

Approach: One to one
 Focus: Understanding rotation and angles
 Resources: Person with torch, board, recording book

Year: 4 & 8

Questions / instructions:



Hand student the model figure and board.

This person is playing spotlight with his torch at night. Put the person in the centre, facing the tree.

- Turn the person clockwise, a quarter turn. What is it facing? **cat** 58 (64) 89 (89)
 Turn the person back so that it is facing the tree again.
- Now turn the person clockwise, a one-third turn. What is it facing? **rabbit** 19 (22) 38 (40)
 Turn the person back so that it is facing the tree again.
- Now turn the person anticlockwise, a half turn. What is it facing? **sunglasses** 61 (64) 87 (87)
 Turn the person back so that it is facing the tree again.
- Now turn the person anticlockwise, a three-quarters turn. What is it facing? **cat** 30 (28) 60 (66)
 Turn the person back so that it is facing the tree again.

YEAR 4 ONLY:

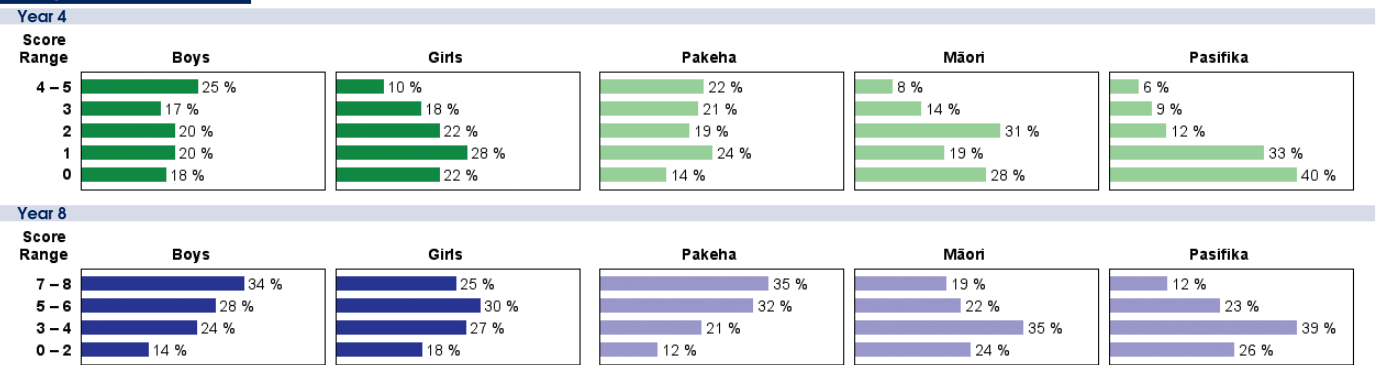
- Now turn the person $\frac{1}{12}$ to the right. What is it facing? **boy** 27 (23)
 Turn the person back so that it is facing the tree again.
- What directions could you give me if I wanted to turn the person to face the chair? **appropriate directions given** 43 (46)
(e.g. 1/4 turn anticlockwise/left; 3/4 turn clockwise/right; 90° clockwise/left; 270° anticlockwise/right)

YEAR 8 ONLY:

- Now turn the person 90° to the left. What is it facing? **chair** 59 (60)
 Turn the person back so that it is facing the tree again.
- Now turn the person 360° to the left. What is it facing? **tree** 77 (77)
 Turn the person back so that it is facing the tree again.
- Now turn the person 30° to the right. What is it facing? **boy** 43 (46)
 Turn the person back so that it is facing the tree again.
- Now turn the person 270° to the right. What is it facing? **chair** 36 (30)
 Turn the person back so that it is facing the tree again.
- What directions could you give me if I wanted to turn the person to face the shoe? **appropriate directions** 31 (32)
(e.g. 120° to the left, 240° to the right; one third turn to the left, two-thirds turn to the right)

Y4 Total Score:	4-5	17 (16)
	3	18 (22)
	2	21 (24)
	1	24 (19)
	0	20 (19)
Y8 Total Score:	7-8	29 (28)
	5-6	29 (34)
	3-4	26 (24)
	0-2	16 (14)

Subgroup Analyses:



Commentary:

Students were less successful with turns other than $\frac{1}{4}$ (or 90 degrees), or $\frac{1}{2}$. Performance was very similar in 2005 and 2009. Year 4 boys scored significantly higher than girls, and Pasifika students at both year levels scored substantially lower, on average, than Pakeha students.