Language of Division

- Share
- Divide
- Split between
- Groups of
- Divisible by
- Distribute
- Fraction of

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Mental Strategies

INVERSE

GROUPING

SHARING

REPEATED SUBTRACTION

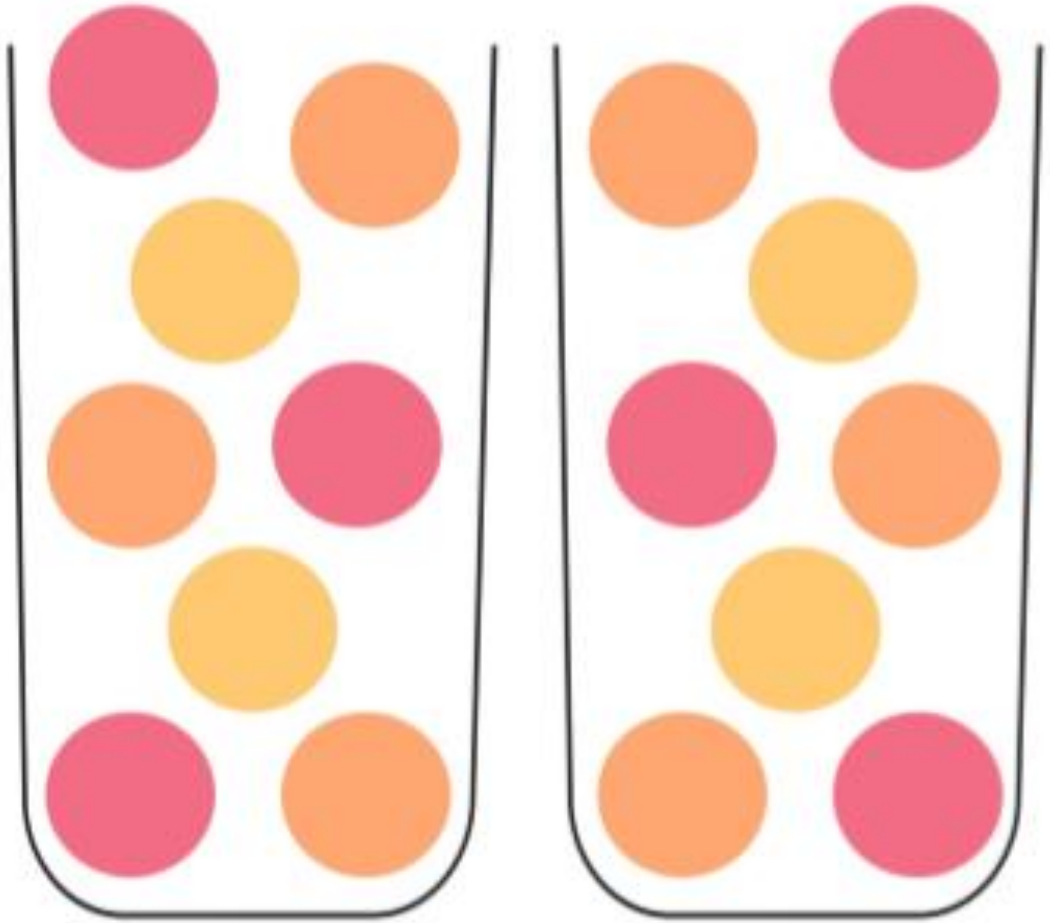
CHUNKING

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Sharing

$$16 \div 2 = 8$$

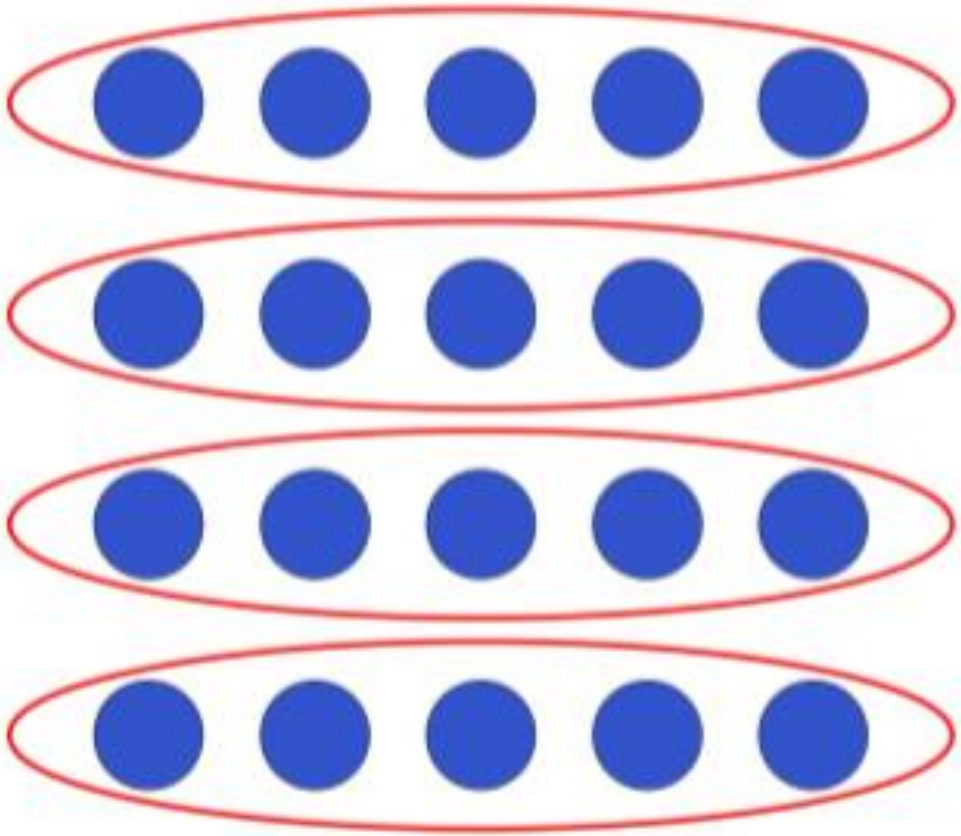
16 shared equally between 2 gives you 8.



Grouping

$$20 \div 5 = 4$$

20 divided by 5 gives 4 groups.



Grouping using arrays.

Inverse

Use multiplication tables to work out a division question.

$$63 \div 9 = ?$$

You can work this out by knowing...

$$7 \times 9 = 63$$

So using the inverse, we know that...

$$63 \div 9 = 7$$

- This strategy may not be desirable for everybody
- It's a good visual for children that are struggling
- Children should be encouraged to learn multiplication facts/tables

Repeated Subtraction

You can use repeated subtraction to see how many times a smaller number goes into a bigger one.

$$15 \div 3 = ?$$



The number of times you can take 3 from 15 is 5.

$$15 - 3 - 3 - 3 - 3 - 3 = 0$$

$$15 \div 3 = 5$$

- This strategy may not be desirable for everybody
- It’s a good visual for children that are struggling
- Children should be encouraged to learn multiplication facts/tables

Repeated Addition

$$28 \div 4 = 7$$

Draw a number line starting at 0.

Count on in 4s until you reach 28.

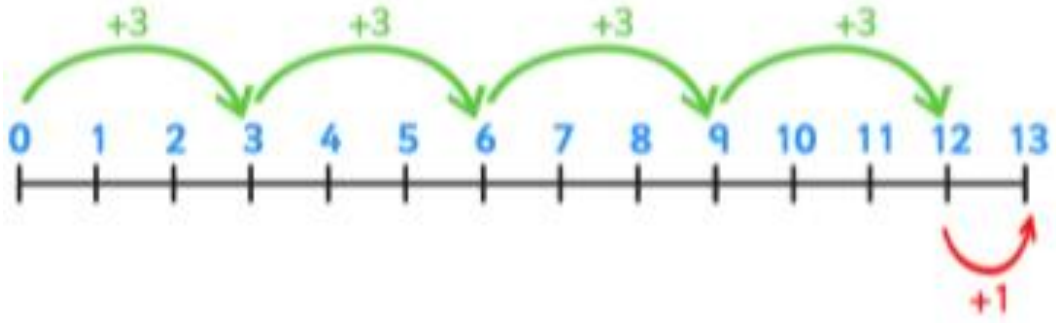
Count how many hops it took.

28 divided by 4 is 7.



Repeated Addition
(with remainders)

$$13 \div 3 = 4 \text{ r} 1$$



Draw a number line starting at 0.

Count on in 3s getting as close to 13 as you can

but not go past it

Count your hops to get the answer.

Any left over is the remainder.

- This strategy may not be desirable for everybody
- It's a good visual for children that are struggling
- Children should be encouraged to learn multiplication facts/tables

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Partitioning

$84 \div 4$

$80 \div 4 = 20$

$4 \div 4 = 1$

21

Partition the number into tens and ones.

Divide the tens and ones.

Combine your totals.

$84 \div 4 = 21$

Halving

Sometimes you can use halving to divide into 2s, 4s, and 8s.

$$120 \div 2 = 60$$

We can use this to divide by 4 by halving twice.

$$120 \div 2 = 60$$

then

$$60 \div 2 = 30$$

so

$$120 \div 4 = 30$$

We can use this to divide by 8 by halving 3 times.

$$120 \div 2 = 60$$

then

$$60 \div 2 = 30$$

then

$$30 \div 2 = 15$$

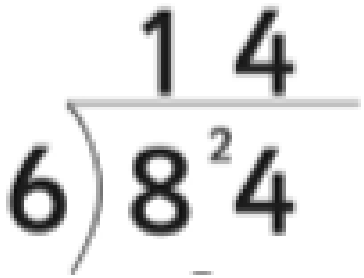
so

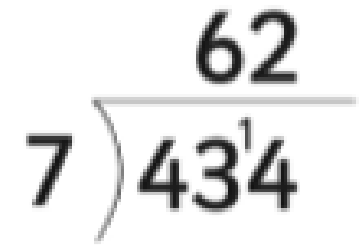
$$120 \div 8 = 15$$

Written Division Calculations

Dividing by a single digit whole number

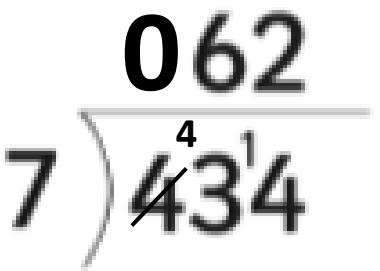
- Always start by dividing from the left
- If a number needs to be carried it goes beside the next digit
- Keep on dividing until the calculation is complete.





- **Initially some children will want to put a zero. This should be used as a teaching point to show that we don't have a zero at the start of a whole number.**
- **At this point we can't ignore the 4. The 4 then becomes 43.**





Long Division

$399 \div 15 = ?$

$$
\begin{array}{r}
26\ \frac{3}{5} \\
15\overline{)399} \\
\underline{300} \\
99 \\
\underline{90} \\
r9
\end{array}
$$

$\frac{9}{15} = \frac{3}{5}$

First partition the number.

Divide 300 by 15. Write this on the answer line above the correct units.

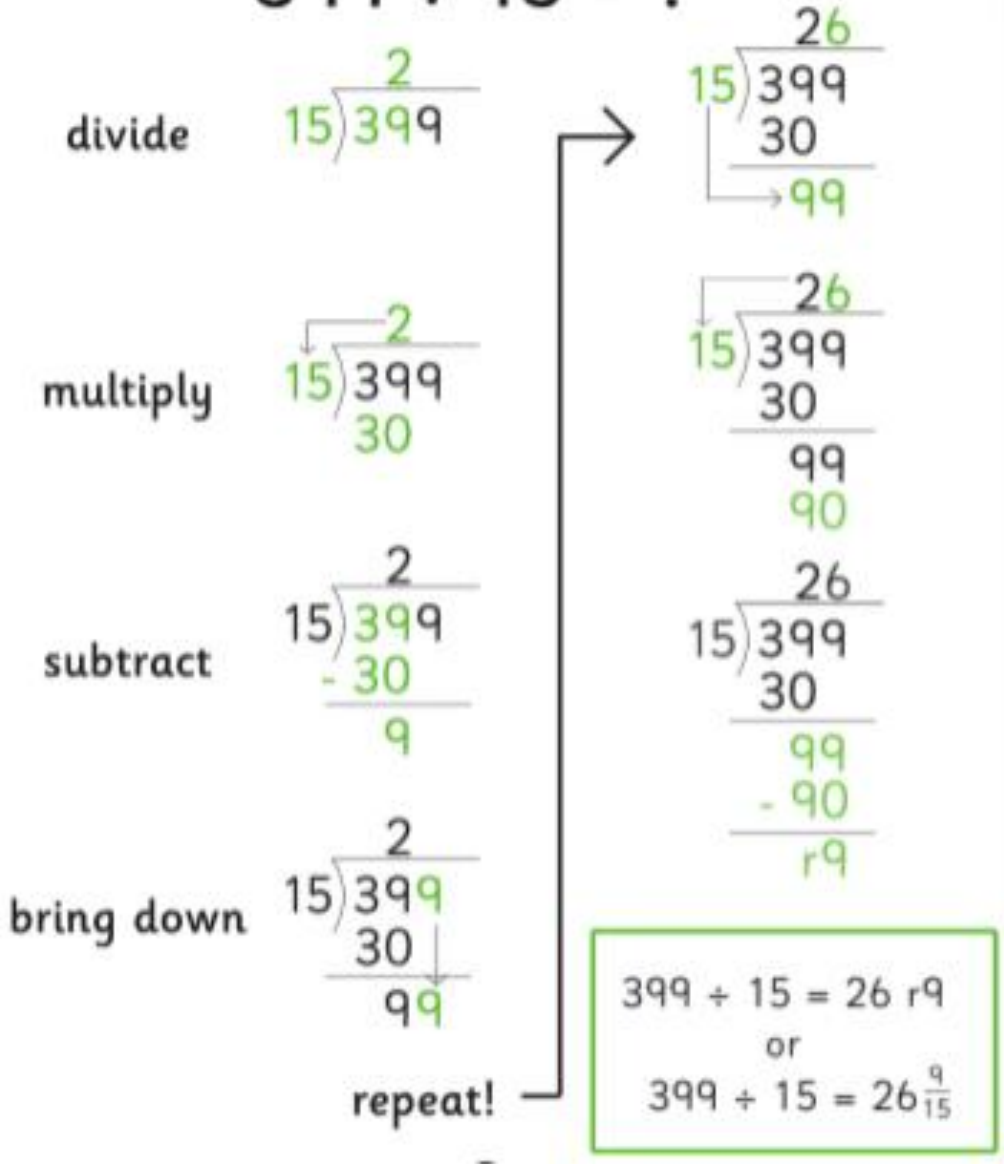
Divide 99 by 15.

Write any remainders as a fraction as simplified as possible.

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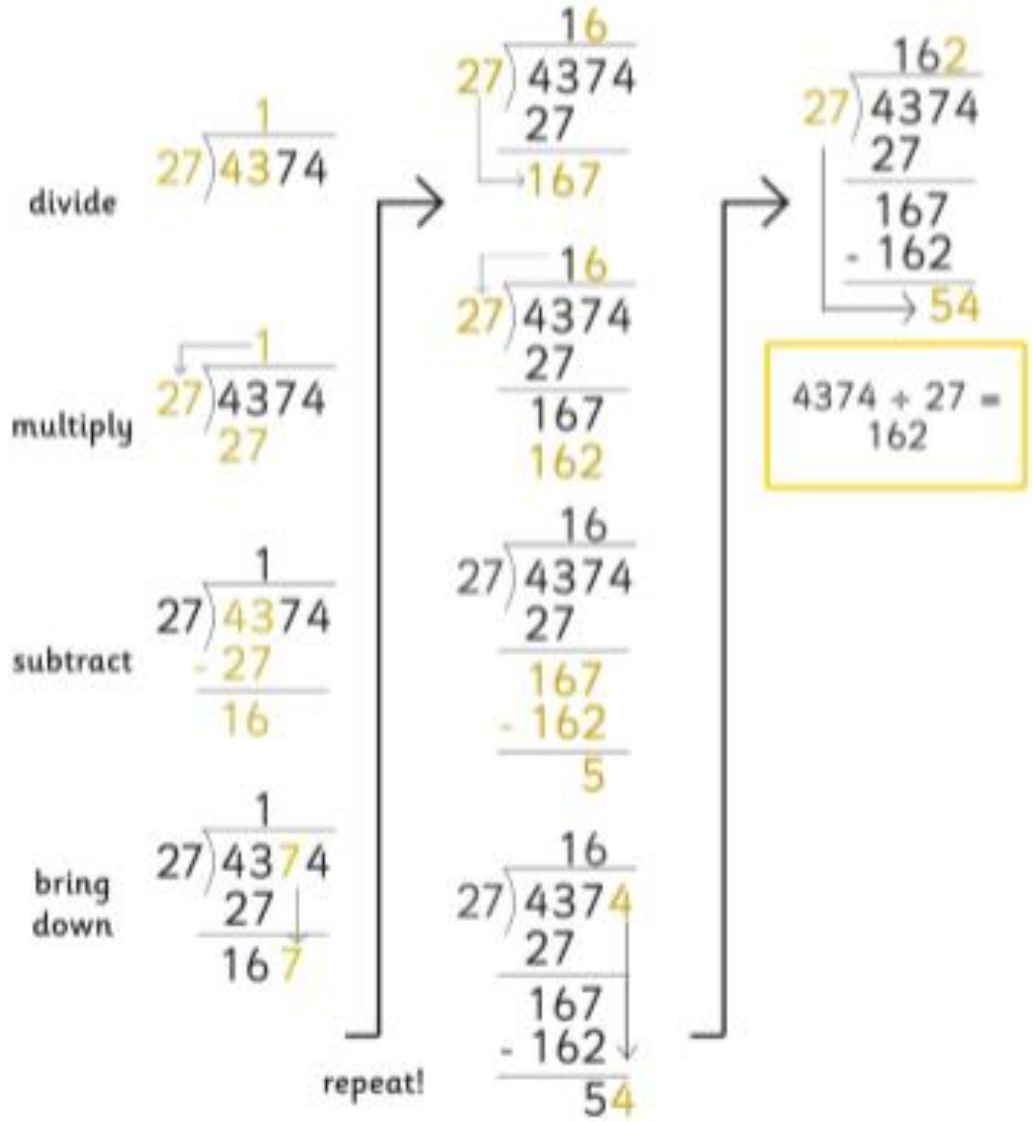
Long Division

399 ÷ 15 = ?



Long Division

4374 ÷ 27 = ?



Dividing by 10

Use place value to work out how to divide in 10s

$$674 \div 10 = ?$$

If you divide a number by 10, the digits move one place value to the right.

Hundreds	Tens	Ones	Tenths	Hundredths
6	7	4 .		

Hundreds	Tens	Ones	Tenths	Hundredths
	6	7 .	4	

$$674 \div 10 = 67.4$$

If you divide a number by 100, the digits will move two places to the right.

Hundreds	Tens	Ones	Tenths	Hundredths
6	7	4 .		

Hundreds	Tens	Ones	Tenths	Hundredths
		6 .	7	4

$$674 \div 100 = 6.74$$

Dividing by 10, 100, 1000

Decimal Numbers

When dividing decimals by 10, 100, 1000, **the decimal point stays** and the digits move the corresponding number of places to the right.

Divide by 10 – move 1 place to the right

62.5 / 10 = 6.25

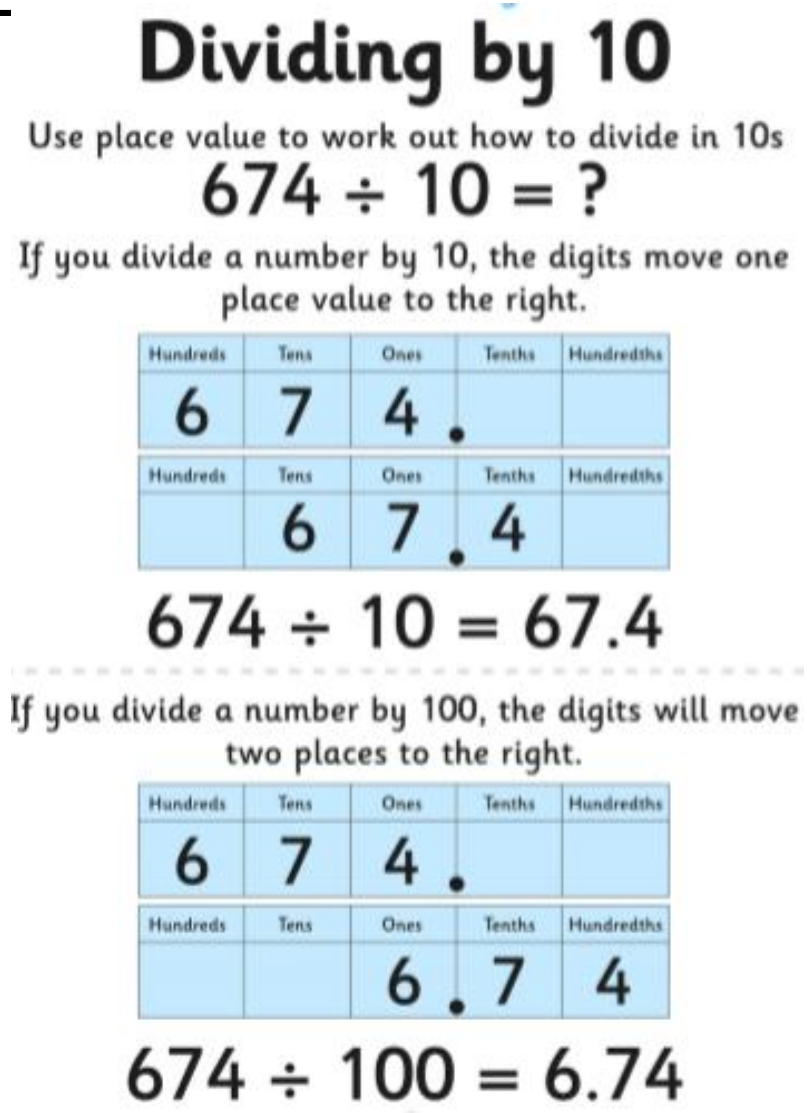
Divide by 100 – move 2 place to the right

725.3 / 100 = 7.253

Divide by 1000 – move 3 place to the right

1455.6 / 1000 = 1.4556

Consider this layout for teaching



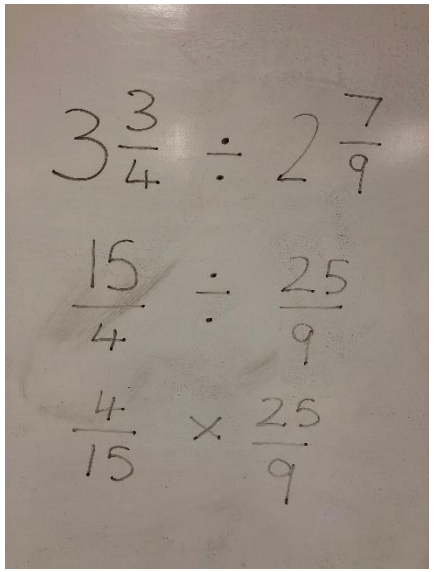
Dividing Fractions

$$\frac{5}{8} \div \frac{2}{3}$$

- When dividing fractions, turn one of the fractions upside down, then multiply the two top numbers together (numerators) and the bottom numbers together (denominators)

$$\frac{5}{8} \times \frac{3}{2} = \frac{15}{16}$$

- Remember to simplify your answer where possible
- When dividing a mixed fraction (whole number and fraction), turn it into an improper fraction and then follow as above



Divide Negative Numbers



- When you divide a negative number with a positive number you make a negative number

Example

$-24 \div 6 = -4$

- When you divide a positive number by a negative number you make a negative number

Example

$40 \div (-5) = -8$

- When you divide a negative number with a negative number you make a positive number

Example

$-60 \div (-10) = 6$

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