Years 5 and 6 Maths Workshop

Friday 1st February 2018

ADDITION

The children are taught a range of mental strategies for addition throughout the year.

Mental Strategies

Develop confidence at calculating mentally with larger numbers and decimal numbers. Using the full range of strategies:

Bridging through 60 when calculating with time

Bridging through multiples of 1,10,100

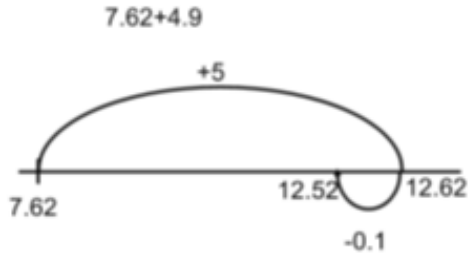
4.85 + 2.36 = 4.85 + 2
= 6.85+ 0.15 + 0.21
= 7.21

Using known facts
63+37=100
0.63+0.37=1

Using place value
Count in 0·1s, 0·01s, 0·001s
e.g. Know what 0·001 more than 6·725 is
Partitioning
e.g. 9·54 + 3·23 as 9 + 3, 0·5 + 0·2 and 0·04 + 0·03, to give 12·77

Counting on
Add two decimal numbers by adding the 1s, then the 0·1s/0·01s/0·001s
e.g. *6·314 + 3·006 as 6·314 + 3 (9·314) + 0·006 = 9·32*
Add near multiples of 1
e.g. *6·345 + 0·999*
e.g. *5·673 + 0·9*

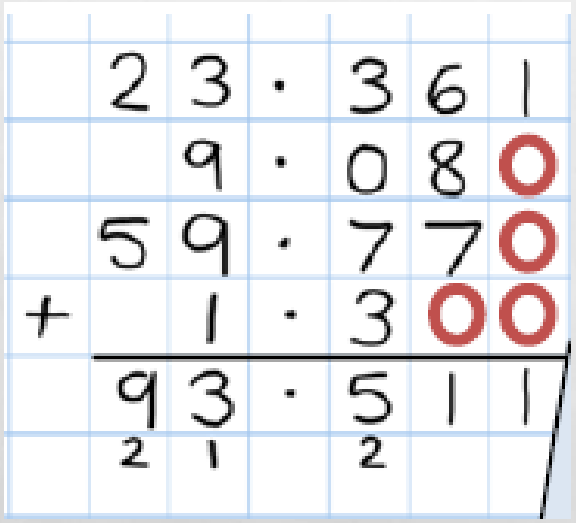
Rounding and adjusting



ADDITION

Add several numbers of increasing complexity including money, measures and decimals with different numbers of decimal places.

Children calculate addition using the formal written method.



Adding several numbers with different numbers of decimal places
(including money and measures):

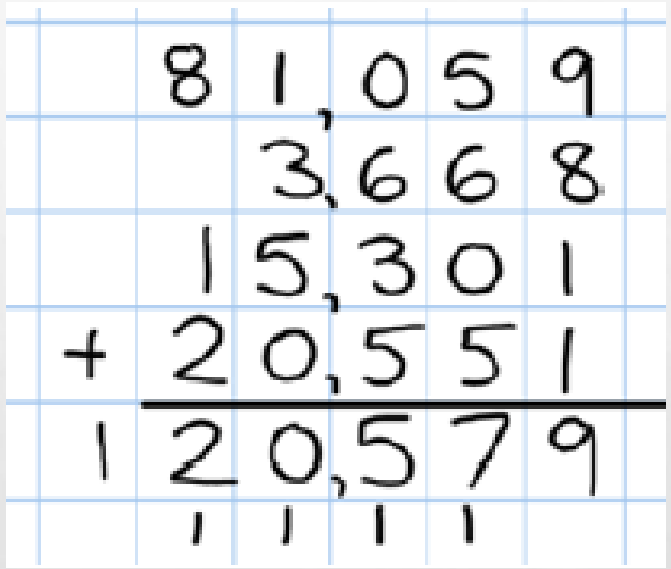
- Tenths, hundredths and thousandths should be correctly aligned, with
  the decimal point lined up vertically including in the answer row.
- Zeros could be used in any empty decimal places, to show there is no
  value to add

ADDITION

Add several numbers of increasing complexity including money, measures and decimals with different numbers of decimal places.

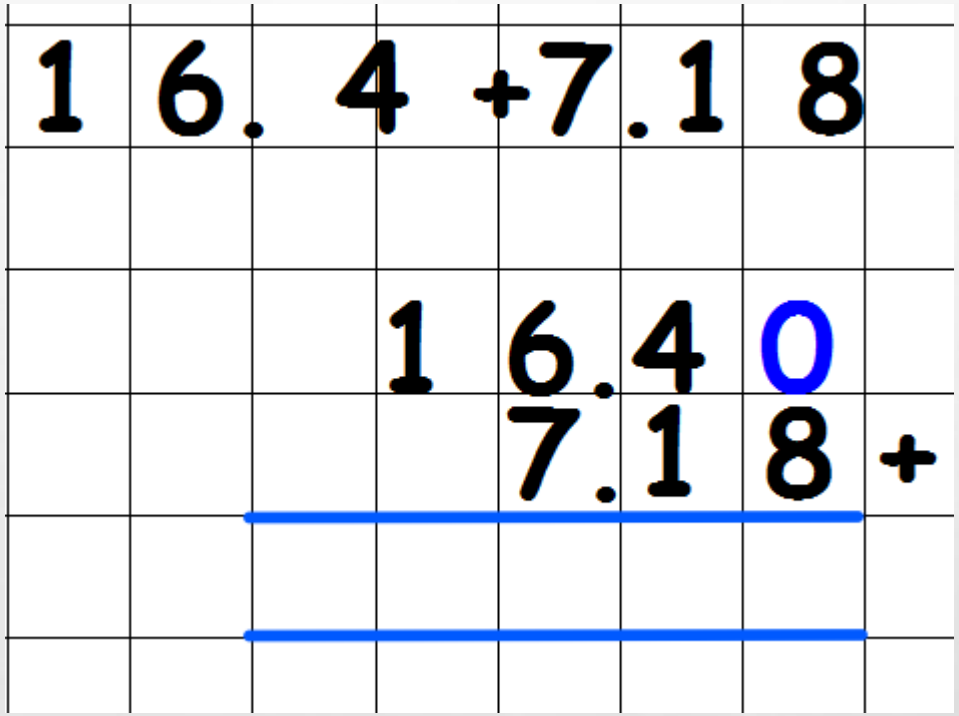
Children calculate addition using the formal written method.

Adding several numbers with more than 4 digits



ADDITION

Let's try one together.



ADDITION

Now it's your turn.

Do questions 1, 2 and 3 on your worksheet.

SUBTRACTION

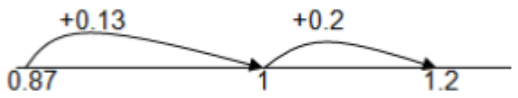
Mental Strategies

Develop mental fluency with subtraction using a wide range of strategies when calculating including decimal and increasingly larger numbers. Children are encouraged to think about the best method for the numbers involved.

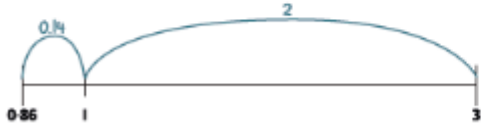
The children are taught a range of mental strategies for subtraction throughout the year.

Using Place Value
7.782 - 0.08 = 7.702
16.263 - 0.2 = 12.063
Partitioning and counting back
3964 - 1051=
3964 - 1000 = 2964
2964 - 50 = 2914
2914 - 1 = 2913 or
5.72 - 2.01 =
5.72 - 2 = 3.72
3.72 - 0.1 = 3.62

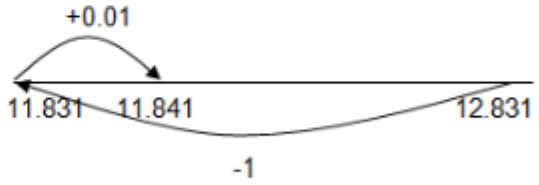
Special Strategy
Counting on
Children are taught to recognise when numbers are close together it is more efficient to count on and find the difference.
1.2 - 0.87 = 0.33



Number Facts
Derived facts from number bonds to 10 and 100, and £, £10 and £100
0.1 - 0.075 using 75 + 25 = 100
5 - 0.65 using 65 + 35 = 100
£100 - £66.20 using 20p and 80p =£1 and £67 + £33 = £100



Special Strategy
Rounding and adjusting
Near multiples of 10, 100, 1000 or £1
12.831 - 0.99 = 11.841

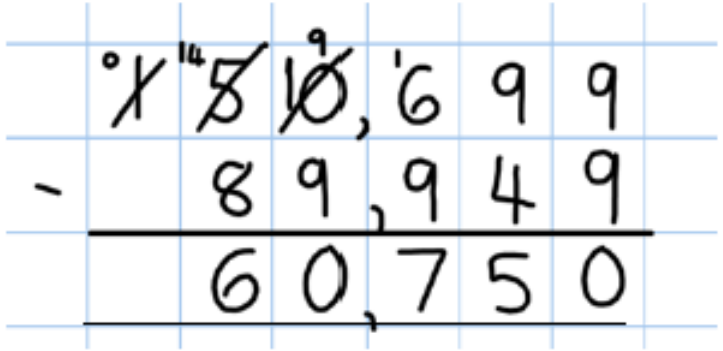


SUBTRACTION

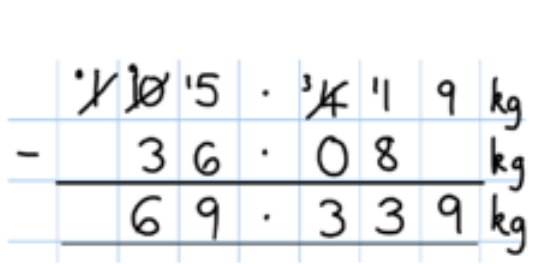
Children calculate subtraction using the formal written method.

Subtract with increasingly large and more complex numbers and decimal values.
Compact column method

Subtracting with more complex integers.



Subtracting money and measures, including decimals with different numbers of decimal places. Empty decimal places can be filled with zero to show the place value in each column.



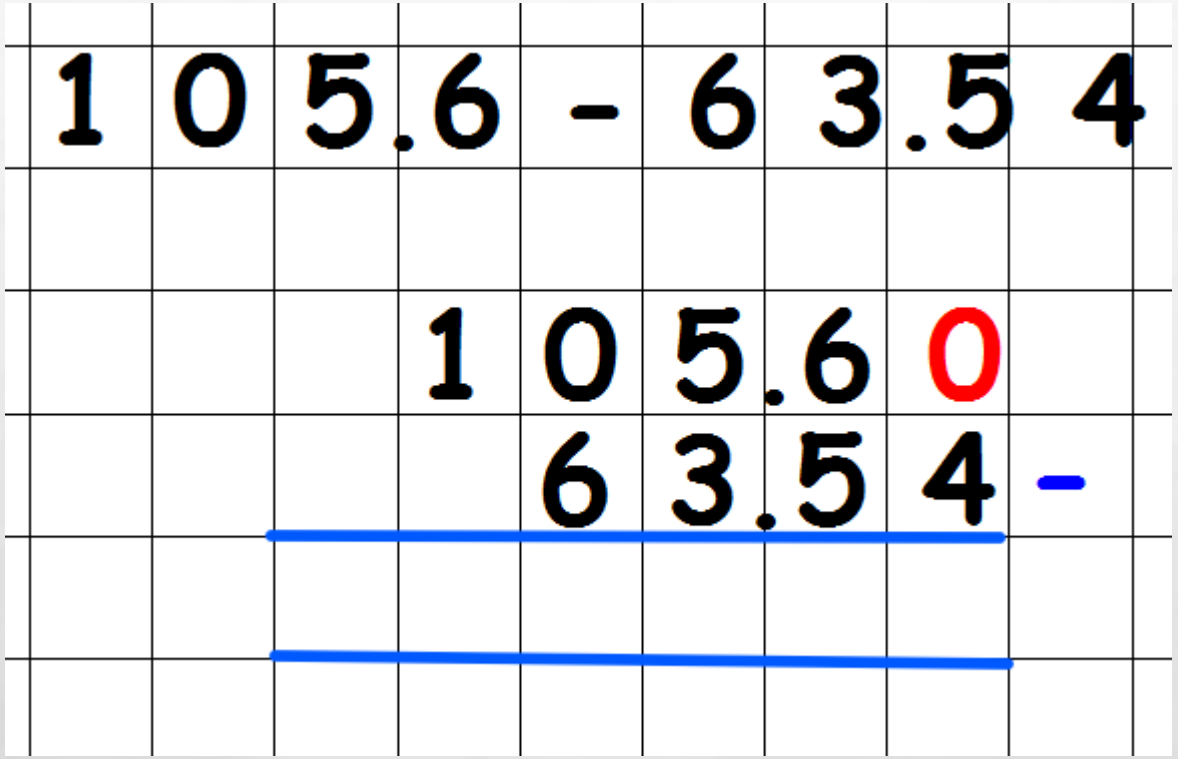
Estimate

Calculate

Check it!

SUBTRACTION

Let's try some together.



SUBTRACTION

Now it's your turn.

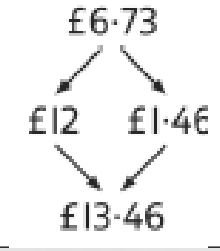
Do questions 4, 5 and 6 on your worksheet.

MULTIPLICATION

The children are taught a range of mental strategies for multiplication throughout the year.

Grouping
Use partitioning as a strategy in mental, as appropriate
E.g. 3060 x 4 as 3000 x 4 = 12,000 and 60 x 4 = 240, 12,00+240 = 12,240
E.g. 8.4 x 8 as 8 x 8 = 64, and 0.4 x 8 = 3.2, 64 +3.2 = 67.2
Use factors in mental multiplication
E.g. 421 x 6 as 421 x 3 = 1263 doubled = 2526

Doubling and halving
Double decimal numbers with up to 2 places using partitioning



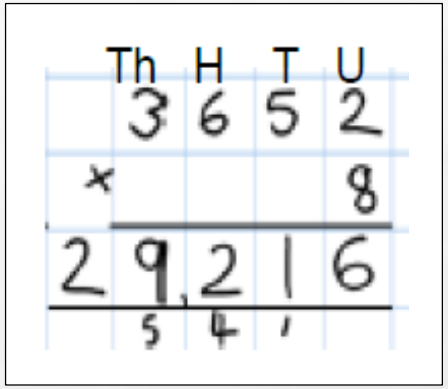
Using number facts
Use times tables facts up to 12x12 in mental multiplication of large numbers or with numbers with up to 2 decimal plac-es
E.g. 6 x 4 = 24, 0.06 x 4 = 0.24

MULTIPLICATION

Children calculate multiplication using the formal written method.

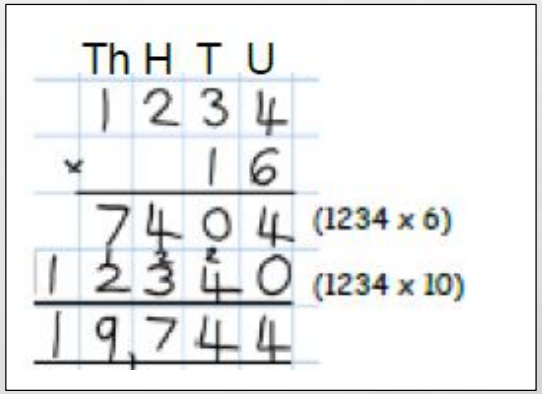
Short multiplication for multiplying by 1 digit

Use **short multiplication** to multiply numbers with **more than**
4-digits by a single digit; to multiply money and measures, and to
multiply decimals with up to 2d.p. by a single digit.



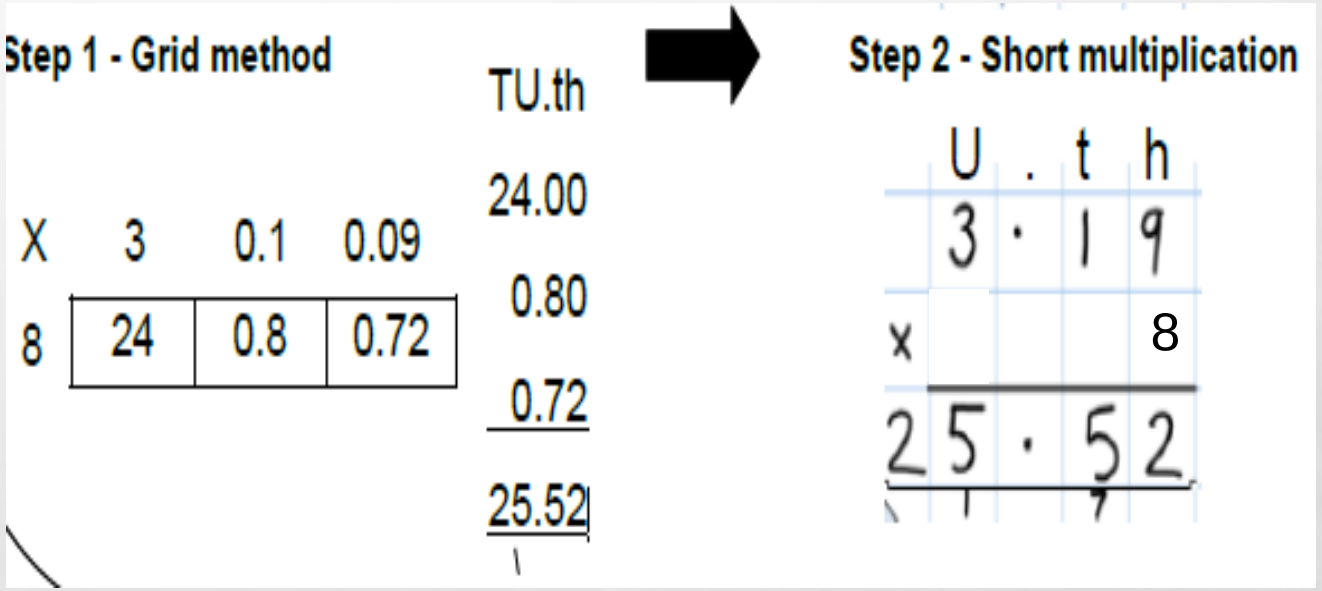
Long multiplication for multiplying by 2-digits

Use **long multiplication** to multiply numbers with **at least 4 digits by a 2-digit number.**



MULTIPLICATION

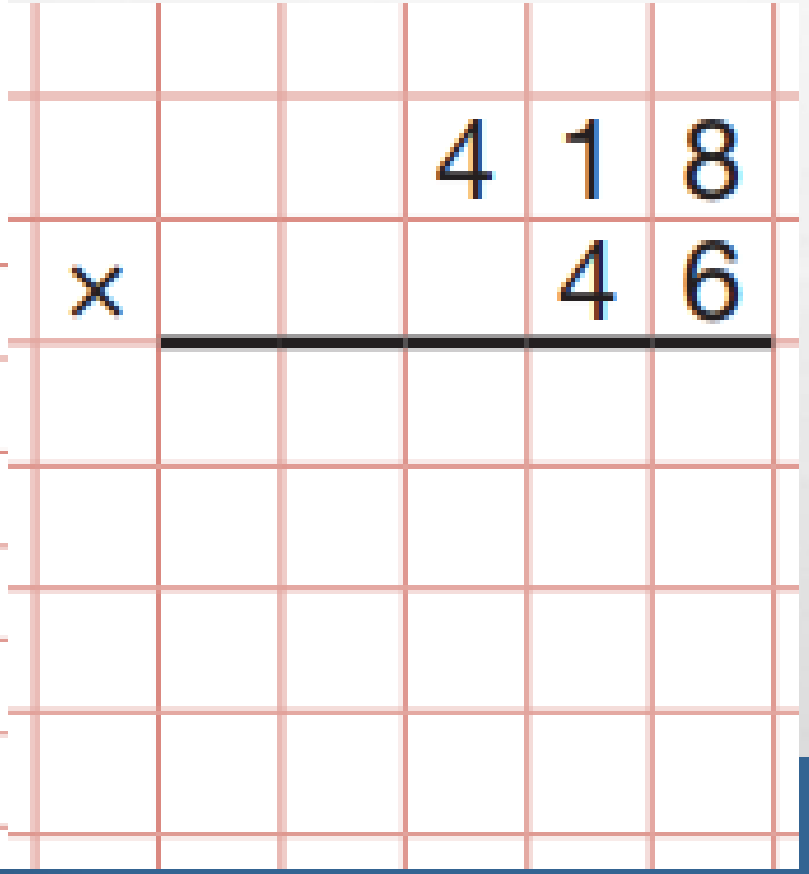
Children calculate multiplication using the formal written method.



MULTIPLICATION

Let's try some together.

$167 \times 4 =$



$15 \times 6.1 =$

MULTIPLICATION

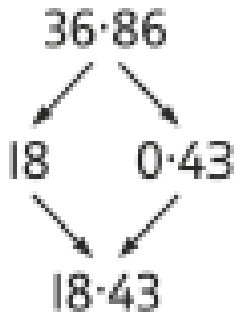
Now it's your turn.

Do questions 7, 8 and 9 on your worksheet.

DIVISION

Mental methods

Halving
Halve decimal numbers with up to 2 places using partitioning
e.g. *half of 36·86 is half of 36 (18) plus half of 0·86 (0·43)*

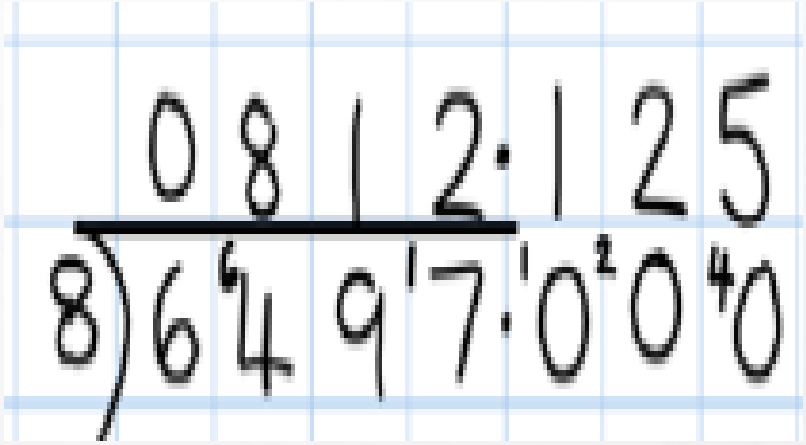


Using number facts
Use division facts from the times-tables up to 12 × 12 to divide decimal numbers by 1-digit numbers
e.g. *1·17 ÷ 3 is* 1/100 of 117 ÷ 3 (39)
Know tests of divisibility for numbers divisible by 2, 3, 4, 5, 9, 10 and 25

Grouping
Divide numbers by 10, 100, 1000, to obtain decimal answers with up to 3 decimal place**s**
***e**.g 340 ÷ 100 = 3.4*

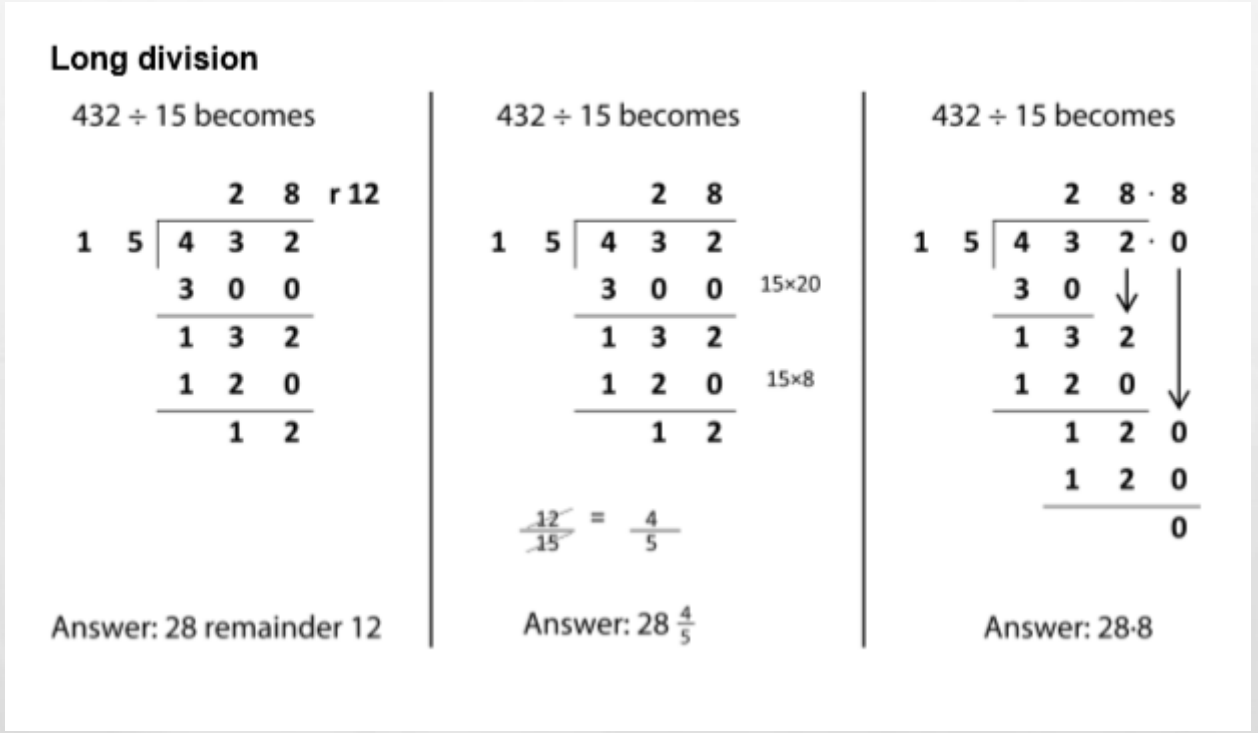
DIVISION

Short division with remainders: Children should continue to use this method, but with numbers to at least 4 digits, and understand how to express remainders as fractions, decimals, whole number remainders, or rounded numbers. Real life problem solving contexts need to be the starting point, where children have to consider the most appropriate way to express the remainder.



Calculating a decimal remainder: In this example, rather than expressing the remainder as **r 1**, a decimal point is added after the units because there is still a remainder, and the one remainder is carried onto zeros after the decimal point (to show there was no decimal value in the original number). Keep dividing to an appropriate degree of accuracy for the problem being solved.

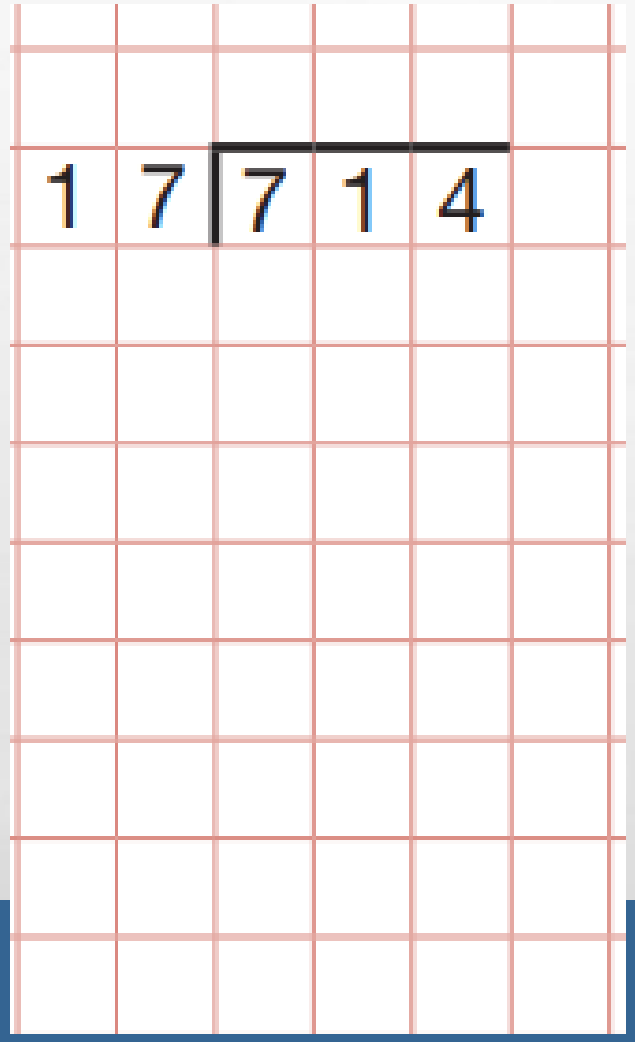
DIVISION

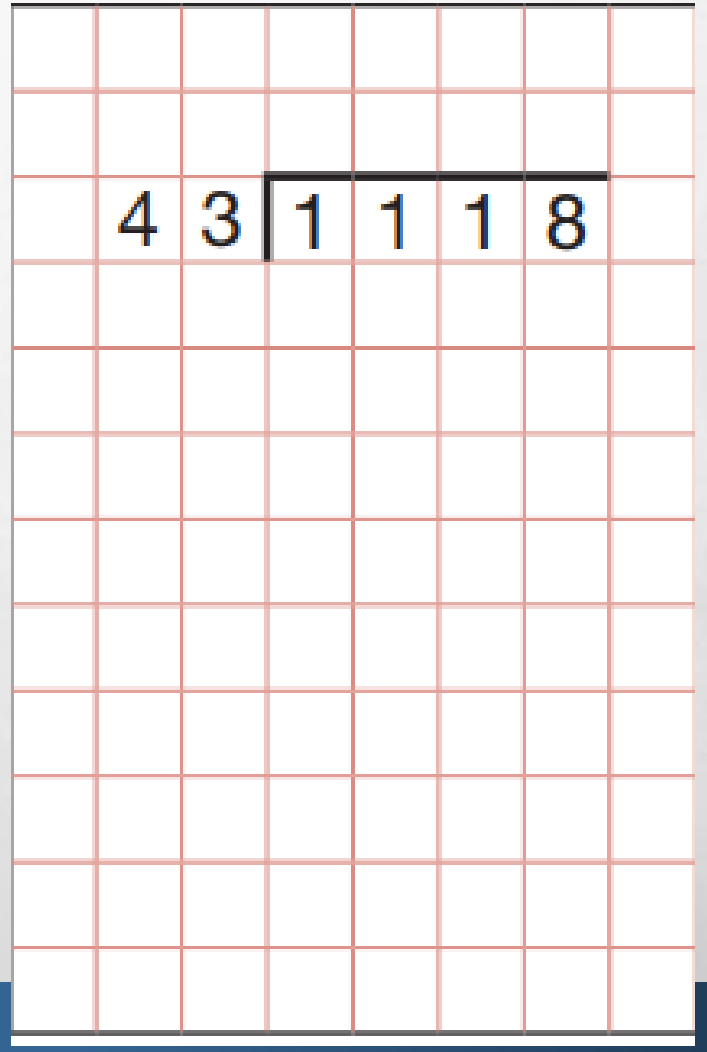

Long division
432 ÷ 15 becomes
2 8 r 12
1 5 | 4 3 2
3 0 0
1 3 2
1 2 0
1 2
Answer: 28 remainder 12
432 ÷ 15 becomes
2 8
1 5 | 4 3 2
3 0 0
15×20
1 3 2
1 2 0
15×8
1 2
12/15 = 4/5
Answer: 28 4/5
432 ÷ 15 becomes
2 8 · 8
1 5 | 4 3 2 · 0
3 0
1 3 2
1 2 0
1 2 0
1 2 0
0
Answer: 28·8

DIVISION

Let's try some together.

581 ÷ 7 =





DIVISION

Now it's your turn.

Do questions 10 and 11 on your worksheet.

USEFUL WEBSITES:

HTTPS://WWW.TOPMARKS.CO.UK/

HTTPS://WWW.BBC.COM/BITESIZE/TOPICS/ZWV39J6 (BBC BITESIZE KS2 MATHS)

HTTP://MATHSZONE.CO.UK/

HTTPS://WWW.OXFORDOWL.CO.UK/FOR-HOME/KIDS-ACTIVITIES/FUN-MATHS-GAMES-AND-ACTIVITIES/ (OXFORD OWL)