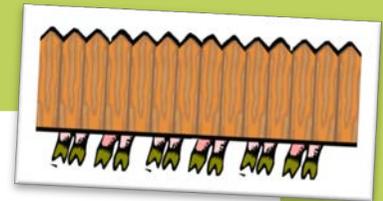


M55



15-20 minutes

THREES AND FOURS, THREES AND FIVES



To consolidate the idea of an axis line – a graphic model which represents quantities and the relationships between them ‘at a glance’

To practise using an axis line to solve practical problems

To promote understanding of the relationship between the size of a group (e.g. 3, 4 or 5) and the number of groups we can make out of a given quantity; the bigger the group, the smaller the number of groups



❖ Pigs’ legs showing below a fence



❖ An axis line (per child)



❖ 2 large sheets, each with an 15-segment axis line on

❖ 3 marker pens in different colours

❖ 16 soft toys

❖ Large paper shapes big enough for a soft toy to sit next to any one of their sides – 3 rectangles, 3 pentagons and 5 triangles

❖ 3 differently coloured pencils (per child)

❖ Some party music



Musical Chairs – Threes and Fours:

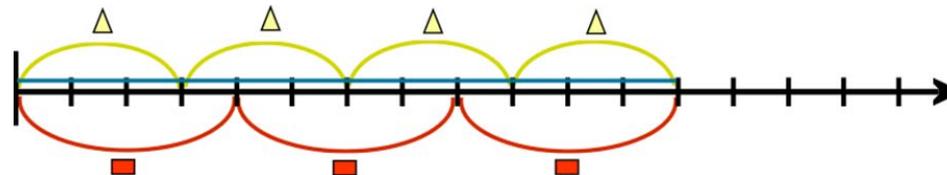
Put out 13 soft toys, and spread out 4 of your large triangles. Explain to your child that their soft toys are going to play a special game of Musical Chairs. It is special because the rules are slightly different – when the music stops, each soft toy must find the edge of a shape to sit next to. The soft toy who does not find an unoccupied edge is out.

Put your chosen music on and encourage your child to ‘help’ the toys dance. When you stop the music, ask your child to help each toy find a place to sit. One soft toy will be ‘out’.

Begin to create a graphic model to show the number of triangle groups on the top of one of your large, prepared axis lines, counting the soft toys sitting around each triangle aloud and ‘thinking out loud’ about each set of 3 – and the arc that you are drawing for each set of 3 as you do it.

Then repeat the game with the same number of soft toys (13), but with the 3 large rectangles this time. When the game has finished, add this information to your graphic model to show the number of rectangle groups on the bottom of the same axis line, in a different colour, and discuss it with your child.

Then ask your child to draw a line in a third colour back from the point reached to the zero point, to represent the total number of soft toys that found a seat. In the end, it should look like this:



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Your child can use an axis line to work out how many groups they can form when a group of a given size divides up into equal groups, for two different sizes of group (12 into groups of 3 and groups of 4; 15 into groups of 3 and groups of 5).

Your child understands that the bigger the number of soft toys in each group, the smaller the number of groups.

Your child can draw an axis line to represent 12 pigs’ legs - using an arc to show the total number of pigs’ legs, splitting the 12 legs into groups of 4 legs, and then using all of that to know that there were 3 pigs in the field.

Your child can explain the axis line to their soft toy, to show them how many pigs there were.



KEY TO LEARNING
@HOME



THREES AND FOURS, THREES AND FIVES – continued



Review the completed axis line together. Count the number of triangle groups on the axis line, and confirm that there is a big triangle shape on the floor for each arc. Discuss which is more and which is fewer, the number of triangle groups or the number of rectangle groups – confirm that there were more triangle groups and fewer rectangle groups. Discuss how many soft toys were in triangle groups and how many in rectangle groups – agree that triangle groups had 3 soft toys and rectangle groups had 4. Conclude that the bigger the group, the smaller the number of groups.

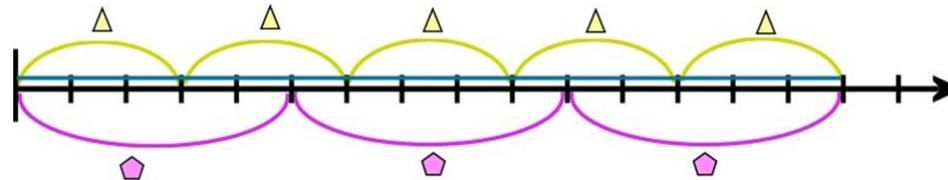
Musical Chairs – Threes and Fives:

This time put out 16 soft toys, and spread out 5 large triangles on the floor. Repeat the game of Musical Chairs as in ‘Threes and Fours’.

On your other large, prepared axis line, begin to create a graphic model together to show the number of triangle groups on the top of the axis line, discussing it with your child as you do it. Model the first arc, counting and thinking out loud as before, and then ask your child to add the other arcs to finish the representation of the groups of triangles. Support them as necessary.

Then repeat the musical chairs game with the same number of soft toys (16) but with the 3 large pentagons this time. When you have finished, ask your child to add this information to the bottom of the axis line to show the number of pentagon groups, in a different colour.

Then ask your child to draw a line in a third colour back from the point reached to the zero point, to represent the total number of soft toys that found a seat. In the end, it should look like this:



Review the completed axis line together. Count the number of triangle groups on the axis line, and confirm that there is a big triangle shape on the floor for each arc. Repeat for the pentagons. Discuss which is more and which is fewer, the number of triangle groups or the number of pentagon groups. Confirm that there were more triangle groups and fewer pentagon ones. Discuss how many soft toys were in triangle groups and how many in the pentagon groups. Agree that triangle groups had 3 soft toys, and pentagon ones had 5. Conclude that the bigger the group, the smaller the number of groups.

Summarise that in each version of the game above, the same number of soft toys got a seat at the edge of a shape – so in the ‘Threes and Fours’ game, once one soft toy was out, the remaining 12 soft toys could be grouped into 4 groups of 3, and also 3 groups of 4; in the ‘Threes and Fives’ game, once one soft toy was out, the remaining 15 soft toys could be grouped into 3 groups of 5, and also 5 groups of 3. Point to the groupings and the total number on each axis line as you are explaining this.

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THREES AND FOURS, THREES AND FIVES – continued



Pigs' Legs:

Put out your one of your child's soft toys. Tell your child that today you also want them to be a detective, and help this toy to solve a mystery. Say: *The mystery you need to solve is about when your toy was out walking past a farm. He/she walked along the edge of a field. There was a tall fence and he/she could not see over the top, but it had a gap at the bottom, and through the gap he/she could see some legs, pigs' legs.*

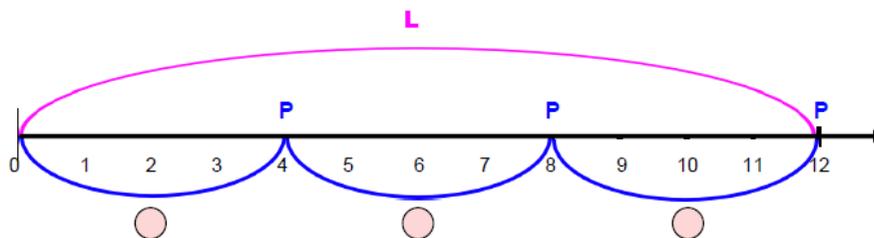
Have each child doing the session work with their own axis line sheet for this part of the session. Show your child the picture of the fence with 12 pigs' legs visible through a gap at the bottom. Ask them to represent the total number of pigs' legs on an axis line using their coloured pencils, to help their soft toy understand how many pigs they actually saw. (If your child is able to tell you right away how many pigs there were, that's great, but to encourage them to represent this visually, say that their soft toy doesn't agree/understand and so a visual model will help him/her.)

First encourage your child to count segments along the axis line, with their finger touching each point until they reach 12. Then they need to draw the arc back from that point to the start of the axis line and label the arc with a letter L, as shown in pink below.

Now ask how many legs a pig has, and agree that it has 4. Confirm that if each pig has 4 legs, then 4 segments on the axis line means 1 pig. Have your child point to the first 4 segments on the axis line one by one, touching each with a finger, 1-2-3-4. Have them mark this point with a letter P, then draw an arc back from this point to the start of the axis line. From the P, they need to start counting again 1-2-3-4, mark the point with another P and draw another arc back to the first P. They continue until they have grouped all 12 legs on the axis line into groups of four legs, i.e. into groups which each represent 1 pig.

Then say: *Now we can see how many small arcs fit into the big one. What does each small arc represent? (1 pig) How many small arcs do we have? (1-2-3) If we have 3 small arcs, how many pigs do we have? (3) So how many pigs did I see on my walk? (3)*

Ask your child to explain the model to their soft toy and then have their toy thank them for their help with the mystery.



The above type of activity can be repeated with different objects and done orally, once your child has grasped the process visually. For example:



- If we see 12 eyes shining in the dark, how many cats are there in the cellar?
- If we see 6 rabbits' ears sticking up over a tree stump in the woods, how many rabbits are hiding from the fox?
- If we see 12 legs under an umbrella, how many children are there?
- If we see 2 teachers' heads going past the window, how many legs were there?

Once they have practised with questions like those above, you can also challenge them with puzzles such as this one: *A miller keeps three cats to catch the mice in his old mill, but the mice only ever see 5 eyes shining in the dark. How could this be true?*

