Rush Green Primary School

Division Policy

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Progression through calculations for Division

- These standards are age-related expectations and therefore we expect the majority of children to achieve them.
- New learning is likely to be taught to groups rather than the whole class to acknowledge the different learning stages of the children.
- Children need to understand that division can be sharing or grouping (repeated subtraction).
- Children should understand that, unlike multiplication, division is not commutative.
- Ensure that children understand the = sign means is the same as and that children see calculations where the equals sign is in a different position, e.g. 12 ÷ 3 = 4 and 4 = 12 ÷ 3.
- Children should be encouraged to approximate before calculating and check whether their answer is reasonable.
- When teaching division, the principles of concrete, pictorial and abstract (CPA) are followed throughout the whole school.

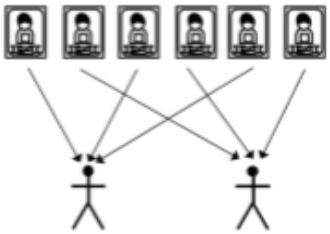
YR

Children are encouraged to develop a mental picture of the number system in their heads to use for calculation. They should experience practical calculation opportunities involving equal groups and sharing items using a wide variety of equipment, e.g. small world play, role play, counters, cubes etc. They develop ways of recording calculations using pictures, etc.

Y1

In problem solving contexts, children will use practical equipment to share out objects equally and to group objects to represent division.

6 football stickers are shared between 2 people, how many do they each get? Children may solve this by using a 'one for you, one for me' strategy until all of the cards have been given out.



Y2

Children will utilise practical equipment to represent division calculations as grouping (repeated subtraction) and use jottings to support their calculation, e.g.

12 ÷ 3 =

Children need to understand that this calculation reads as 'How many groups of 3 are there in 12?'

The link between sharing and grouping can be modelled in the following way by relating back to the first football sticker question:

Placing the football stickers in a bag or box, the teacher can ask the children how many stickers would need to be taken out of the box to give each person one sticker each (i.e. 2) and exemplify this by putting the cards in groups of 2 until all cards have been removed from the bag.

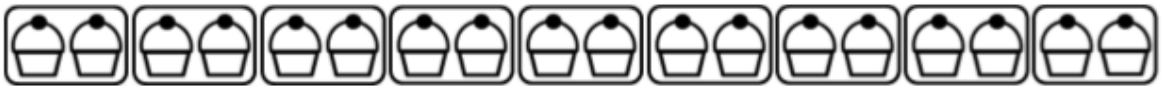
Children should also move onto calculations involving remainders.

13 ÷ 4 =

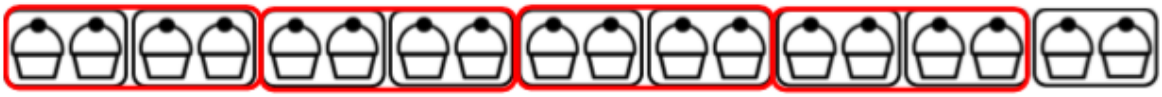
13 ÷ 4 = 3 remainder 1

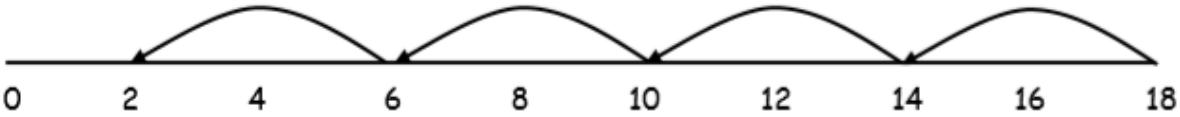
Y3

Children will continue to use grouping (repeated subtraction) to represent their calculations, answering questions such as: 18 ÷ 4 = or There are 18 cupcakes, how many people can have 4 cupcakes each?



This should also be modelled alongside a number line to emphasise that grouping is repeated subtraction (the number line could be both horizontal or vertical).





Children need to be able to decide what to do with remainders after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example 62 ÷ 8 is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context.

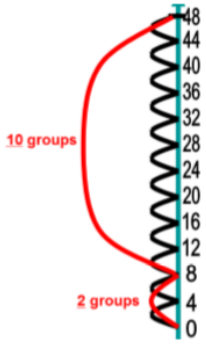
e.g. I have 62p. Sweets are 8p each. How many can I buy? Answer: 7 (the remaining 6p is not enough to buy another sweet)

Apples are packed into boxes of 8. There are 62 apples. How many boxes are needed? Answer: 8 (the remaining 6 apples still need to be placed into a box)

Y4

Before starting the more formal written method of 'chunking', children should first use the repeated subtraction on a vertical number line.

48 ÷ 4 = 12 (groups of 4) leading to 48 ÷ 4 = 10 (groups of 4) + 2 (groups of 4)
= 12 (groups of 4)



Children will develop their use of grouping (repeated subtraction) to be able to subtract multiples of the divisor, developing the use of the 'chunking' method.

Short division (TO ÷ O) Bus Stop Method

72 ÷ 3

$$\begin{array}{r} 24 \\ 3\overline{)\,7^{1}2} \end{array}$$

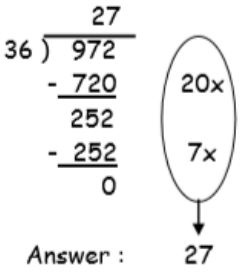
Children should write their answer above the calculation to make it easy for them and the teacher to distinguish. Any remainders should be shown as integers, i.e. 14 remainder 2 or 14 r 2.

Y5

Children can start to subtract larger multiples of the divisor (e.g. 20x). It is important for children to have a secure understanding that division is repeated subtraction as they work with the chunking method, therefore they need to be fluent in their subtraction skills.

Long division (HTO ÷ TO)

972 ÷ 36



Any remainders should be shown as fractions, i.e. if the children were dividing 32 by 10, the answer should be shown as 3 2/10 which could then be written as 3 1/5 in its lowest terms.

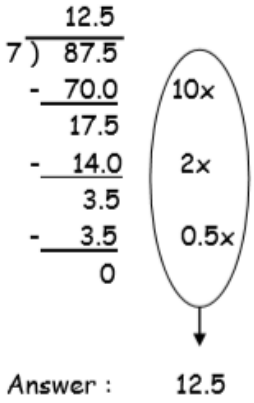
Children need to be able to decide what to do after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example 240 ÷ 52 is 4 remainder 32, but whether the answer should be rounded up to 5 or rounded down to 4 depends on the context.

Y6

Children to continue to use the methods taught in Y5. Children may still use the menu box if required, but would also be expected to use larger multiples of the divisor (e.g. 20x, 30x, 40x).

The long division method should be extended to be used with decimals with up to two decimal places. Children should know that decimal points line up under each other.

e.g. 87.5 ÷ 7



By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved.

Children should not be made to go onto the next stage if:
1) they are not ready.
2) they are not confident.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.