

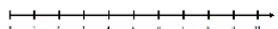
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10-15 minutes



- ❖ 3 Axis Line Sheets (per child)



- ❖ 8 Boy Cards and 5 Girl Cards

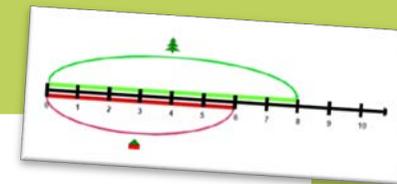


- ❖ Some tokens or counters
- ❖ An abacus
- ❖ 3 toy cars
- ❖ 6 toy 'domestic animals' and 8 toy 'wild animals' (or use the picture cards from recent Logic sessions)
- ❖ A pencil and some coloured pencils (per child)
- ❖ A whiteboard or large sheet of paper, and pens

# ARCS ON THE AXIS LINE



To introduce the idea that we can use one segment on an axis line, instead of one token on a correspondence grid or one bead on an abacus, to represent one object  
 To practise creating a graphic model on an axis line that facilitates comparison of quantities  
 To facilitate accurate representation of quantity on an axis line, without relying on counting  
 To practise using different coloured arcs to distinguish between and facilitate comparison of different objects or sets of objects being quantified

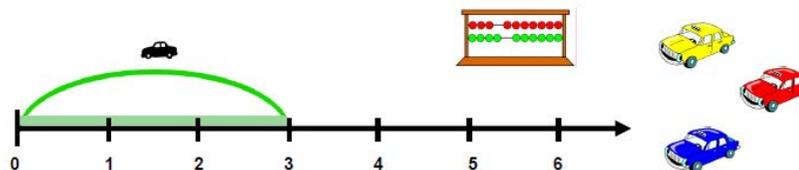


## Segments of an Axis Line: Cars

Draw an axis line on your whiteboard or paper. Put the three cars, some tokens and your abacus on the table. Ask your child to show you how to use the tokens to show three cars (set out one token for each car), then how to use the abacus (one bead moved from left to right for each car).

*Say: We can do exactly the same thing on this axis line. For every car we need one segment of the axis line. Hold up one car and draw a line on the axis from 0 to 1, then take another car and draw a line from 1 to 2, then take the last car and draw a line to 3. Summarise: These lines show all the cars. Then starting at 3 (i.e. the point that marks the total quantity of cars), draw an arc back to 0 so that it covers the 3 car segments.*

Give your child an Axis Line Sheet and three coloured pencils. Ask them to mark three cars on their axis line. Starting at 0, they need to draw a green line against the first segment of the axis line, then against the second, then against the third. Then they need to draw a green arc from the end point, 3, to 0. Finally they need to label the cars' arc - by writing the initial C or drawing a symbol (e.g. a small car) over the arc.



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Your child can use segments on an axis line to help them count out a given quantity.  
 Your child can use drawings/symbols or initial letters to label their axis lines.  
 Your child can draw a graphic model on an axis line to represent 3 cars, then 5 girls and 8 boys, and then 8 wild and 6 domestic animals.  
 Your child can use their animal graphic model to advise the director of the zoo that he has more domestic animals and fewer wild ones.



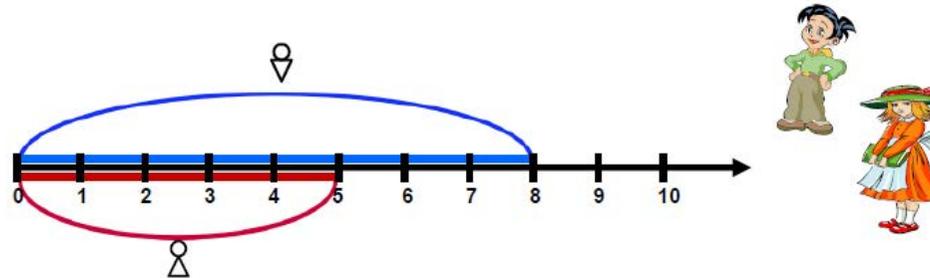
KEY TO LEARNING  
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# ARCS ON THE AXIS LINE - continued



## Segments of an Axis line: Boys and Girls

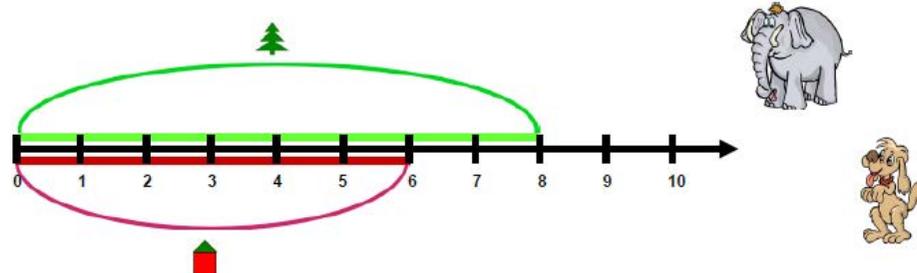
Now put the five Girl Cards and the eight Boy Cards on the table. Ask your child to draw arcs on another Axis Line Sheet to show how many boys there are (in blue) and how many girls (in red). Remind them they will need one blue segment for every boy and one red segment for every girl; and that they must label the arcs. The boys' arc needs the initial B (or symbol), and the girls' the initial G (or symbol).



## Segments of an Axis Line: Wild and Domestic Animals

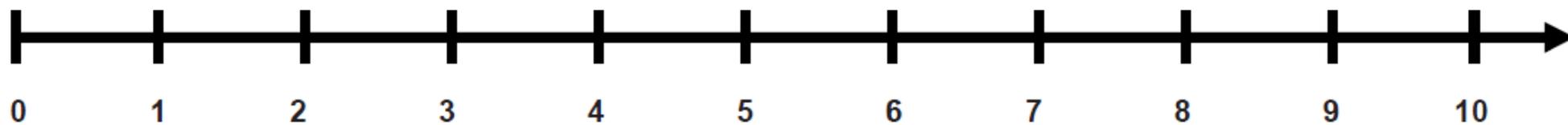
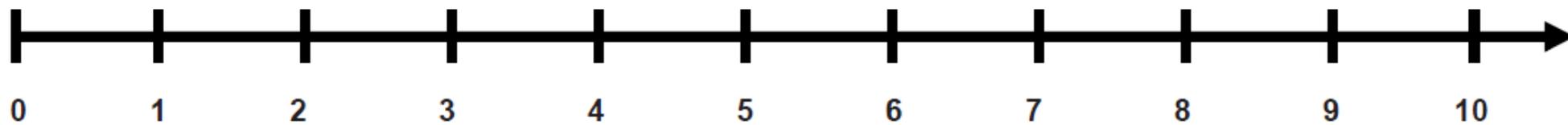
Set the scene with this short story: *All the animals in the zoo are fed up because they don't have enough space. The director of the zoo has been given some money for building two new areas for the animals. He plans to build one area for domestic animals and one for wild animals, and to be fair, he plans to give the most space to the group with the most animals in it. But he does not know if the zoo has more wild animals than domestic ones, or more domestic animals than wild ones. He would like you to help him calculate the answer and then to let him know.*

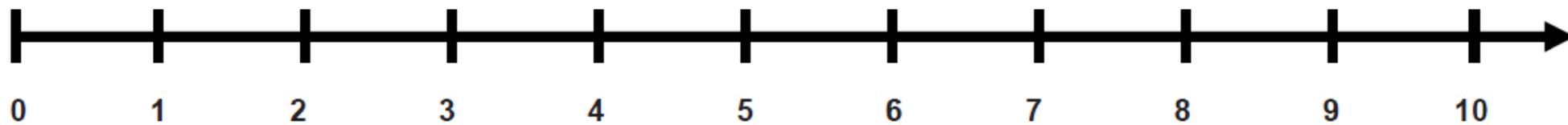
Give your child two coloured pencils and another Axis Line Sheet. Put the toy wild animals on the table, and ask your child to count them by marking a segment on the axis line for each one, starting at 0 on the left, and then drawing an arc above the axis line from the point that shows how many wild animals there are back to the 0. Ask them to draw a symbol (e.g. a tree) or initial W above the arc to label the arc so it is clear this is the wild animals' arc.



Remove the wild animals, and replace them with the domestic ones. Ask your child to repeat the process of counting the animals, drawing and labelling the arc. This time they should use a different colour, draw the arc under the line and use a symbol (e.g. a house) or the initial D to label it.

When they have finished, ask them to look at their axis line and consider their answer to the director of the zoo's question: *Which do we have more of, wild or domestic animals? Which is greater? Which is less?* Discuss as necessary and then pretend to phone the director of the zoo so that your child can explain personally that there are more domestic animals than wild ones in his zoo.





Cut out each boy and girl separately.

