How Much Does it Take

This activity is part of the **Water Technology** theme

What's the purpose of this activity?

To introduce students to mechanical processes that consume water during production. To get the students to think "outside the box" and understand that even though things do not look like they are made of water, that water in some way is consumed while it is being made.

Key Messages:

- Animals at farms consume water
- While we have developed technology to produce a variety of goods and services, water is commonly used by technology in that production.
- Water is used in the production of a great many of common, everyday products.

Materials

Permanent:

- Laminated picture board of consumable products
- Plastic water bottles for reference for younger kids

What will I be doing?

You will be discussing the concept of mass production, with the development of technology which allows us to have a variety of items at our fingertips. With pictures, you need to explain that even though these items do not look like they are made of water or contain water, that water is essential in the production of these products..

Ask the kids how much water they think is consumed in the production of the items in the pictures. If they guess right or cannot guess, simply lift the picture to see the right answer. Some of these answers will amaze you.

Background Information

Be prepared, in terms of consumption of water for these products, it includes consumption through transportation, organic material growth (plant and animal culture), heating/cooling systems, mixing of ingredients and physical use of water by machinery for various items.

How much water does it take to process a quarter pound of hamburger?
Approximately one gallon.
How much water does it take to make four new tires?
2,072 gallons
What is the total amount of water used to manufacture a new car, including new tires?
39,090 gallons per car
How many households use private wells for their water supply?
17,000,000 households
Water is the only substance found on earth naturally in the three forms.
True (solid, liquid, and gas)
Does water regulate the earth's temperature?
Yes (it is a natural insulator)
How long can a person live without food?
More than a month
How long can a person live without water?
Approximately one week, depending upon conditions.
How much water must a person consume per day to maintain health?
2.5 quarts from all sources (i.e., water, food)
How much water does a birch tree give off per day in evaporation?
70 gallons
How much water does an acre of corn give off per day in evaporation?
4,000 gallons
How many miles of pipeline and aqueducts are in the US and Canada?
Approximately one million miles, or enough to circle the earth 40 times

What were the first water pipes made from in the US?
Fire charred bored logs
How much water is used to flush a toilet?
2-7 gallons
How much water is used in the average five-minute shower?
25-50 gallons
How much water is used to brush your teeth?
2 gallons
How much water is used on the average for an automatic dishwasher?
9-12 gallons
On the average, how much water is used to hand wash dishes?
20 gallons
How many community public water systems are there in the United States?
56,000
How much water do these utilities process daily?
34 billion gallons
Of the nation's community water supplies, how many are investor-owned?
32,500
How much water does the average residence use during a year?
107,000 gallons
How much water does an individual use daily?
50 gallons
What does a person pay for water on a daily basis?
National average is 25 cents
How much of the earth's surface is water?
80%
Of all the earth's water, how much is ocean or seas?
97%
How much of the world's water is frozen and therefore unusable?
2%
How much of the earth's water is suitable for drinking water?
1%
Is it possible for me to drink water that was part of the dinosaur era?
Yes
If all community water systems had to be replaced, what would it cost?
In excess of $175 billion
What does it cost to operate the water systems throughout the country annually?
Over $3.5 billion
How much does one gallon of water weigh?
8.34 pounds
How many gallons of water would it take to cover one square mile with one foot of water?
219 million gallons
How much water is in one cubic foot?
7.48 gallons

How many gallons of water do you get per acre, when it rains one inch?
27,000 gallons per acre
At what temperature does water freeze?
32 degrees F, 0 degrees C
At what temperature does water vaporize?
212 degree F, 100 degrees C
What is the most common substance found on earth?
Water
How much of the human body is water?
66%
How much of a chicken is water?
75%
How much of a pineapple is water?
80%
How much of a tomato is water?
95%
How much of an elephant is water?
70%
How much of an ear of corn is water?
80%
How much water does it take to process one chicken?
11.6 gallons
How much water does it take to process one can of fruit or vegetables?
9.3 gallons
How much water does it take to process one barrel of beer?
1,500 gallons
How much water does it take to make one board foot of lumber?
5.4 gallons
How much water does it take to make one pound of plastic ?
24 gallons
How much water does it take to make one pound of wool or cotton?
101 gallons
How much water does it take to refine one barrel of crude oil?
1,851 gallons
How much does it take to produce one ton of steel?
62,600 gallons
How much water does it take to process one ton of cane sugar to make processed sugar?
28,100 gallons
How much water does it take to process one ton of beet sugar to make processed sugar?
33,100 gallons

The world's largest rodent is the Capybara. An Amazon **water** hog that looks like a guinea pig, it can weigh more than 100 pounds.

There are 370 species of sharks. All of the shark species live in **water**.

There are fewer than 1,000 Bactrian camels left in the wild. They have survived in a land with no **water** in an area used for nuclear testing. Their numbers, however, are falling dramatically as humans encroach farther and farther into China's Gobi Desert.

To prevent waste, overeating, and pollution of the **water**, feed the fish in an aquarium twice a day an amount that takes them five minutes to completely clean up.

Tunas will suffocate if they ever stop swimming. They need a continual flow of **water** across their gills to breathe, even while they rest.

Unlike most fish, electric eels cannot get enough oxygen from **water**. Approximately every five minutes, they must surface to breathe, or they will drown. Unlike most fish, they can swim both backwards and forwards.

The blue fin tuna swims with its mouth partly open, relying on ramjet ventilation, unlike slower fish, which force **water** through their gills to remove oxygen and release carbon dioxide. Since sea**water** contains only about 2.5 percent as much oxygen it needs from the volume of **water** flowing through its mouth, the blue fin has proportionately one of the largest gill areas of any fish.

The bottlenose dolphin is longer in United Kingdom **water**s (measuring up to 410 cm, or 13.45 feet, length) than those off the coast of Florida (up to 270 cm, or 8.85 feet, in length).

The common carp lives up to 25 years in the wild, and up to 40 years in captivity. The durable fish can survive in **water**s up to 90º F, and can even withstand freezing for short periods.

The electric eel lives in the Amazon River and its tributaries in South America. The rivers churn up a lot of mud and the eels cannot see well in them. Two less powerful electric fish are the electric catfish and ray. Electric rays live in warm ocean **water**, and they can give off a charge of sufficient force to stun a human. The biggest electric ray, the Atlantic torpedo ray, can weigh 200 pounds.

Clean Up procedures

Simply insure the pictures are in good working order.