Bottle Flipping Activity

What is the best water level for bottle flipping? We all have our preferences, but together, we are going to find out how much water will give us the best chance for bottle flipping success!

Make a prediction: What level on the water bottle do you think will be the best level for bottle flipping? ___1___

What level on the water bottle do you think will be the worst level for bottle flipping? _empty_

Find a space in the room to begin flipping your bottle. Start with a full bottle, then drink the water until you reach the next level. Continue working your way down until the bottle is empty. At each level, you get 25 flips. Make a tally for each successful bottle flip, then calculate your success rate at that level.
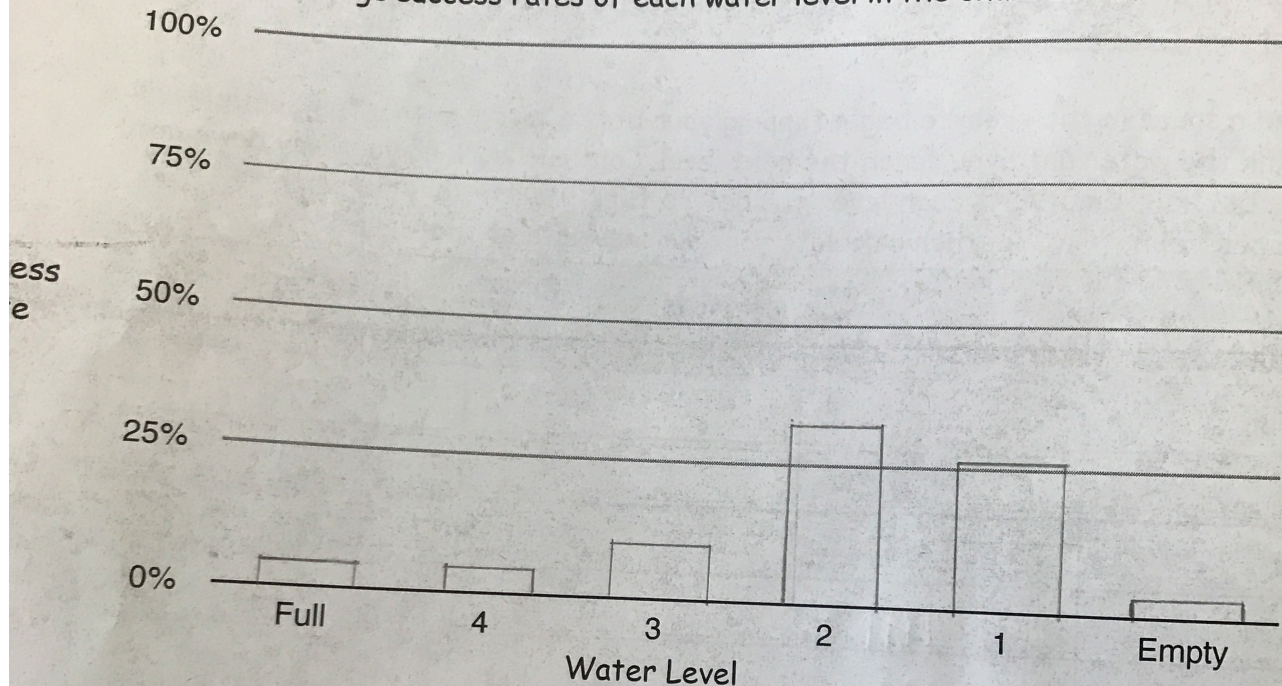
Water level	Successful flips	Success rate (successful flips/25)
Full		O
4		O
3	~~||||~~	0.2
2	~~||||~~ ~~||||~~ ||	0.48
1	~~||||~~ |||	0.32
Empty		O

Now we are going to find the **average** success rate for the class at each water level.

Water Level	Success rates	Average success rate
Full	0,0,.04,.08,0,0,.04,.04,.08,.04, .12,0,0	0.03
4	0,.04,.12,.04,0,0,0,.08,.04,0,.04, 0,0	0.03

Water Level	Success rates	Average success rate
3	.04, .16, .04, .04, 0, .04, .04, .08, .08, .04, .16, .16, .2, .2	0.09
2	.36, .16, .32, .40, .28, 0, .12, .36, .24, .12, .44, .32, .48, .32	0.29
1	.2, .44, .16, .36, .48, .12, .24, .12, .4, .4, .32, .32, .12	0.26
Empty	0, 0, 0, 0, .04, .08, 0, .04, .08, 0, 0, 0, 0, .08	0.02

Graph the average success rates of each water level in the chart below.

From our experiment, what is the best water level for bottle flipping?

2

What is the worst water level for bottle flipping?

empty

How do the results compare to your prediction?

I was close on my prediction for best water level because I predicted 1 and that's 2nd best. I predicted the worst water level would be empty.

Describe your graph:

The more water, the harder it is to bottle flip, but you do need some water because it's also hard to flip when the bottle is empty.

Now look at the water level with the highest average success rate. Using the success rates of you and your class mates at that water level, answer the questions below: 0, 0.12, 0.12, (0.16), 0.24, 0.28, 0.32 | 0.32, 0.32, 0.36, (0.36), 0.44, 0.48, 0.48

What is the highest success rate?

　　　0.48　　　48%

What is the lowest success rate?

　　　0　　　0%

What is the median success rate?

　　　0.32　　　32%

What success rate marks the first quartile? (median of lower half)

　　　0.16　　　16%

What success rate marks the third quartile? (median of upper half)

　　　0.36　　　36%

Using this information, create a box plot of the information in the space below.

32%　　48%

0%　　16%　　36% 50%　　　100%

Success Rate