

Question: What uses less water, a dishwasher or washing the dishes by hand?

Hypothesis: If I wash the dishes by hand for 7 days it will use less water than using the dishwasher for 7 days.

Material: Dishwasher, dish soap, cleaning brushes, sink, water, water meter, paper to collect data, dirty dishes, drying rack.

Procedure:

Part 1

Step 1: Take a photo of the water meter.

Step 2: fill the sink with water.

Step 3: add dish soap to the water.

Step 4: clean the dishes with the cleaning brush.

Step 5: take a photo of the water meter.

Step 6: subtract the volume of water from the second photo from the volume of the water from the first photo.

Part 2

Step 1: take a photo of the water meter

Step 2: Put all the dishes from the sink into the dishwasher

Step 3: Start the dishwasher

Step 4: Take a photo of the water meter after the dishwasher is done

Step 5: subtract the volume of water from the second photo from the volume of water from the first photo

Re

Washing By Hand Data:

Day 1-25.6L

Day 2-38.9L

Day 3-13.8L

Day 4-19.5L

Day 5-16.7L

Day 6-21.9L

Day 7-37.6L

Average-24.9L

Dishwasher Data:

Day 1- Express cycle (1 hour) -11.6L

Day 2- Normal cycle (2 hours, 22 minutes) - 13.3L

Day 3- Normal cycle (2 hours, 22 minutes) - 12.1L

Day 4- Express cycle (1 hour) -10.7L

Day 5- Express cycle (1 hour) -14.1L

Day 6- Express cycle (1 hour) -11.7L

Day 7- Express cycle (1 hour) -11.5L

Average-12.1L

What I learned

1. I learned that the dishwasher used less water than washing the dishes by hand.
2. The dishwasher puts the same amount of effort into washing all the dishes. When washing the dishes by hand the effort changes.
3. When washing the dishes by hand the time changed depending on the amount of dirty dishes. While the dishwashers time stayed the same no matter the amount of dirty dishes.
4. When washing the dishes by hand you cannot do anything else. When the dishwasher is going you can do anything with your time.

Results:

Washing by hand average = 24.9L

Dishwasher average = 12.1L

Conclusion:

The purpose of this experiment was to investigate what uses less water; a dishwasher or washing the dishes by hand. To do this I made sure no one used any water in the house. I took a photo of the water meter and washed the dishes or started the dishwasher. After I was finished I took another photo of the water meter and did the math to determine how many liters I used. I did that 7 times by hand, 7 times using the dishwasher. This is how I made it a fair test. I learned that the dishwasher used less water, with an average of 12.1L. While by hand I used an average of 24.9L.

One of the reasons for the difference in water used was that the amount of dishes changed day to day. For example on day 2 by hand I used 38.9L's of water while on day 3 I used 13.8L's. The dishwasher however used a similar amount of water no matter the amount of dishes making it more efficient.

This experiment was based on 5 people in my house. If you have less or more people your results may vary.

Research: from (saveenergyNB) Filling the average kitchen sink can take between 15 and 20 litres of water. While a running tap uses approximately 6 litres of water per minute (depending on many factors, including water pressure and the age of the pipes). Based on internet research, the newer model dishwashers use as little as 15 litres of water per load.

From (Whirlpool) Standard dishwashers typically use 11-15 liters of water during an average wash cycle.

## **Title: Boy vs Dishwasher**

