

Approach: One to one

Year: 4 & 8

Focus: Predicting the centre of gravity of a rod and a weighted rod

Resources: Rod with markers, 3 rods with weights in different positions, rod weighted at one end and markers indicated, recording book, whiteboard pen, wet paper towel

Questions / instructions:



Show shorter rod.

In this activity you will be trying to balance this rod on your finger. You will see the rod has three markers, a red one, a black one and a blue one.

1. Which marker should be touching your finger so that the rod balances?

Prediction: red marker
black marker
✓ blue marker
no answer or more than one answer

% response
2007 ('03)
year 4 year 8

3 (2) 1 (0)
7 (6) 5 (4)
91 (92) 95 (95)
0 (0) 0 (0)

Hand out shorter rod.

Now try it out and see what happens

2. Do you want to change your answer?

Result: red marker
black marker
blue marker
no change
no answer or more than one answer

0 (0) 0 (0)
3 (1) 3 (2)
6 (3) 1 (3)
90 (95) 94 (94)
1 (1) 2 (1)



Show longer rod and indicate heavy end.

On this rod one end is heavier than the other end.

3. Which marker should be touching your finger so that the rod balances?

Prediction: red marker
✓ black marker
blue marker
no answer or more than one answer

21 (23) 9 (11)
63 (51) 63 (60)
14 (25) 25 (28)
2 (1) 3 (1)

Hand out weighted rod.

Now try it out and see what happens.

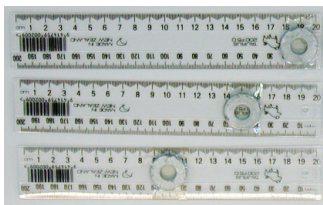
4. Do you want to change your answer?

Result: red marker
black marker
blue marker
no change
no answer or more than one answer

% response
2007 ('03)
year 4 year 8

2 (1) 1 (1)
33 (46) 32 (39)
3 (2) 0 (1)
57 (49) 63 (57)
5 (2) 4 (2)

Here are three more rods. Each rod has a weight on it. Find where to put your finger so that each rod balances. Use the whiteboard pen to mark on the rod where your finger was.



Hand out rods.

Now look at where the weights are and the pen marks showing where your finger was.

5. What do you notice about where the weights and the pen marks are on the rods?

markers are close to the weights

42 (41) 43 (57)

Description:
(Distance between weight and markers (balance points) increases as weight gets closer to end of ruler)

clear, accurate description
on right track, but vague

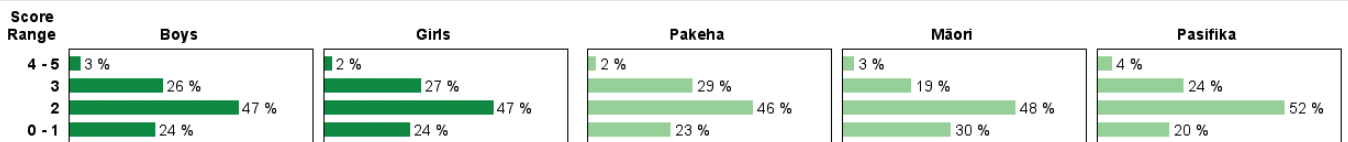
1 (1) 4 (12)
7 (5) 15 (25)

Total score: 4-5

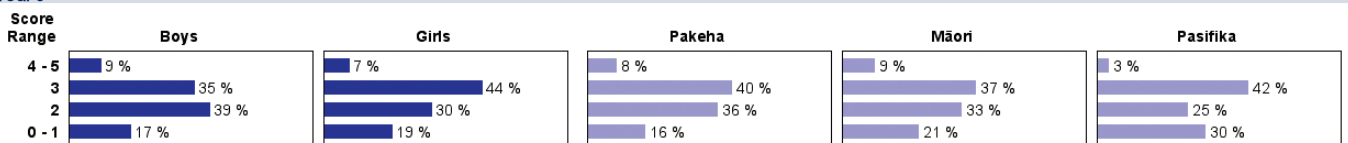
2 (2) 8 (16)
3 27 (21) 39 (38)
2 47 (44) 35 (35)
0-1 24 (33) 18 (11)

Subgroup Analyses:

Year 4



Year 8



Commentary:

There was little change between year 4 and year 8 on this task, nor for year 4 students between 2003 and 2007. The performance of year 8 students dropped a little between 2003 and 2007. Māori and Pasifika students at both year levels performed similarly to Pakeha students.