SCIENCE

NAME: PERIOD: DATE:

**NATURE OF SCIENCE**

**SYSTEMS**

A **SYSTEM** is a group of related parts that work together and produce a result we can observe.

Examples of systems include: the digestive system, the water cycle, food chains, health care systems, school districts, and the solar system

Systems can be natural (nervous system, food webs), man-made (factory, a bicycle), or a combination of natural and man-made (farming, an aquarium.)

In a system, there are many parts. Those parts can be objects (like a sparkplug is part of a car engine) or they can be actions (like evaporation is a part of the water cycle.)

Each part in a system has a specific **FUNCTION**, or job that they have to do to keep the system going.

For example if the spark plug doesn't make a spark, the engine can't go because the gasoline and air don't combine. If there was no evaporation, the water cycle couldn't work because no water vapor would make it into the sky.

An **INPUT** is something that goes into a system.

Ex. lemons and sugar go into a lemonade stand system, gasoline goes into a car's system as fuel, seeds are a part of a farming system

A **PROCESS** is something that happens in a system that changes the inputs or alters the system.

Ex. squashing the lemons and stirring the lemonade are processes in a lemonade stand system, the gasoline exploding inside a cylinder head of an engine drives the pistons, the growth of the corn changes the seed into an ear of corn

A **FEEDBACK MECHANISM** is a process where the effects of a change in part of the system help control the system.

Ex. A thermostat on a furnace can tell when the temperature you want has been reached. The thermostat turns off the furnace when it is hot enough, and turns it back on when it's too cold. The thermostat is a feedback mechanism.

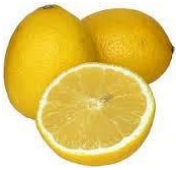
Ex. Less and less people are coming to your lemonade stand. You put up a suggestion box, and find out many people think your lemonade is too sour. You change the recipe. The suggestion box is a feedback mechanism.

An **OUTPUT** is something that is produced by a system.

Ex. lemonade is the output at a lemonade stand, the car driving down the road is the output of a car's system, a harvest of corn comes out of a farming system

Let's put it all together in a visual form. Our system will be a making lemonade.

To get our system started, we need 3 inputs:


Lemons


Water

Sugar

INPUTS

Then our system will have some processes.

Cutting the lemons.

Squeezing the lemons to get the lemon juice.

Cooling the water.

Measuring the sugar and lemon juice.

Mixing the lemon juice, water, and sugar.

PROCESSES


COOLING


SQUEEZING


MIXING

Finally, our system will have the output, lemonade!

OUTPUT

If you don't have the inputs, you can't do the processes.

(Ex. If you don't have any water, you just have cold lemon juice.)

If the processes aren't done (or aren't done in a certain way) the output will change.

(Ex. If you forget to cool the water, the lemonade will be warm.)

The inputs are used/altered by processes to create the desired output. It's a system!