

# Jelly Bean Model

In this model, what represents the following:

current: \_\_\_\_\_

battery: \_\_\_\_\_

bulb: \_\_\_\_\_



Each time a child walks around the circuit, they pick up two jelly beans from the table. The jelly beans represent the amount of energy given to the charges. What is the voltage for this circuit? \_\_\_\_V

**Describe** the strengths (good points) of the model.

The good points of this model are... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Describe** the weaknesses (bad points) of the model.

The bad points of this model are... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Suggest one** way in which you could improve the model.

One way to improve the model is... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



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# Rope Model

In this model, what represents the following:

current: \_\_\_\_\_

battery: \_\_\_\_\_

bulb: \_\_\_\_\_



Use the keywords to fill in the gaps below to explain voltage.

**battery**    **hard**    **electrical current**    **voltage**    **energy**

The flow of charges that move around a circuit is called the \_\_\_\_\_. The electrical current is pushed by the \_\_\_\_\_. The voltage of a battery tells us how much \_\_\_\_\_ it provides to the components in the circuit. It also tells us how \_\_\_\_\_ a battery pushes the electrons in a circuit. The strength of push provided by the battery is called its \_\_\_\_\_.

**Describe** the strengths (good points) of the model.

The good points of this model are... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Describe** the weaknesses (bad points) of the model.

The bad points of this model are... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Suggest one** way in which you could improve the model.

One way to improve the model is... \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



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# Jelly Bean Model

In this model, what represents the following:

current: **speed at which the children are walking**

battery: **table**

bulb: **obstacle course**



Each time a child walks around the circuit, they pick up two jelly beans from the table. The jelly beans represent the amount of energy given to the charges. What is the voltage for this circuit? **2V**

**Describe** the strengths (good points) of the model.

**Student answers may vary.** The table represents the battery providing the energy to the charges. The children represent the flow of charges around the circuit. The current is represented by the speed at which the children are walking. The voltage is represented by the number of jelly-bean charges each child holds. As each child holds two charges, this shows that the voltage around the circuit is 2V.

**Describe** the weaknesses (bad points) of the model.

**Student answers may vary.** Children may walk at varying speeds along the circuit. Therefore, the charges would not flow at the same speed. A student might eat the jelly bean as soon as they receive it from the table.

**Suggest one** way in which you could improve the model.

**Student answers may vary.** Energy transfer happens slowly. The energy from a jelly bean only travels as quickly as the student that has eaten it.

# Rope Model

In this model, what represents the following:

current: **rope**

battery: **student pulling the rope**

bulb: **components students**



Use this model to **explain** the role of voltage in a circuit.

**The flow of charges that move around a circuit is called the electrical current. The electrical current is pushed by the battery. The voltage of a battery tells us how much energy it provides to the components in the circuit. It also tells us how hard a battery pushes the electrons in a circuit. The strength of push provided by the battery is called its voltage.**

**Describe** the strengths (good points) of the model.

**Student answers may vary.** The rope represents the current going around the circuit. The rope going through the 'circuit components' causes heat to be generated as energy is transformed. This shows that there can be resistance in a circuit.

**Describe** the weaknesses (bad points) of the model.

**Student answers may vary.** It is not very good at explaining voltage or power. The student elected to be the battery must keep the tension constant around the circuit.

**Suggest one** way in which you could improve the model.

**Student answers may vary.** One student could represent a resistor by squeezing the rope. The more resistance, the smaller the circuit.



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