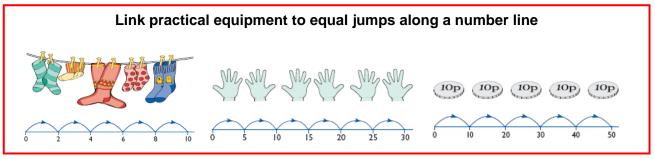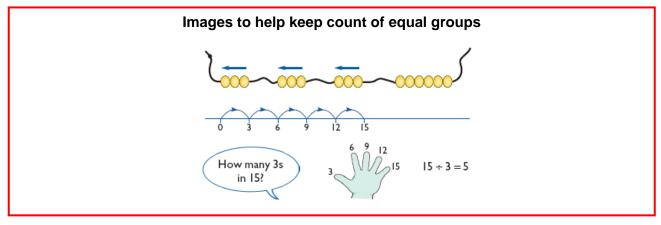## Can I use grouping to solve division problems?

Teaching guidance

Key vocabulary

divide, division, groups, equal groups of, count on/back, left over, ÷

Models and images, resources and equipment

Link practical equipment to equal jumps along a number line

Images to help keep count of equal groups

How many 3s in 15?

$15 \div 3 = 5$

Images also used for multiplication such as arrays and counting sticks

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Grouping ITP to link the grouping of objects to counting in equal jumps along a number line

$15 \div 5 =$

Primary *National Strategy*

Teaching tips

- There are two models of division and children need experience of both. Calculations such as 10 ÷ 2 can be interpreted as:
    - Sharing, for example ten stickers are shared between two children; how many will they have each?
    - Grouping, for example if we have ten children, how many pairs can we make? (how many 2s are there in 10?)

  Provide opportunities for children to solve the same division problem using both grouping and sharing. For example for 30 ÷ 10, share 30 between 10 and then show how you could also find how many groups of 10 there are in 30. Establish that the answer is the same and discuss which way was quicker.

- Children often have more everyday experience of sharing and so the concept of grouping usually requires the greatest emphasis when exploring division.

- Provide frequent opportunities for children to gain practical experience of grouping using a wide variety of practical opportunities, equipment and models and images, for example:
    - Count along a counting stick in 5s. Stop when you get to 20 and then ask: How many 5s in 20?
    - Show 14 identical socks. How many pairs do you think we'll be able to make?
    - In PE, ask children to predict how many groups they will be able to make. There are 30 children here today. How many groups of five do you think we'll be able to make? Get yourselves into groups of five and we'll check.
    - Show children how they can count on their fingers to keep track, for example find how many fives are in 20, saying five, ten, fifteen, twenty.
    - Show 30 beads. How many groups of ten are there?
    - Display 25 objects (e.g. coloured circles) arranged randomly on the whiteboard. How many groups of five do you think we could make? Ring the groups of five to confirm. Record 25 ÷ 5 saying that we can read this as 'how many 5s are there in 25?' Repeat, this time arranging the objects in a line. Sketch a number line directly underneath the line of objects, labelling 0 at one end and 25 at the other. Draw hops of 5, labelling where they land on the line.
    - Show an array of four rows of five objects. Ask children to describe this picture. How many altogether? In each row? In each column? How many 5s are in 20? What division number sentence could we write? How many 4s are in 20? What division number sentence could we write?

- Use the Grouping ITP to link grouping objects to counting in equal jumps along a number line.

- Begin to explore, in practical contexts, the concept of remainders. Discuss questions such as, 'How many packs of four buns can we make using 17 buns? How many four-person tents will we need if 17 children are going camping?' Through these contexts explore how sometimes there are either too many or not enough items to make a whole group.