

Build a Water Wheel Worksheet

Part A. Build a Model Water Wheel

Write a description or draw and label the chosen water wheel design.

Data Table A. Weight of load: _____N Distance lifted: _____m

Trial	Work (J)	Time (s)	Power (W)	Observations
1				
2				
Avg.				

Part B. Design Challenge

Write a description or draw and label the chosen water wheel design.

Cut sides of buckets down to about half the original size. Cut length by 0.5 cm. Arranged 8 buckets very evenly around wheel.

Data Table B. Weight of load: _____N Distance lifted: _____m

Trial	Work (J)	Time (s)	Power (W)	Observations
1				
2				
Avg.				

Post-Lab Questions and Calculations

1. Calculate the work done by the modified water wheel from Part B and record in Data Table B.
2. Calculate the power generated by the modified water wheel for each trial and the average power output. Fill in the data table.
3. How did the amount of power generated by the original water wheel design compare to the modified design?

4. Describe how energy is transferred throughout the water wheel system, starting with energy from the Sun and ending with the lifted load.
5. The largest water wheel in the world, called the Laxey Wheel, measures 22.1 m in diameter and is 1.8 m wide. It was used to pump water out of underground mines on the Isle of Man. The water wheel could move an amount of water weighing 10,780 N a distance of 640 meters in one minute.
- a. How much work in joules was the wheel capable of producing?
- b. How much power could the Laxey Wheel produce? (*Reminder:* Power is the rate of work done per second).