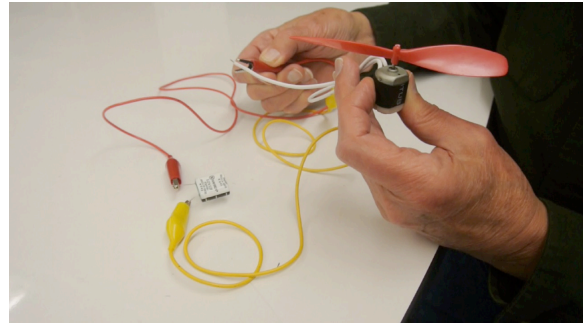


Capacitor Energy Quick Check – Interpretation Guide

Jim has a capacitor and a motor with a propeller on his desk. As soon as he connects the wires to the motor, the propeller begins to spin. The propeller spins for about 6 seconds and slows down to a stop. Watch a video of this investigation and answer the following questions.



When does the capacitor have the most energy?

- ★ Just before Jim connects the wires to the capacitor. **The capacitor will have the most energy before it has transferred any energy to the propeller.**
- Just after Jim connects the wires and the propeller starts spinning. **Students may think the capacitor only has energy after it has been connected.**
- When the propeller is spinning the fastest. **Students may associate the speed of the propeller with the energy of the capacitor. They may be focusing on the rate of energy transfer instead of the amount of energy remaining in the capacitor.**
- Just after the propeller stops spinning.
- The capacitor has the most energy the whole time the propeller is spinning. **Students may think that the capacitor has the same amount of energy as long as the propeller is spinning.**
- Some other time. **Students may express other ideas about the energy in this scenario.**

Ben finds a capacitor in the classroom. He is not sure if it has any energy. Which of the following statements makes the most sense to you?

- All capacitors have energy **Students may think that capacitors always have electrical energy.**
- The capacitor cannot have energy if it is not connected to something **Students may think capacitors only have electrical energy when they are connected.**
- Ben could observe the capacitor carefully to see if it has energy **Students may think that there is a directly visible indicator of the electrical energy in a capacitor.**
- ★ Ben could do an investigation with the capacitor to see if it has energy **Students who select this response recognize that Ben will need to do an investigation or experiment to see if the capacitor has energy.**
- There is no way to tell if the capacitor has energy

