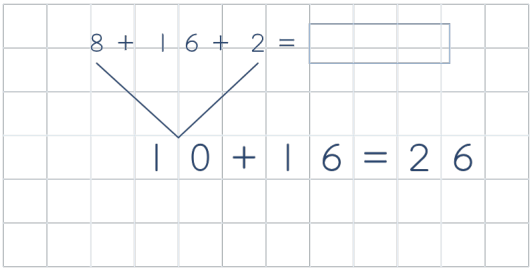
Use number bonds, doubles and other number facts to choose a helpful pair. A useful pair here is 8 and 2. 8 + 2 = 10. That gives us a multiple of 10, which is easy to add to. Draw a line from each chosen number to where we will write the first result. Keep 16 for the next step. Other pairs can still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

Step 4



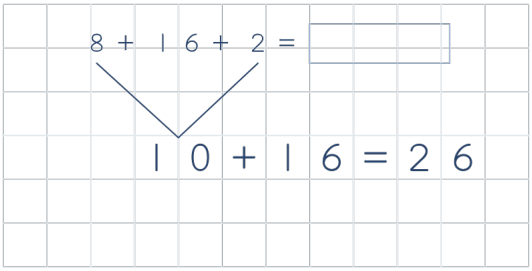
First, we add the chosen pair. 8 + 2 = 10. We write 10 on the squares, in the middle below the two chosen numbers. We still need the remaining addend, 16.

Step 5



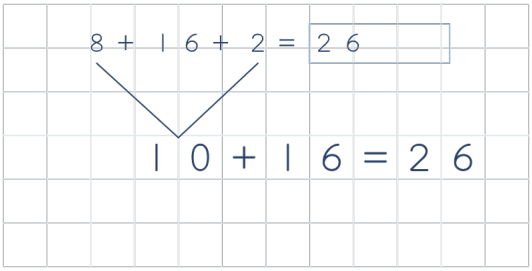
Next, we add the remaining addend to our first result. 10 + 16 = 26. There are no exchanges in this addition, so we can work it out mentally. We could use a column method if needed. We have now used all three original numbers once.

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.

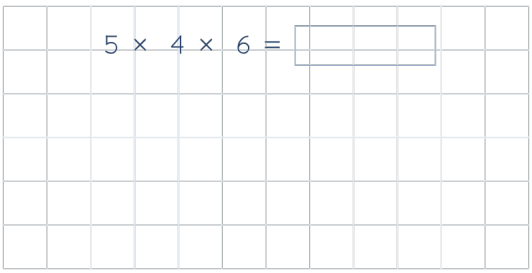
Step 7



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

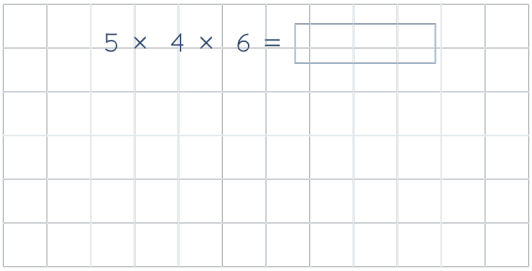
Year 3 - Multiplying 3 Numbers — Lesson Guide

Step 1



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

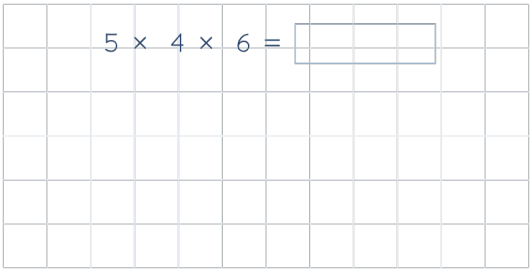
Step 2



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.

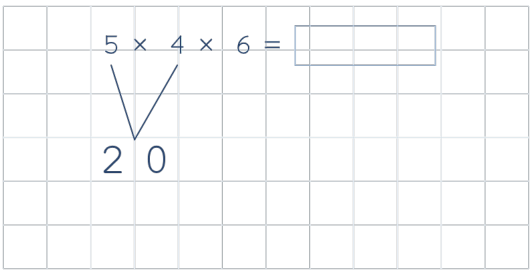
Step 3



Remember: Use each original number once.

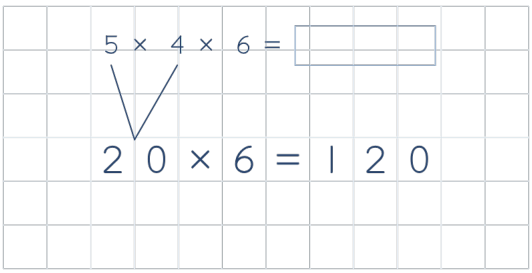
Use multiplication facts to choose a helpful pair. A useful pair here is 5 and 4. 5 × 4 = 20. 20 is 2 tens. We can use 2 × 6 to find the number of tens in the product. Draw a line from each chosen number to where we will write the first result. Keep 6 for the next step. Other pairs can still give the same product.

Step 4



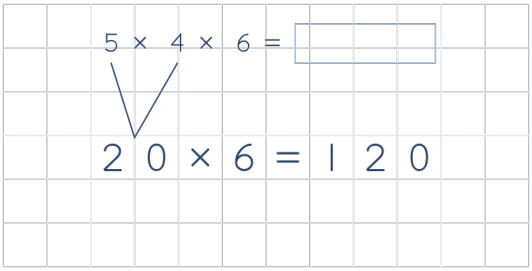
First, we multiply the chosen pair. 5 × 4 = 20. We write 20 on the squares, in the middle below the two chosen numbers. We still need the remaining factor, 6.

Step 5



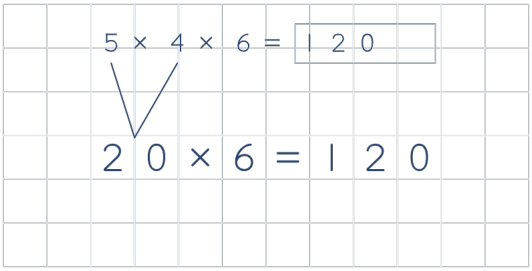
Next, we multiply our first result by the remaining factor. 20 is 2 tens. We know 2 × 6 = 12, so the product is 12 tens. 20 × 6 = 120. We can use our number facts mentally or choose a suitable written method if needed. We have now used all three original numbers once.

Step 6



Now, we check that we have used all three original factors once. First, 5 × 4 = 20. Then, 20 × 6 = 120. All three original numbers have been used once.

Step 7



The product is 120. Copy 120 into the answer box. Make sure you copy the answer correctly.

Year 3 - 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 3 - Subtracting Fractions with the Same Denominator — Lesson Guide

Step 1

$\frac{6}{7} - \frac{5}{7} =$ ☐

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

Step 2

$\frac{6}{7} - \frac{5}{7} =$ $\frac{\square}{7}$

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

$\frac{6}{7} - \frac{5}{7} = \frac{1}{7}$

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. Take 5 sevenths away from 6 sevenths to leave 1 seventh. Write 1 above the fraction line.

Step 4

$\frac{6}{7} - \frac{5}{7} = \frac{1}{7}$

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 6 – 5 = 1, our numerator.