

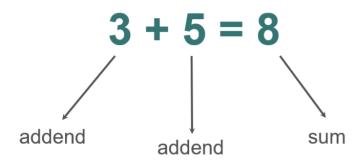
MoorthorpePrimary School with
Inclusion Resource

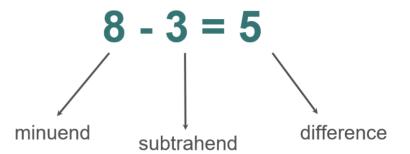
Maths at Moorthorpe Primary School with Inclusion Resource 2024

The 4 operations – add, subtract, multiply, divide.

Language of Addition

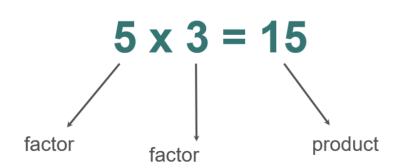
Language of Subtraction

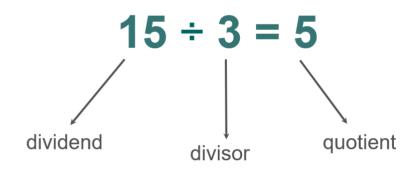




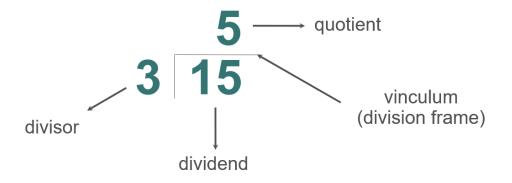
Language of Multiplication

Language of Division

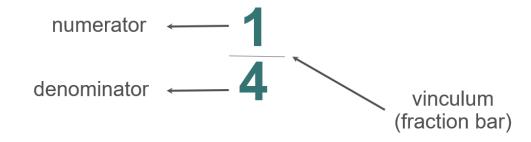




Language of Division



Language of Fractions (division)





Key Vocabulary

Add + Subtract - Multiply >	Divide ÷ More than >	Less than < Equals =
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Subitise – look at objects and know how many there are without having to count them.

Inverse – using the opposite operation (x and \div) (+ and -)

Commutative – changing the order of the number sentence does not change the result.

Partition – separate the parts of the number in to their value

Array – an arrangement of objects, numbers or pictures in columns or rows.

$$\begin{array}{c}
29 + 25 \\
20 + 9 & 20 + 5 \\
20 + 20 = 40 \\
9 + 5 = 14
\end{array}$$

Concept	Written Method		
Adding a 3 digit number + 2 digit number, exchange required	1. Add the ones column (5 + 6 = 11). Carry the 10 under the line. (1 ten, 1 one). 2. Add the tens column (7 tens + 1 ten = 8 tens or 80, then add the 1 ten you carried before = 9 tens) 3. Add the hundreds column (2 hundreds + 0 = 2 hundreds or 200)		
Adding a 3 digit number + 3 digit number, exchange required	1. Add the ones column (6 + 7 = 13). Carry the ten under the line in the tens column. 1 ten, 3 ones.		
	2. Add the tens column (2 tens + 1 ten = 3 tens or 30, then add the 1 ten you carried before so 4 tens. 3. Add the hundreds column (1 hundred + 2 hundreds = 3 hundreds or 300)		
Subtracting a 3 digit number – up to 3 digit number	H T O 1. Subtract the ones column - 3 5 2 (9 - 2 = 7) - 7 H T O 2. Subtract the tens column 9 9 9 9 (9 tens - 5 tens = 4 tens or - 3 5 2 90 - 50 = 40)		
	3. Subtract the hundreds 3		

Subtracting a 3 digit number – up to 3 digit number, exchange required	425 3425 3425 -143 -143 -282 1. Start at the ones (5 - 3 = 2) 2. 20 - 40 we can't do so we need to knock on next door and borrow 1 hundred from the 400. The 400 becomes 300 and the 20 becomes 120. 120 - 40 = 80 so we write an 8 as it is in the tens column (8 tens). 3. 3 hundreds - 1 hundred = 2 hundreds (300 - 100 = 200) 4. 425 - 143 = 282)
Multiplying a 2-digit number by a 1-digit number, expanded column method	T 0 1. Multiply the ones 8 x 5 = 40 x 5 20 x 5 = 100 100 3. Add the two answers together 40 + 100 = 140
2-digit number divided by 1-digit number, with remainders	Partition to divide, understanding the remainder in context. 67 children try to make 5 equal lines. 67 = 50 + 17 50 + 5 = 10 17 - 5 = 3 remainder 2 67 = 5 = 13 remainder 2 There are 13 children in each line and 2 children left out.

Concept	Written Method
Column addition with exchange	Th H T 0 1 5 5 4 + 4 2 3 7 (1 ten, 1 one).
	Th H T O 2. Add the tens (5 tens + 3 tens = 8 tens or 50 + 30 = 80. + 4 2 3 7 Then add the 1 ten you carried before = 9 tens or 90)
	Th H T O 3. Add the hundreds + 4 2 3 7 (5 hundreds + 2 hundreds = 7 hundreds or 500 + 200 = 700)
	Th H T O 1 5 5 4 4 2 3 7 5 7 9 1 4. Add the thousands (1 thousand add 4 thousand = 5 thousand or 1000 + 4000 = 5000)
	NB: You may need to carry in more than 1 column:
	2. 6 tens + 8 tens + 1 ten = 3965 15 tens or 150) +4387
	3. 9 hundreds + 3 hundreds + 1 hundred = 8 3 5 2 13 hundreds = 1300)
	4. 3 thousands + 4 thousands + 1 thousand = 8 thousands (8000)

Column subtraction with exchange	Th H T O O O O O O O O O O O O O O O O O O	 Subtract the ones column (0 - 0 = 0) Subtract the tens column (5 tens - 2 tens = 3 tens or 50 - 20 = 30)
	Th H T O Y 2 5 0 4 2 0 8 3 0 Th H T O Y 2 5 0 4 2 0 8 3 0	3. Subtract the hundreds column (2 hundreds – 4 hundreds or 200 – 400, can't be done so borrow 1000 from the thousands column. Thousands becomes 0 and the 200 becomes 1200. 1200 – 400 = 800) 4. 0 thousands – 0 thousands = 0.
Column subtraction with exchange across more than one column	Th H T O 2 45 '0 2 - 2 4 3	1. Subtract the ones column (2 – 3 we can't do so borrow from the tens column. However in this case there aren't any tens to borrow from. Move along to hundreds column. Borrow 100 from the 500 so it becomes 400 give to
	Th H T O 2 48 98 12 - 2 4 3	from the 500 so it becomes 400, give to tens column so it is now 100 then borrow 10 from the 100 so it becomes 90. Now we can do 12 – 3 = 9)
	Th H T O 2 48 9 8 2 - 2 4 3 2 2 5 9	 Subtract the tens column (9 tens - 4 tens = 5 tens or 90 - 40 = 50) Subtract the hundreds column (4 hundreds - 2 hundreds = 2 hundred or 400 - 200 = 200) Subtract the thousands column 2 thousands - 0 = 2 thousand or 2000 - 0 = 2000.

Column multiplication for 2- and 3-digit		3	1	2	1. Start by multiplying the ones
numbers multiplied by a	×			3	2 x 3 = 6.
single digit		q	3	6	2. Then multiply the tens 10 x 3 = 30
	-				3. Then multiply the hundreds 300 x 3 = 900
	Sometimes you may need to carry digits to the next column.				
		X	1	12	 Start by multiplying the ones x 6 = 12 (carry the 10 to the tens column under the line)
	-		6	72	2. Then multiply the tens 10 x 6 = 60, don't forget to add the 10 under the line = 70
					3. Then multiply the hundreds 100 x 6 = 600
Dividing 2-digit and 3- digit numbers by a single digit by partitioning into 100s, 10s and 1s				146	÷ 2 = ?
				100+	2= 40+2= 6+2=
					0 + 2 = 50 0 + 2 = 20
	6+2=3				
				50	+ 20 + 3 = 73
					14G ÷ 2 = 73

Year 5

Concept	Method	
Column addition and subtraction with exchange	Same as in Year 4 but with an extra column – up to digit numbers	5
Adding decimals using column addition	O . t h O · 2 3 + O · 4 5 O · 6 8	on e n.
	4. Add the ones (0 + 0 = 0)
	You may need to exchange e.g.	
	O . t h O · 9 2 + O · 3 3 I · 2 5 1	on se n.

Adding decimals using column addition cont. Subtracting decimals	There may not be the same number of decimal places – take care when lining the digits up, use place value knowledge. O . t h 3 · 4 0 + 0 · 6 5 Use column subtraction. Similarly to adding decimals,	
using column addition	ensure numbers are in correct place value column with the decimal points lined up. O . t h th 3 · 9 2 - 3 · 7 5 0	
Multiplying up to 4 digits by 1 digit e.g. 3468 x 7 =	Same as in Year 4 but with an extra column – up to 4 digit numbers.	
Multiplying 2 digit numbers by 2 digit numbers (Long multiplication)	3 4 In Write out the question with 4 lines underneath. Put the place holder below the second line (the purple zero) 2 3 8 6 8 0 2 First multiply 34 x 7. 4 x 7 = 28 (carry the 20 under the line in the tens column) 30 x 7 = 210, add the 20 under the line = 230.	

	3. Then multiply 34 by 20. 4 x 20 = 80 30 x 20 = 600 4. Add together both answers using column method for addition: 238 + 680 = 918.
Multiplying up to 3-digits by 2-digits (Long multiplication)	4 3 See above but with an extra column x
Multiplying decimals by 10, 100 and 1000	Th H T O Tth 2·5 × 10 = 25 2·5 × 100 = 250 2·5 × 1,000 = 2,500 2·5 × 1,000 = 2,500 Using a place value chart. 1. Firstly put the number under the correct place value headings in the chart – in this case 2.5 (2 wholes, 5 tenths) 2. When multiplying by 10, 100 and 1000 we move the digits to the LEFT. An easy way to remember this is that multiply has 2 L's in for LEFT. 3. If multiplying by 10, we move all the digits 1 place to the left. 4. If multiplying by 100, we move all the digits 2 places to the left. 5. If multiplying by 1000, we move all the digits 3
	places to the left. 6. LOOK AT HOW MANY ZEROS TO TELL YOU HOW MANY PLACES TO MOVE. 7. THE DECIMAL POINT DOES NOT MOVE BUT INSTEAD THE NUMBERS MOVE AROUND THE DECIMAL POINT.

Dividing decimals by 10, 100 and 1000



This is the opposite in to multiplying by 10, 100 and 1000. All the digits move to the RIGHT.

$$0.85 \div 10 = 0.085$$

0	•	Tth	Hth	Thth
8_	•/	5_		
0	•	0	→8	→5

$$8.5 \div 100 = 0.085$$

Using a place value chart.

- Firstly put the number under the correct place value headings in the chart – in this case 0.85 (0 wholes, 8 tenths, 5 hundredths)
- When dividing by 10, 100 and 1000 we move the digits to the RIGHT.
- If dividing by 10, we move all the digits 1 place to the right.
- If dividing by 100, we move all the digits 2 places to the right.
- If dividing by 1000, we move all the digits 3 places to the right.
- LOOK AT HOW MANY ZEROS TO TELL YOU HOW MANY PLACES TO MOVE.
- THE DECIMAL POINT DOES NOT MOVE BUT INSTEAD THE NUMBERS MOVE AROUND THE DECIMAL POINT.

Short division or bus stop method for division for up to 4 digit numbers

- 1. Set out your question as above using a ruler.
- You are using your 7 times table. First think to yourself how many groups of 7 are there in 3.
 The answer is 0 so carry your 3 over to the next number making it 38.
- 3. How many times does 7 go into 38 OR how

many groups of 7 go into 38. Count up in 7047 14, 21, 28, 35, 42) Well, 5 lots of 7 is 35 so 7 goes into 38 5 times with 3 left over – write the 5 above then carry this 3 to the next number. In this case it becomes 39.

- How many groups of 7 go into 39? Similarly count up in 7's (7, 14, 21, 28, 35, 42...) Again, 5 lots of 7 go into 39 but this time with 4 left over.
- Write the 5 above and carry the 4 left over to the next number which in this case becomes 42.
- How many groups of 7 go into 42? 6 exactly. Write the 6 above the line.

Note: There may be a remainder at the end of the question. E.g. if there was a 4 at the end of this question (3894 ÷ 7) then there would have been a remainder of 2. This can be represented as a fraction 2 sevenths so the answer would be 556 and 2/7.

Or 556 remainder 2.

Year 6

Concept	Method		
Multiplying up to 3-digits by	See Year 5 method but with an extra column – in this		
2-digits	case a thousands column.		
(Long multiplication)			
	1 2 3 5		
	× 2 I		
	1 2 3 5		
	2 4 7 0 0		
	2 5 9 3 5		
	1. Write the question using place value columns, 4		
	lines and place holder (0).		
	2 4225 4		
	2. 1235 x 1 = 5 x 1 = 5		
	30 x 1 = 30		
	200 x 1 = 200		
	1000 x 1 = 1000		
	3. 1235 x 20 =		
	5 x 20 = 100 (carry over)		
	30 x 20 = 600 + 100 = 700		
	200 x 20 = 4000		
	1000 x 20 = 20000		
	4. Use column method to add together		
	1235 + 24700 = 25935		
Dividing by a 2-digit	13 3 7 7 377÷13=		
number using long	13 3 7 7		
division	- I 3 0 13 x 10 = 130		
	2 4 7		
	- I 3 0 13 x 10 = 130		
	1 1 7		
	1 1 7		
	- 1 / 13(x9) 117		
	0		

- Think how you can 'chunk'. In this example, 10 lots of 13 = 130. Write at the side then subtract this from the starting number.
- We are left with 247. Take away another 10 lots of 13 leaves us with 117.
- 4. 9 lots of 13 is 117 exactly so subtract this.
- NOTE: this may take more steps, keep going till you reach zero at the bottom.
- Add up the number of groups that have been subtracted (circled) 10 + 10 + 9 = 29.

An example with a remainder:

Answer: 167 ÷ 45 = 3 r32

Dividing decimals

8 4 · 2 4

See short division/bus stop method taught in Year 5 and follow the same method.