

Marbles in Water

Approach: One to one

Level: Year 4 and year 8

Focus: Account for the rise in water level in a container when an object or objects are added, in terms of water being displaced.

Resources: 100ml jug, water, 1 small marble, water, 2 large marbles.

<i>Questions/instructions:</i>	% responses			% responses	
	y4	y8		y4	y8
In this activity you are going to do an experiment with some water in a jug and some marbles.			4. Why do you say that?		
			no water added or removed (just displaced)	38	61
Give student equipment. Pour 80mls of water into the jug.			5. If you were to put one more large marble into the jug what would happen to the water?		
Here's the jug. You can see that it has 80mls of water in it.			increase by about 15ml	13	15
Show student 80ml level mark.			increase (unspecified)	80	82
1. What might happen to the water if you put one large marble into the jug?			6. What about the little marble? What do you think will happen when you put it into the water?		
water level would increase	83	95	increase smaller amount	41	51
Now put one large marble into the water. Watch what happens to the water.			7. You can try it out. What do you notice?		
2. Read the scale on the side of the jug. What is the level of the water on the scale now?			not scored		
reads increase of about 15mls	83	83	8. What would happen if you took out all the marbles?		
3. Is there more, less or the same amount of water in the jug compared with before?			return to original level	90	89
same amount	32	66	go down	9	10

Commentary:

Both year 4 and year 8 students were generally able to predict the rises and falls in water level as marbles were added or removed. In question 3, year 8 students were much more aware that the amount of water did not change when marbles were added, but the results of question 8 suggest that year 4 students understood that removal of all objects would restore the original water level.