Activity 19: Get Your Motor Running

How can you build an electric motor-powered vehicle or device?

Resources

• Electricity Kit items: switch, motor, connecting wires, lamp holder and lamp, thin elastic band, thick elastic band
• various common home materials such as tape, scissors, paper, cardboard, string, or toy building kits (exact materials depend on the design of vehicle or device you decide to build)
- pencil and paper
- batteries - D or AA cells
- Yenka software
- Optional: digital camera or scanner

Instructions

1. Design a vehicle or device that uses an electric motor. You can choose from several methods to build your design.

Method A: Design a vehicle or device using Electricity Kit items. Include items from around home if you wish.
Method B: Draw a circuit diagram using paper and pencil.
Method C: Draw a diagram for the device using Yenka software.

No matter which method you use, you should be prepared to share your electric motor-powered vehicle or device design.

- If you choose Method A, you can use a digital camera.
- If you choose Method B, you can use a digital camera or scanner.
- If you choose Method C, you can save your Yenka file for sharing.

2. Design your electric motor-powered vehicle or device using the method you chose, and write an explanation of what it does and how it works. Note that if you choose Methods B or C, you should also include with your explanation a drawing of what the electric motor-powered vehicle or device would look like. Space will be provided to write your explanation and insert images in **Lesson 8 Exit Pass: Electric Motor-Powered Vehicle or Device.**

3. Test the design of your electric motor-powered vehicle or device. If it does not work the way you want, make changes and repeat the testing. Repeat as many times as you wish until the vehicle performs the way you want.

4. Prepare the electric motor-powered vehicle or device you have designed for sharing.

• If you choose Method A, you can use a digital camera.
• If you choose Method B, you can use a digital camera or scanner.
• If you choose Method C, you can save your Yenka file for sharing.

Criteria

The design of your electric motor-powered vehicle or device should have the following features:

• It must have a switch to turn the vehicle or device on and off.
• If must have an electric motor.
• If it is a vehicle, it must be able to move from place to place.
• If it is a device, it must have some sort of useful or entertaining function.
• It must have a power source.
• It must include an explanation of exactly what it does and how it works.

Motor Rubric

	Excellent 5	**Proficient 4**	**Satisfactory 3**	**Limited 2**
Design /5	• *Effective* design, uses multiple loads with a parallel circuit, and is *innovative* and *efficient.*	• *Functional* design, uses multiple loads with a parallel circuit, and is *practical*.	•*Basic* design, uses multiple loads and is *feasible*.	• *Impractical* design, lacks either multiple loads or a working circuit, and is *ineffective.*
Explanation /5	• *Detailed* explanation is *precise* and uses *accurate* circuit terminology.	• *Reasonable* explanation is *thoughtful* and uses *logical* circuit terminology.	• *Basic* explanation is *simple* and uses *mostly accurate* circuit terminology.	• *Haphazard* explanation is *vague* and uses *inaccurate* circuit terminology.
Presentation /5	• Presentation or demonstration is *exceptionally well organized* and shows *all* parts *effectively.*	• Presentation or demonstration is *logically organized* and shows *most* parts *accurately*.	• Presentation or demonstration is *clearly organized* and shows *some* parts *generally*.	• Presentation or demonstration is *disorganized* and shows parts *imprecisely*.
Assessment	Areas of Strength:			
	Targets for Improvement:			