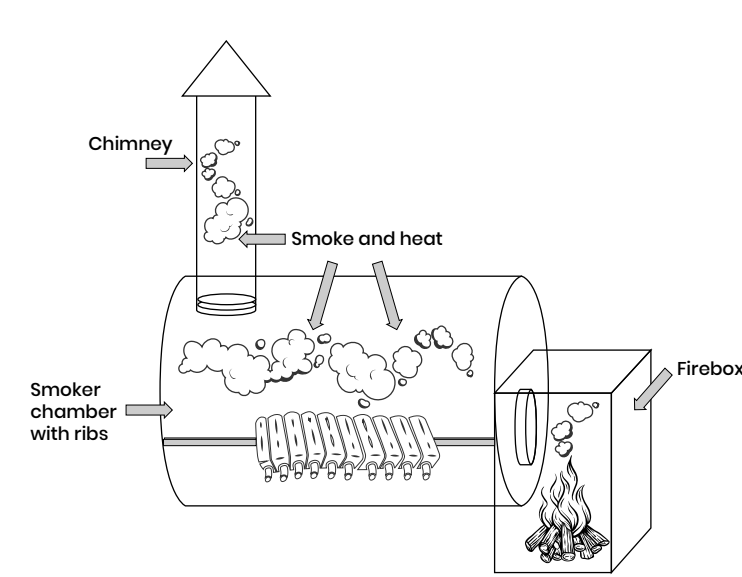


**How do the parts
of the barbecue
smoker grill work
together to cook
food?**

How do the parts of the barbecue smoker grill work together to cook food?

1. Look at the barbecue smoker grill in the poster. Use the drawing below and on the lines next to it describe how you think the different components of the grill work together to cook food.



I think the different grill components work together to cook food by...

2. Research how a smoker grill works. “How do the different parts of the smoker grill work together to transfer heat energy from one area of the grill to another in order for the food to cook?”

3. Exploring systems and system models. Look around your home for any device that is an example of a system. Draw a sketch of the device and label its component parts. Describe how energy is transferred in those components as the device functions.

My device is _____

Barbecue Smoker Grill—How do the parts of the barbecue smoker grill work together to cook food?

Image Information: The image shows an example of a barbecue smoker grill used for slow cooking meat. On the left side of the poster image is the firebox where either wood, wood chips, charcoal or pellets are added as fuel to create an indirect heat source. Attached to the firebox is the smoke chamber (open area with smoke) where the heated smoke circulates around the meat to cook it. The chimney (to the right) is used to vent the heat and smoke as a way to regulate the temperature inside the chamber.

Question: How do the parts of the barbecue smoker grill work together to cook food?

Possible student answers:
I think the different grill components work together to cook food by...[Possible answer. The fire warms the air inside the grill. The heat energy and smoke move from the firebox to the smoke chamber. The smoke chamber heats up and excess hot air and smoke go out the chimney].

Interesting Info: The practice of smoking meat has been around since prehistoric times. It likely evolved as a way to preserve food. Ancient civilizations used various methods to both preserve and enhance the flavors in the meat. Today, smoker grills can vary greatly depending on their construction materials, heat source and intended cooking method. Dry smokers, like the one pictured, uses an indirect heat source to slowly cook food by heating the air inside the chamber and not directly placing the food over the fire. Areas of the American South and West have a rich history of barbecue foods, with distinct regional differences based on the immigrant populations that settled in the area.

Support the Phenomena: How do the different parts of the smoker grill work together to transfer heat energy from one area of the grill to another for the food to cook?” Gather evidence to support your opinion and share your ideas with each other.

NGSS: Crosscutting Concepts #4 – System and System Models In K-2, students understand that objects in the designed world have parts that work together; In 3-5, students understand that the parts of a system work together to carry out a function that the individual parts cannot; In 6-8, students use models to represent systems and their interactions; In 9-12, students understand that systems may interact with other systems and have sub-systems to be part of larger complex systems.

- In K-2, have students draw, label and describe how the parts of their device work together.
- In 3-5, have students draw and explain how the parts of their device must work together to perform its function. (Example devices might include a flashlight, wind-up toy, pinwheel, rubber band race car)
- In 6-8, have students take apart an old or broken appliances (toaster, coffeepot, hand mixer) to observe its component parts. They then create an illustration of the device components detailing how its component parts work together to perform its function.
- In 9-12, have students design a solar cooker and use thermal energy sensors to gather data on how heat energy is captured and transferred in their device. They use their data to describe how the system works together to perform its function.

More information: To learn more about the different regional barbecue foods in the United State visit the **Webstaurant Store blog**. For fun, have students compare their family’s favorite grill recipes. See how they are similar and different.