

# Reflection Questions

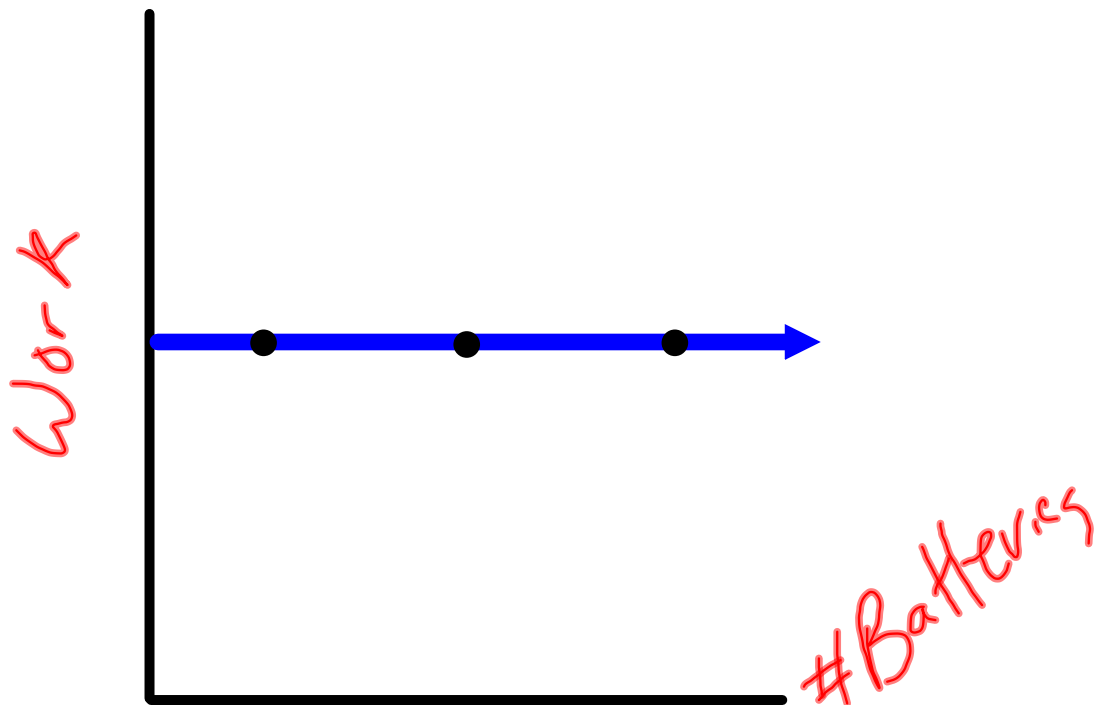
A. Did the amount of work done each time by the motor depend on the number of batteries used in the circuit? Why or why not?

No, the amount of work done does not change.

Work = Force x Distance

The weight of the washer and the distance it is lifted are both constants. They do not change as more batteries are added.

B. What would a graph of work done vs. number of batteries look like?

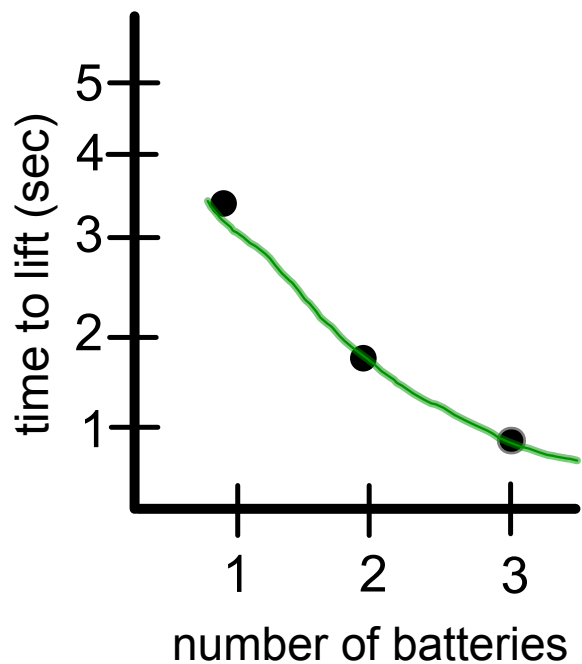


C. What changed as you added more batteries?

**The speed of the rising washers, therefore the time it takes them to move from the floor to the top of the motor.**

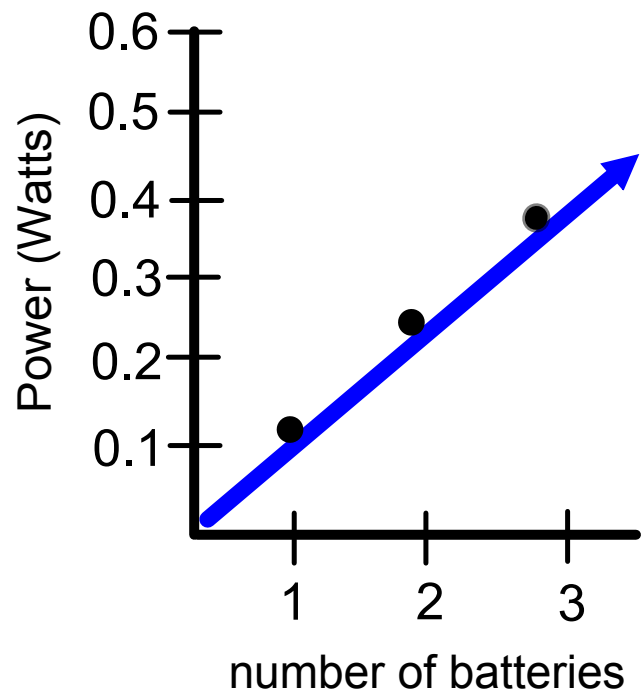
D. Is the time needed to lift the washers related to number of batteries?

Yes! As you add more batteries in series, the time it takes the motor to lift the washers decreases.



E. Does the power to lift the washers depend on number of batteries? How?

Yes! The more batteries you add, the more power the motor has.





The force needed to move the snow, and the distance stay the same.

Both the little boy and the man are doing the same amount of work.

Which one will clear the sidewalk faster?



$$P = \frac{100\text{ N} \times 10\text{ m}}{600\text{ sec}}$$
$$P = 1.67\text{ Watts}$$



$$P = \frac{100\text{ N} \times 10\text{ m}}{60\text{ sec}}$$
$$P = 16.67\text{ Watts}$$

F. What can you do to make the motor produce more power?

**Adding more batteries**

**Could you add too many?**

G. Did the motor use ALL of the energy supplied to lift the washers? If not, what other forms of energy does the battery's energy become?

**No. Some of the energy turns into heat in the motor. Also kinetic energy in the washer.**