

## DART ACTIVITY

### Verse 1:

Let's talk 1. \_\_\_\_\_,  
 It makes the lights shine, gets you online, powers kettles for your tea.  
 And when you talk about the 2. \_\_\_\_\_ in a circuit you mean,  
 3. \_\_\_\_\_ that are free, My brothers, sisters and me!  
 Physicists will agree that a 4. \_\_\_\_\_ will be,  
 About 6 billion billion of us. That's a big family!

### Chorus:

We are electrons getting pushed around in a wire,  
 if we get faster or there's more of us our 5. \_\_\_\_\_ is higher,  
 Potential difference is the reason that we are a-flowing,  
 but we get stuck, we stop flowing if that 6. \_\_\_\_\_ is broken.

### Verse 2:

Current's the rate that we flow, the number of us that go,  
 Charge over 7. \_\_\_\_\_, one coulomb per second is one 8. \_\_\_\_\_ you know,  
 And the reason that we move is, we're getting pushed to do this,  
 By 9. \_\_\_\_\_ charge and pulled to positive charges, but you knew this,  
 We're always working as a team to transfer 10. \_\_\_\_\_,  
 The joules transferred per coulomb, is the 11. \_\_\_\_\_, p.d.  
 Yo, it is measured in 12. \_\_\_\_\_, so the work done is Q times V  
 If volts go higher, then our current increases.

### Verse 3:

We get obstructed though, yeah, we collide as we go,  
 With the 13. \_\_\_\_\_ in the wire which heats up, that's why a bulb glows,  
 So, we make a ratio, between p.d. and current flow,  
 V equals I times R, which is 14. \_\_\_\_\_, measured in ohms.  
 You can make resistance low by making wires wider,  
 Or made of 15. \_\_\_\_\_, there are more electrons free inside them.  
 If you keep your wires cool, and keep them shorter too,  
 We collide less with the ions and glide right through.

### Verse 4:

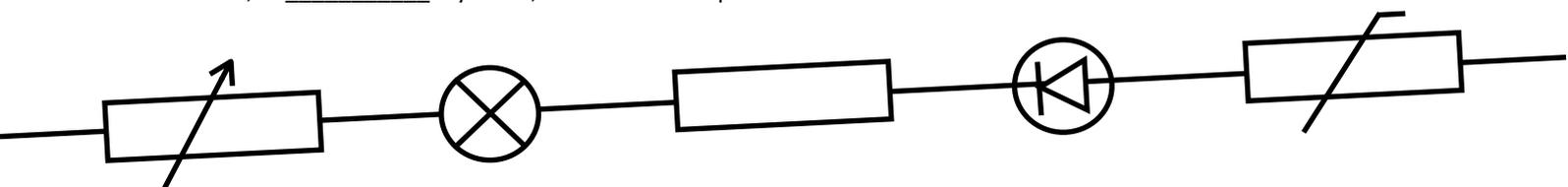
When we're pushed by the 16. \_\_\_\_\_, our current alternates,  
 But we flow in one direction when a 17. \_\_\_\_\_'s the one to blame,  
 A 18. \_\_\_\_\_ stops our flow, if the wrong way, we should go,  
 And fixed resistors make my sisters and my brothers slow.  
 Sensor circuits are, made with 19. \_\_\_\_\_ and LDRs,  
 That change resistance when there's a change in light and temperature,  
 If you want fade or turn up the volume then use,  
 Variable resistors to control our flowing, right away.

### Verse 5:

When we're in 20. \_\_\_\_\_, we're on a single loop,  
 Resistances get added, and we flow the same the whole way through,  
 When we're in 21. \_\_\_\_\_, there's more than one route,  
 There's more of us to flow so we can transfer more energy too,  
 The rate that we transfer the energy,  
 E over t is 22. \_\_\_\_\_, P, it also equals I V,  
 And what about safety, when I get too lively,  
 Earth me, 23. \_\_\_\_\_ my wires, use a fuse to stop me.

### Complete the following tasks

1. Fill in the blank keywords - if you are not sure, there are clues on the next page.
2. Circle sections in **red** that describe **components** that might be in a circuit.
3. Circle sections in **green** that describe **properties** of an electric circuit.
4. Circle sections in **blue** that explain **properties** of an electric circuit.
5. Circle sections in **black** that describe **equations** connected with electrical circuits.



**Each of these words is used once.**

power energy copper charge diode circuit  
amp resistance coulomb thermistors negative  
potential difference electricity volts cell time  
insulate current series mains electrons ions

### Definitions

1. A general term for the flow of charge.
2. The property of particles that can either be positive or negative.
3. The charged particles that can flow through a wire.
4. The unit of charge.
5. The rate of the flow of charge
6. A continuous loop of conductors that allow a current to flow.
7. A quantity measured in seconds.
8. The unit of measurement of current.
9. The type of charge that repels electrons.
10. The ability to do work on another object.
11. The energy per coulomb of charge in the circuit, or the push that causes current to flow.
12. The unit of potential difference.
13. The atoms of the wire that have lost their outer shell electrons.
14. A quantity that represents anything that prevents current flowing in the circuit.
15. A common element with high electrical conductivity.
16. The name for current taken from the National Grid, through power sockets in the wall.
17. Two or more connected together are known as a battery.
18. An electrical component, made of a semiconductor that only allows current to flow in one direction.
19. An electrical component that increases in resistance as as the temperature falls
20. A part of a circuit in which the current only flows on a single path.
21. A part of a circuit in which the current from the same source is flowing through more than path at the same time.
22. The rate at which energy is transferred, or the joules transferred per second.
23. Cover in a non-conducting material.

