Y2 Plan Session 1 – Combining Moving Forwards and Turning through a maze

Class Activities

To predict and test which sets of instructions are needed to make Roamer move through a maze.
New vocabulary – right angle; right-angled corner

Expect the following:

- a natural, age-appropriate confusion of right and left amongst the youngest children
- a confusion of right and left when Roamer faces the starting point or when the child is doing the programming
- difficulty thinking in different planes ie Once Roamer has been turned to face in a different direction the children cannot always recognise future movements as forwards but see them as a movement 'up' or to the side.

To help them to understand movement and changes of direction children should always stand behind Roamer when they are programming it to move.

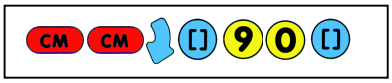
PE As suggested previously it is useful to teach and consolidate the understanding of (quarter) turns during PE so the children can physically experience the movement and link the language required to program Roamer to carry out these movements. For ideas of sequences which include left and right turns, see the plan and video on the Val Sabin Web site http://www.valsabinpublications.com/activate/lessons.htm (Activate 9) (5A) CIRCUIT PATTERNS – "jogging"

Resources:

- **Left Right Man** made from: (17) Year 1 Sheet 1 – Make a little left right man resource to help children establish left and right whichever way they (or Roamer) are facing.
- **PowerPoint Presentation E or F** (for visual reference)
- **Roamer Key Symbols** (see link)
- **Roamer mat laid out in a grid with large pictures to form a route** (as before but include one right and one left turning corner.
- **Somewhere to Blu-Tack the key symbols** as the children record the sequence of instructions.

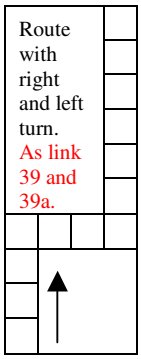
Children sitting along the edges of the Roamer mat with Roamer at its starting position.

Recap – quarter turns. Depending on the ability of the majority of the children decide whether to use quarter turns or 90° turns. If the children are to use quarter turns you will need to key in your 'secret instructions' in order to change the unit of turn



Moving along a route with two different turns

Tell the children that Roamer is going to move along the pathway to get to the finishing point (whatever picture has been placed there). Decide whether Roamer will stop before that picture or 'park' itself on it.



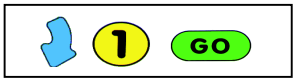
Tell the children to look carefully at the route.

Ask them:

- How many turns will Roamer have to do?
- Where are the turns? Which squares will Roamer have to turn in?

Ask for two volunteers to stand in the turning squares and establish which way Roamer will need to turn in each square (one right, one left)

- What kind of turns will it have to do? (quarter turn, 90° turn)
- Introduce the term 'right-angle'. Tell the children that when Roamer does a quarter turn or turns 90° it will be turning at a right-angled corner.
- How many right-angled corners can they see on the route map?
- How do we instruct/tell Roamer to make a 'one quarter' turn? What are the words we need to say so that we know which keys to press? (left one or right one)



Tell the children that they are going to give Roamer instructions to get to the end of the route but it must stop at each change of direction.

Sequencing the instructions – child as Roamer

Choose a child to be 'Roamer'. Child stands in the starting square and waits for instructions before completing each move along the route.

As in previous sessions, invite individuals to Blu-Tack the key symbols as each one is suggested until the first instruction is complete.

- Which keys do we press to complete Roamer's first move? (forward __ GO) Child moves forward.
- Which keys will make Roamer turn? Which way? How much? (right 1 GO) Child turns right.
- Which way does Roamer go now? (forward) How far? Which keys? (forward __ GO) Child moves forward.
- What does 'Roamer' need to do now? (turn) Which way? How far (left 1 GO) Child turns.
- Which keys do we need to get to the end? (forward __ GO)

The sequence of instructions – programming Roamer

Read/chant the instructions that have been made from the key symbols. Point out that these instructions will make Roamer stop at the end of every move. Choose a different child to key in each step of instructions. Make sure they always stand behind Roamer when pressing keys.

When Roamer has completed all the individual moves, ask the children how they can alter the instructions on the board to make Roamer complete the rout without stopping. (remove surplus CMs and Gos.)

Invite individuals to key in the new steps but not to press GO until all the instructions have been given.

Ending session – Did they encounter any problems? How did they overcome them?

Follow up

- **Children work in small groups** with an adult helper to consolidate what they have been learning during this session. Encourage them to lay out their own route (one turn will shorten the time needed) and make sure they use the symbols to record their instructions. One child should walk the route (as Roamer) while other children display the symbols as the keys are pressed. However, at this stage they should be ready to program Roamer to complete the route without stopping. They will notice that unless the keys are pressed correctly in the correct sequence Roamer will not respond as expected. If time is short make sure their helper keeps a keen eye on key presses!

Extension to the above:

- Show the children how to write instructions in 'shorthand' (see opposite) and how the shorthand corresponds to the key symbols. Give them small pieces of 1cm squared paper and encourage them to write each instruction in turn on their paper (using the squares) as you write the same instruction on the board in the new format.

Once they have been introduced to this they should be encouraged to always have a pencil and piece of squared paper with them so that when they are working in groups they can write down each instruction before it is keyed into Roamer's memory. This will help them later when they have to record their own sequence of instructions. (see links)

The new format is the same as the one used for programming **LOGO** in **KS2**. Children in **Y2** should switch from the use of symbols to use of this format as soon as possible in preparation for work on **LOGO** in KS2.

	FD	3	
	RT	1	
	FD	3	
	LT	1	
	FD	5	

Individual work

- As the children become more familiar with what a Roamer route looks like, they can draw their own 'Roamer maps' on pieces of 2cm squared paper (one 2cm square = 1 Roamer step).

They should use arrows to show the steps Roamer will take (see link 39). Some children (working towards level 3) will be able to produce maps which will fulfil this expectation and look very good on display. Others will forget that a square should have only one arrow or Roamer step in it (they are not able to relate their map to the Roamer routes the class have used or to Roamer's movement along the route) and will also forget that Roamer does only 90° degree turns. These children will benefit from the follow up group work (above) and from the use of pre-prepared Roamer route maps. (See links)

This is a good exercise for assessment purposes.

Extension: Children work on Sheet 39 **(**Link **39** and **39a)** where there is a Roamer route (as suggested for this session) and a PowerPoint Show.

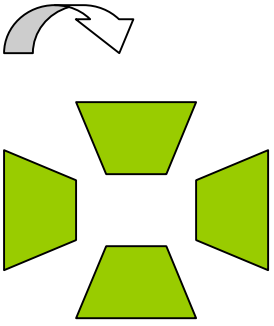
1. Suggestions for using a **Multilink Cube** to help children who are using a paper Roamer map (route)
2. Worksheet - children can draw their own pictures along the route and answer questions about turning.
3. Worksheet – children (attempt to) record their key presses in sequence (first, then, after that, then, finally) Literacy link.

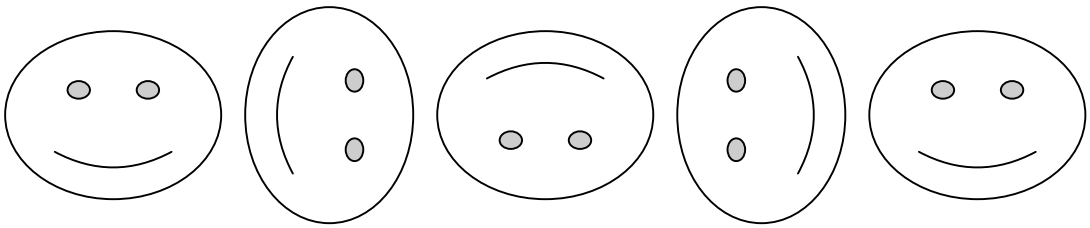
Partner work – (Link **39a)**

- Once they have finished their paper 'route map' children should be asked to work with a partner.
  Partner 1 uses a **multilink link cube** and controls the '**multilink Roamer**' as it travels along the route on their Roamer route map.
  Partner 2 has to work out and give instructions to partner 1 to move **multilink Roamer** along. They then swap roles and maps.
  It will become apparent where they have made mistakes in the drawing of their route map.

- More able children could be asked to work with their partners to work out and write down the sequence of instructions for Roamer (the **multilink cube**) to complete their route.

Children could use software such as Word or Publisher to draw large shapes and then use the rotate right and rotate left buttons to turn the shape/s through 90° turns. They could use the copy paste facility to make a sequence showing what a shape will look like after it has made 4 quarter turns to the left or right.





Can they continue the pattern they have made?

More able children might like to use a Maths Dictionary on the Internet to look up an examples of turns (click on the link to 'T' to see left & right turns and the letter P turned through 4, 90° turns) or to see different angles click on the link for R to go to a page about right angles which allows children to 'make their own angles' by typing numbers into a box
See http://www.teachers.ash.org.au/jeather/maths/dictionary.html

See link 39 for how to use a Mutilink Cube to help the children.