

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? 4

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	1	4%
4	1	4%
3	11	8%
2		56%
1		44%
Empty	0	0%

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	4, 0, 8, 0, 12, 0, 4, 8, 0, 0, 0, 0	3%
4	4, 0, 0, 8, 0, 0, 4, 4, 0, 0, 0, 8	2.333%

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:

16, 20, 24, 28, 28, 40, 44, 44, 52, 52, 68, 76

What is the highest success rate?

76%

What is the lowest success rate?

16%

What is the median success rate?

42

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

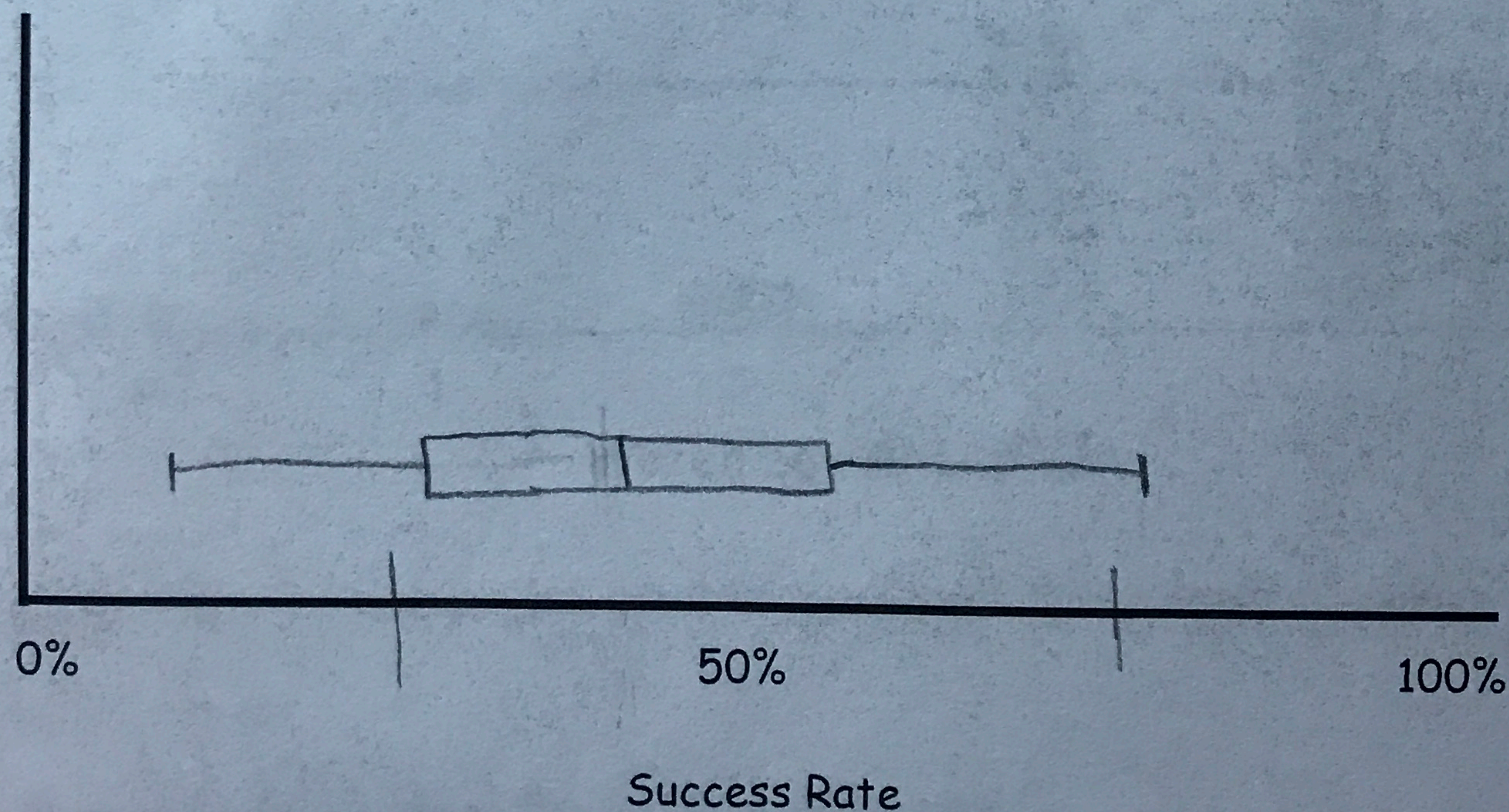
26

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

52

$$\begin{array}{r} 20 \\ 24 \\ \hline 52 \end{array} \quad \begin{array}{r} 24 \\ 2 \overline{) 52} \\ \underline{48} \\ 4 \end{array} \quad \begin{array}{r} 52 \\ 2 \overline{) 104} \\ \underline{104} \\ 0 \end{array}$$

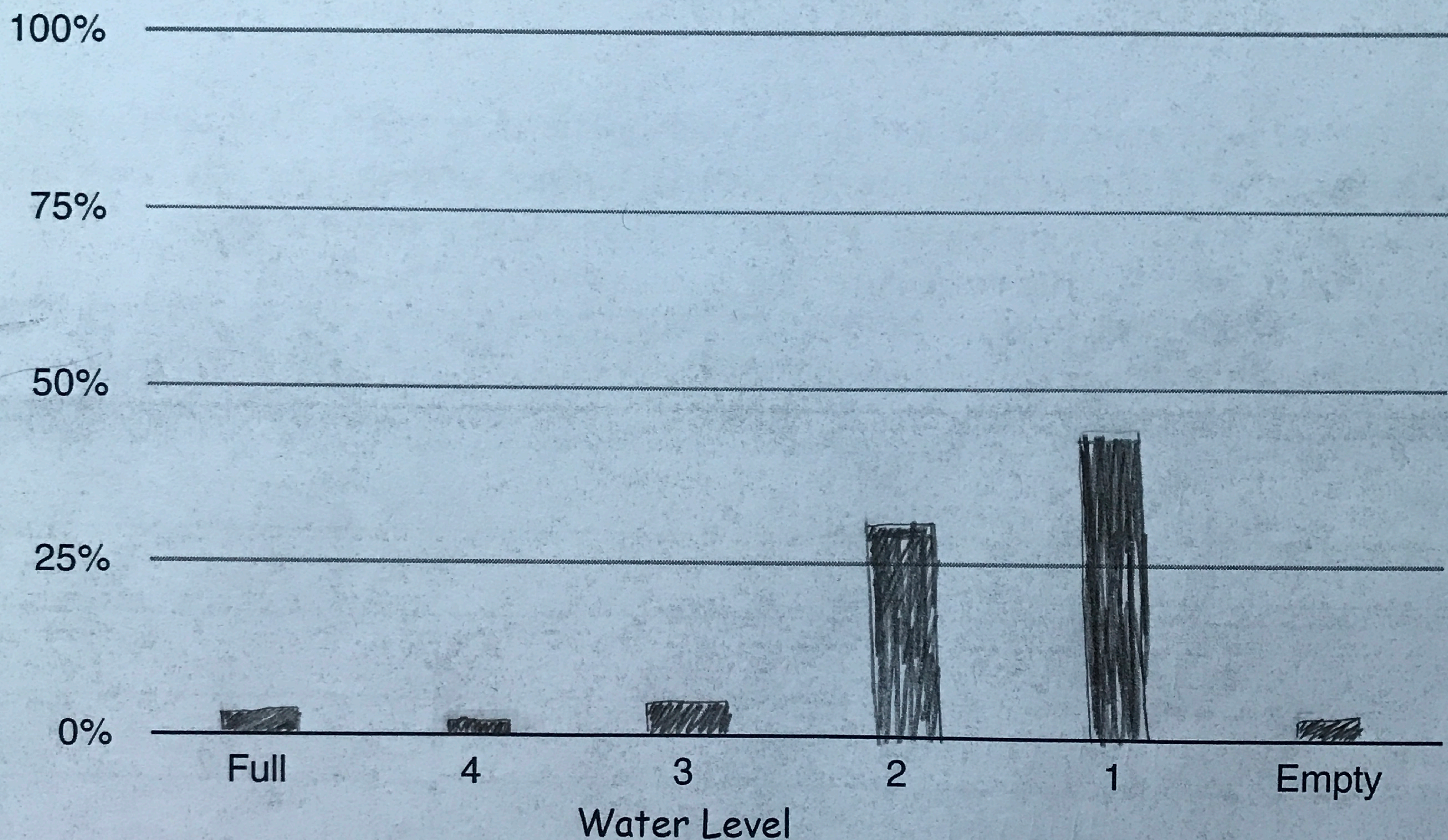
Using this information, create a box plot of the information in the space below.



76
16 ✓
42
26
52

Water Level	Success rates	Average success rate
3	8, 0, 12, 12, 4, 0, 12, 4, 0, 0, 4, 12	5.6 %
2	56, 12, 36, 28, 24, 36, 48, 40, 48, 40, 12, 20	33.3 %
1	✓✓✓✓✓✓✓✓✓✓ 44, 28, 68, 28, 44, 52, 52, 40, 76, 16, 20, 24	41 %
Empty	0, 4, 0, 0, 16, 20, 4, 4, 1, 0, 0, 0	4.3 %

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?

experiment 2

What is the worst water level for bottle flipping?

Full

How do the results compare to your prediction?

I thought I was gonna be the best from experience -

Describe your graph: