

# *Cleveland Water*

## H<sub>2</sub>O KIDS

★ ★ Intermediate

*We're*  
**erie-sistable!**



HYDRO



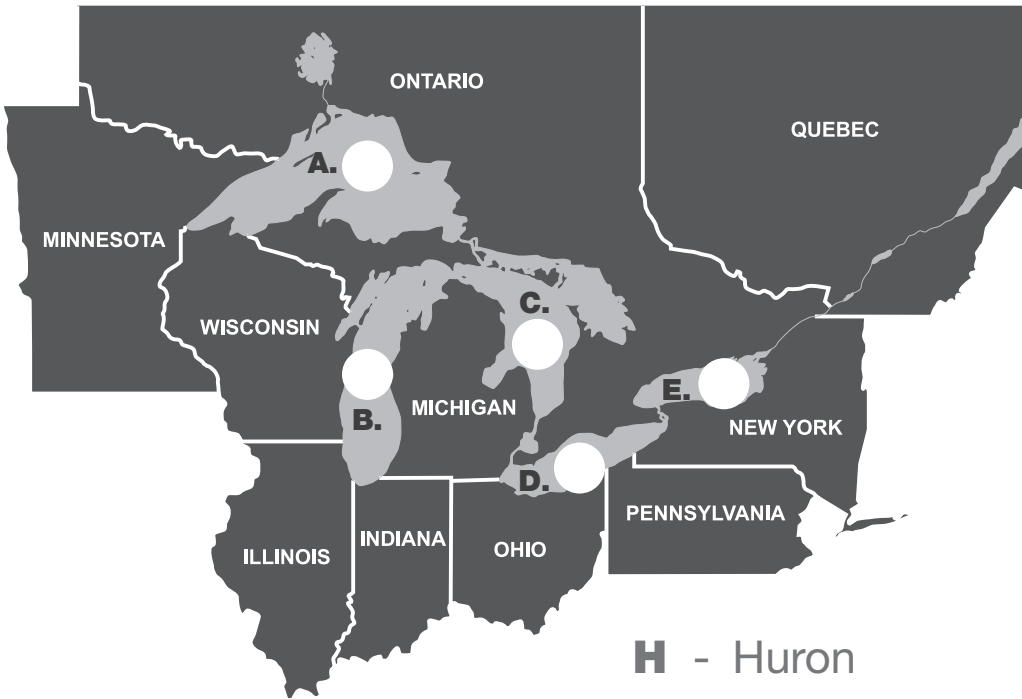
[clevelandwater.com](http://clevelandwater.com)

# The Great Lakes

The Great Lakes system is the world's largest source of fresh surface water.

Cleveland Water's source is Lake Erie, one of the five Great Lakes. Can you help Hydro identify the Great Lakes? Mark the location of each Great Lake by writing the matching number on the correct body of water.

- ① Lake Huron
- ② Lake Ontario
- ③ Lake Michigan
- ④ Lake Erie
- ⑤ Lake Superior



- H** - Huron
- O** - Ontario
- M** - Michigan
- E** - Erie
- S** - Superior

A good way to remember the names of the Great Lakes is by using the word “**HOMES**” as an acronym:

Answers: A = 5, B = 3, C = 1, D = 4, E = 2

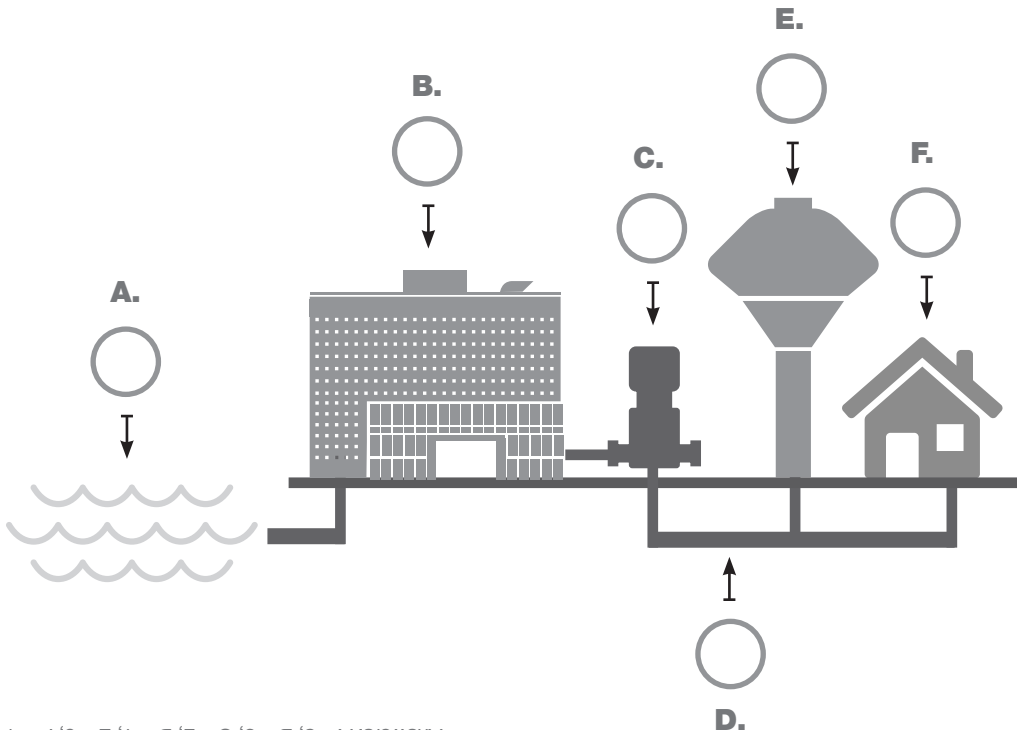
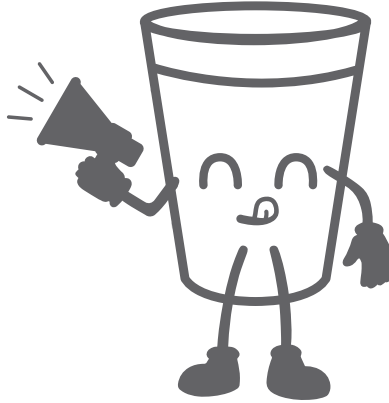
# Did You Know?

It takes around 24 hours for water to come in through the Lake Erie intake tunnel and be made safe to drink in our water treatment plant.

Hydro wants you to match the words with each step of the distribution cycle.

## Word Bank

- 1 Water Main
- 2 Pump
- 3 Lake Erie
- 4 Home
- 5 Water Treatment Plant
- 6 Tower



Answers: A = 3, B = 5, C = 2, D = 1, E = 6, F = 4

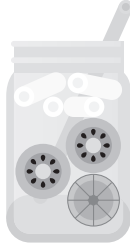
# Mix It Up • Fruits Infused Water

Hydro loves making new friends. Write two recipes using fruits, vegetables or herbs and adding Hydro to the recipe.

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+ STRAWBERRIES  
+ BASIL



+ ORANGE  
+ KIWI



+ RASPBERRIES  
+ MINT



+ BLUEBERRIES  
+ LIME



+ LEMON  
+ CUCUMBER

Examples above.

Here are some possible ingredients: Apple, Lemon, Carrot, Strawberry, Mint, Apricot, Raspberry, Orange, Lime, Pineapple, Peach, Plum, Cucumber, Celery, Cinnamon Stick, Red Pear, Kiwi, Watermelon, Ginger, Basil, Clove, Blueberry, Grapefruit, Rosemary, Thyme and Cranberry

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**Recipe name:** \_\_\_\_\_

**Ingredients:**

• Water

• \_\_\_\_\_

• \_\_\_\_\_

**Recipe name:** \_\_\_\_\_

**Ingredients:**

• Water

• \_\_\_\_\_

• \_\_\_\_\_

# Hydro's Optical Inversion

What you will need:

- A Clear Glass • Water

What to do:




- 1 Fill your glass with water
- 2 Place drawing 6 to 8 inches behind glass
- 3 Observe the picture. What appears to have happened?



# Ice Cream Makes You What?

Thirsty! Following the example below, complete the fractions showing how many scoops of each ice cream.

Example:

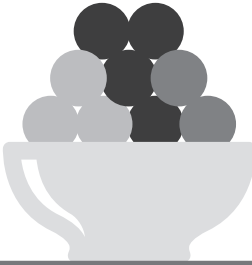
Legend	
	= Banana
	= Strawberry
	= Chocolate

Banana:  $3/9$

Strawberry:  $2/9$

Chocolate:  $4/9$

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A.

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B.

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C.

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D.

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**Science Sidebar:** You may become thirsty after eating ice cream because of the way sugar interacts with your body's cells. Be sure to drink lots of water after your ice cream!

Answers: A. = Banana: 5/9, Strawberry: 3/9, Chocolate: 1/9, B. = Banana: 2/9, Strawberry: 1/9, Chocolate: 6/9 C. = Banana: 4/9, Strawberry: 3/9, Chocolate: 2/9, D. = Banana: 3/9, Strawberry: 3/9, Chocolate: 3/9

# Drink More Water

## Did you know?

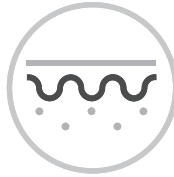
### The Brain is 73% water

Drinking water increases alertness and improves your memory.



### Skin is 64% water

Drinking water hydrates your skin cells and flushes out toxins, helping skin look healthier.



### Lungs are 83% water

Staying hydrated keeps the mucous membrane lining your lungs thin, helping you breathe easier.



### The Heart is 73% water

Dehydration makes your heart work harder to pump blood and get oxygen to cells.



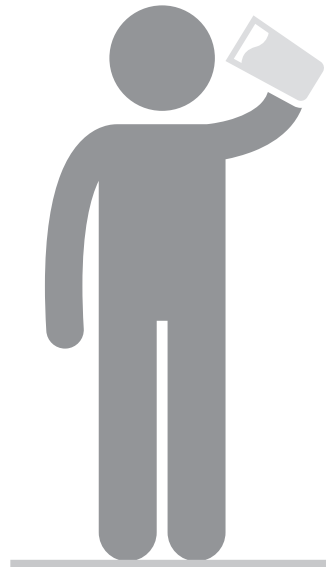
### Muscles are 79% water

Drinking water helps muscles grow stronger and faster and prevents muscle cramps.



### Bones are 31% water

Water brings calcium and other nutrients to your bones, keeping them strong.



1 Which organ has the highest percentage of water?

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2 Which organ works harder when you're dehydrated?

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Answers: 1 = lungs, 2 = heart

# Nadia's Summer Water Use Journal

Hydro wants to know how much water Nadia used in the summer. Add every column and row in the chart. Use her journal to answer the questions below.

	June	July	August	Total
Washing Dishes	310 gal.	434 gal.	620 gal.	
Showers	527 gal.	682 gal.	465 gal.	
Flushing the Toilet	475 gal.	500 gal.	525 gal.	
Total				

- 1 How many gallons of water did Nadia use in June?  
\_\_\_\_\_
- 2 How many more gallons of water were used in July than in June?  
\_\_\_\_\_
- 3 What is the average number of gallons used for flushing the toilet this summer?  
\_\_\_\_\_
- 4 If it takes 5 gallons to flush the toilet, how many times did Nadia flush the toilet in August?  
\_\_\_\_\_
- 5 In September, Nadia used  $\frac{1}{4}$  of the amount of water she used to wash dishes in August. How many gallons of water did she use?  
\_\_\_\_\_
- 6 Which activity used the most amount of water?  
\_\_\_\_\_

Answers: 1 = 1312, 2 = 304, 3 = 500, 4 = 105 times, 5 = 155 gallons, 6 = Showers



# Hydro Riddles

- 1 Give me food, and I will live. Give me water, and I will die. What am I?  

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- 2 I am the wettest letter in the alphabet, as I contain the most water. What letter am I?  

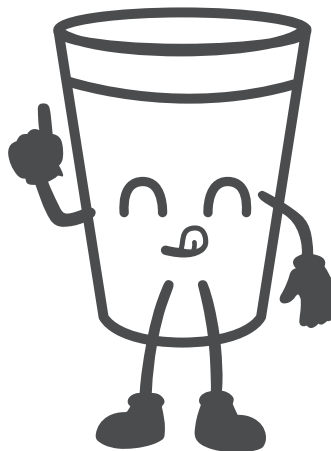
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- 3 What has a mouth but never talks, has a bed but never sleeps, has a head, but never weeps?  

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- 4 What is full of holes but still holds water?  

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- 5 How do you know if the water likes you?  

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- 6 A man was outside taking a walk when it began to rain. He did not have an umbrella, and he wasn't wearing a hat. His clothes were soaked, yet not a single hair on his head got wet. How could this happen?  

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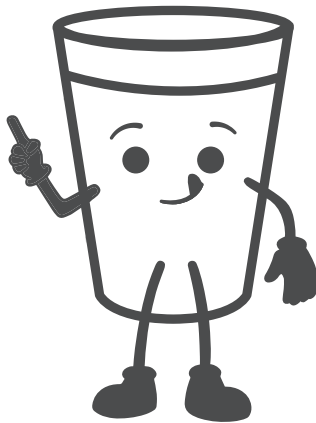
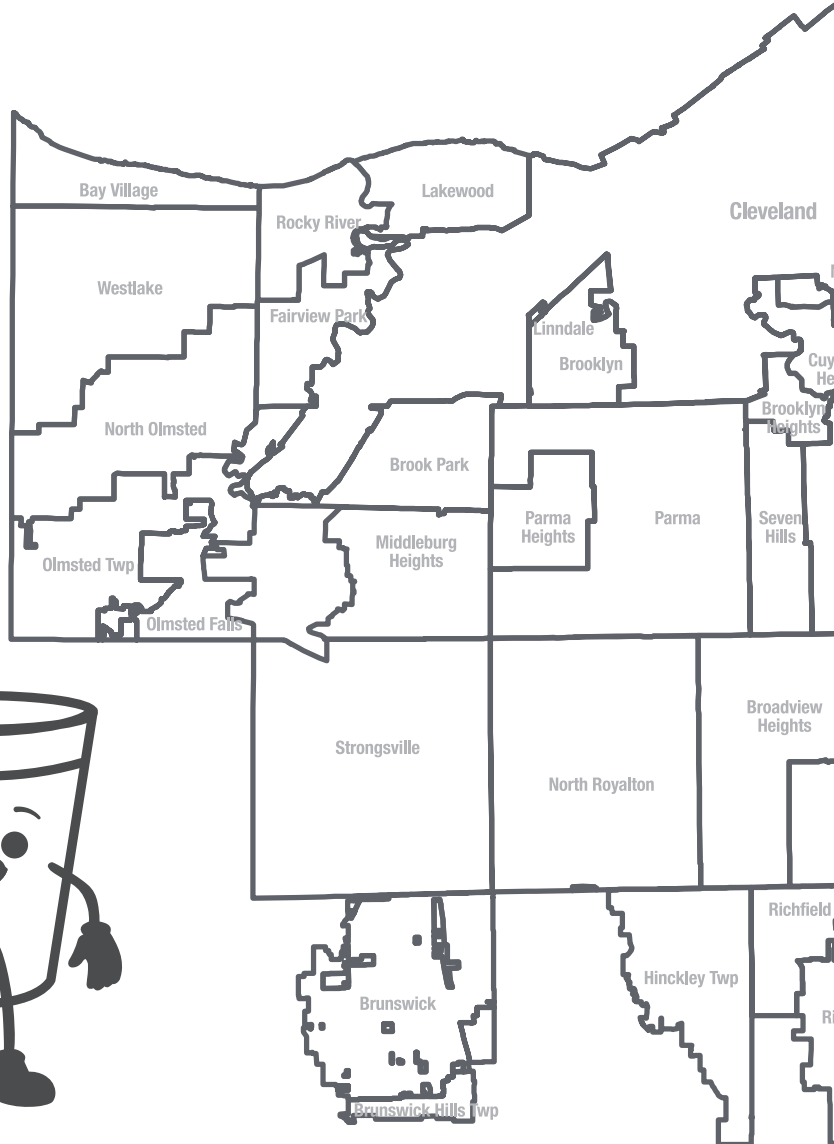
Answers: 1. Fire, 2. C, 3. River, 4. Sponge, 5. If it waves, 6. He was bald

# Our Customers

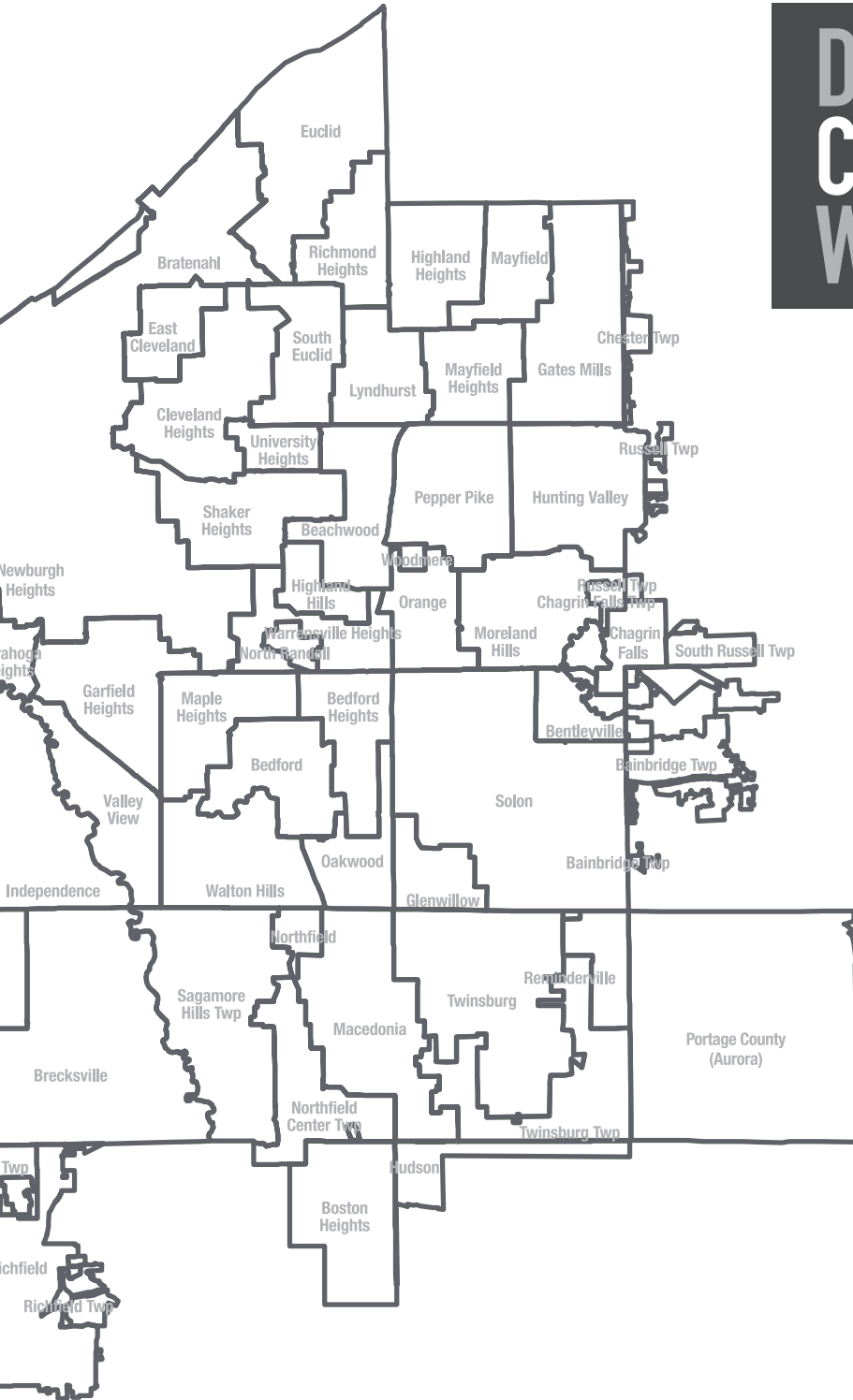
Cleveland Water services **80 communities.**

Do you live in our service area?

**Color in your city.**

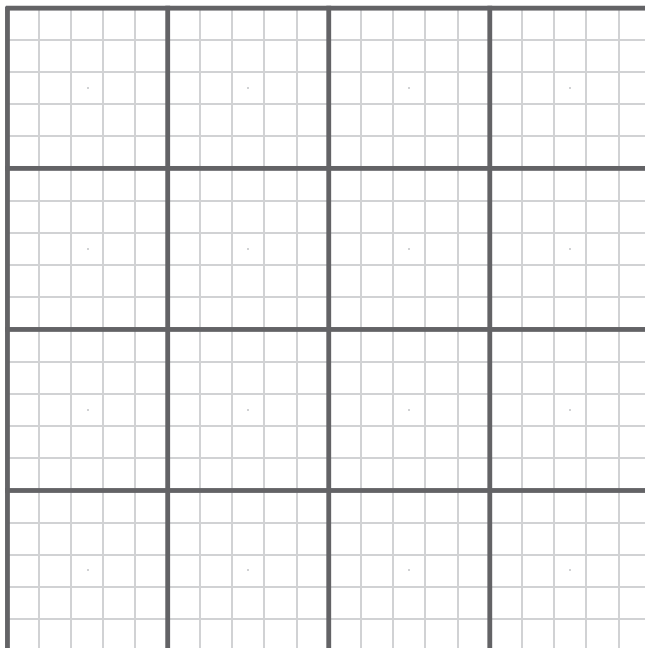
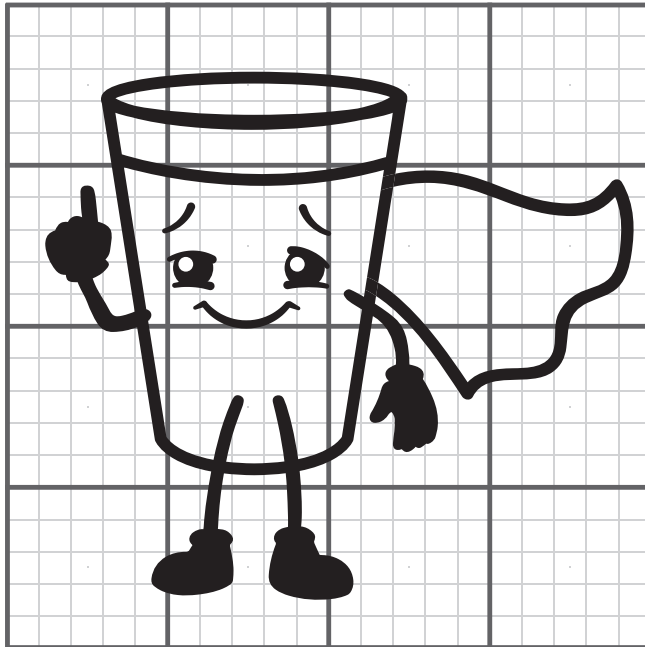


# DRINK CLEAN WATER



# Grid Draw

Using the grid as a guide, copy the picture in the grid below and then color Hydro.



# Staying Hydrated

For each statement below, circle “**More,**” “**Average,**” or “**Less** ” to let Hydro know how much water to drink that day.

- ① In February, it is cold outside. Hydro bundles up and goes skiing all day with Walleye Water Drop and Moon Dog. Hydro gets very sweaty underneath the snowsuit.

**More**      **Average**      **Less**

- ② In May, Hydro gives a speech about the value of clean water during Drinking Water Week to scouts who are touring Garrett A. Morgan Water Treatment Plant. It is the perfect day, not too hot and not too cold.

**More**      **Average**      **Less**

- ③ In June, Hydro goes to a Cleveland baseball game. Hydro enjoys the warm sunshine and watching his favorite team win. Hydro gets to meet Slider and cheers on the hot dogs, Mustard, Ketchup and Onion, while they race around the field. It’s a long walk back to the car.

**More**      **Average**      **Less**

- ④ In October, Hydro likes to ride bikes on the Towpath Trail down through the Cuyahoga Valley National Park then take the train with Moon Dog back to the car. Hydro loves the pretty colors of fall leaves. Even though the day was cool, the bike ride was fun exercise.

**More**      **Average**      **Less**

# Problem-Solving with Hydro

Hydro likes words, but sometimes they come with problems. Help Hydro answer the questions below.

## Word Problem Steps



Circle the Numbers



Underline the Question



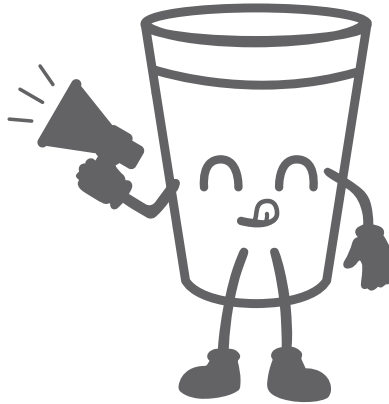
**Box** the Key Words



Evaluate and Draw 



Solve and Check 



- 1 There are 15 students on a tour of Cleveland Water's treatment plant. Three of the students went to get the lunches they had forgotten on the bus. One of the students went to the restroom. The remaining students continued the tour. How many students continued the tour?
- 2 Cleveland Water has over 1,200 employees. Employees are scheduled to work around the clock, seven days a week to ensure safe drinking water. How many hours is Cleveland Water's system left unattended?
- 3 Rachel's mom drinks a half-gallon of water a day. If 8 cups is a half-gallon of water, how many cups of water would Rachel's mom have to drink to consume a gallon of water?
- 4 Curtis takes a shower for 8 minutes. The average shower head uses 2.5 gallons of water per minute. How many gallons of water did Curtis use?

Answers: 1. = 11, 2. = 0, 3 = 16, 4. = 20

# Know the Flow

Hydro enjoys being around you and your family.

In the blanks below, fill in the percentage of total water used. 3% - 9% - 11% - 14% - 16% - 17% - 30%

**\$28 \ 100%**  
**Per Month**

The average household in Cleveland uses approximately 155 gallons of water per day.

1

## Sinks & Faucets

**\$3.90 \ \_\_\_%**  
**Per Month**



A leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons per year

2

## Toilets

**\$4.70 \ \_\_\_%**  
**Per Month**

A running toilet can waste about 200 gallons of water per day.



3

## Showers & Baths

**\$4.50 \ \_\_\_%**  
**Per Month**

A showerhead leaking at 10 drips per minute wastes more than 500 gallons per year



4

## Washing Machines

**\$3.10 \ \_\_\_%**  
**Per Month**

Newer efficiency models use up to half the amount of water used by traditional models.



5

## Dishwasher & Other Appliances

**\$1.00 \ \_\_\_%**  
**Per Month**

Washing your dishes with an open tap can use up to 20 gallons of water, but filling the sink and closing the tap saves 10 of those gallons.



6

## Possible Leaks

**\$2.50 \ \_\_\_%**  
**Per Month**

Ten percent of homes have leaks that waste 90 gallons of water or more per day.



7

## Outdoors

**\$8.40 \ \_\_\_%**  
**Per Month**

An irrigation system with a dime-sized leak can waste about 6,300 gallons of water each month.

# Water Treatment Plants

Cleveland Water treats millions of gallons of water every day for over 1.4 million people.

Would you like to see how water is treated and learn how it gets from Lake Erie to your home? We offer FREE plant tours for interested groups of eight or more Monday thru Friday from 9:00 a.m. to 3:00 p.m. Ask an adult to contact [PlantTour@clevelandwater.com](mailto:PlantTour@clevelandwater.com) or 216.664.2444 extension 75641.

**4**  
Water Plants

**5,300**  
Miles of Mains

**16**  
Pump Stations

**21**  
Tanks & Towers

## NOTTINGHAM

WATER TREATMENT PLANT



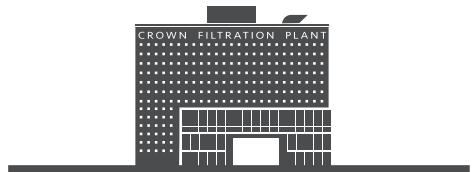
## MORGAN

WATER TREATMENT PLANT



## CROWN

WATER TREATMENT PLANT



## BALDWIN

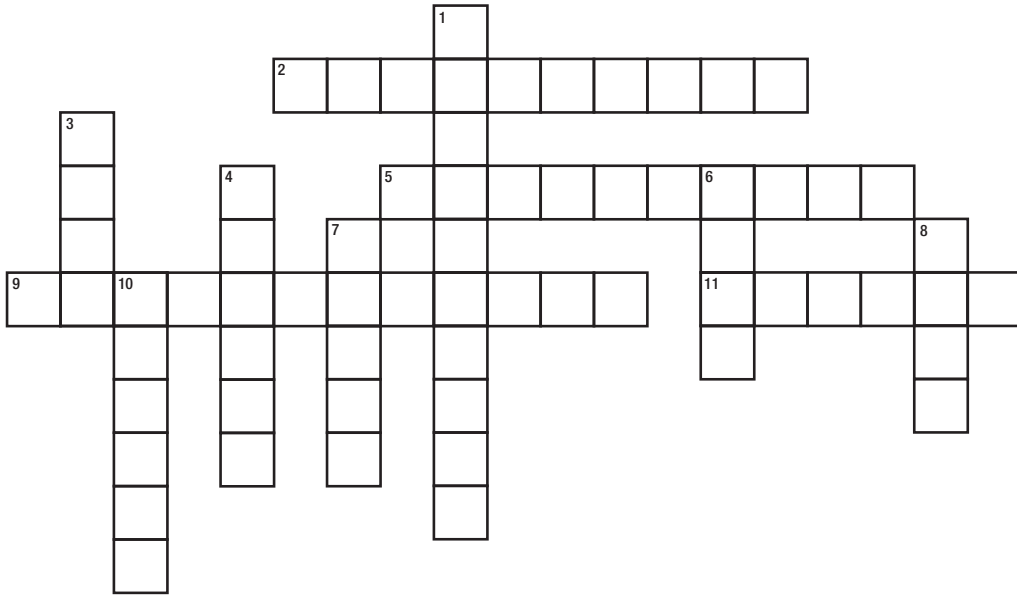
WATER TREATMENT PLANT





# Help! Find Hydro's Favorite Hiding Places

Where could he be?



## ACROSS

- 2. Adds moisture to air
- 5. Pours water down on you in the bathroom
- 9. Where food is stored
- 11. Outside faucet

## DOWN

- 1. Washes the dishes for you
- 3. You find this behind the walls, underground
- 4. Collects waste in the bathroom
- 6. Connects to outside faucet to wash the car
- 7. Typically in the basement and is used to capture how much water is being used
- 8. Keeps you cool in the summer
- 10. Can be found in the kitchen, bathroom, and the basement

---

**Did you find Hydro's favorite hiding places?**

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Across: 2. Humidifier, 5. Shower head, 9 Refrigerator, 11 Spigot, Down: 1. dishwasher, 3 pipe, 4 toilet, 6 hose, 7 meter, 8 pool, 10 faucet

# Oil vs. Water Experiment

## Materials needed:

- glass or bottle
- water
- vegetable oil or a similar cooking oil
- dishwashing liquid

## Procedure:

Pour water into the glass. Pour vegetable oil into the glass. Observe what happens. (The vegetable oil and water separate into layers.) Add dishwashing liquid and stir. Observe what happens.

## The science behind it:

Water and oil are both made up of molecules that are strongly attracted to each other. Water molecules have a positive charge on one end and a negative charge on the other end. Since the opposite ends of the molecule have different charges, it is called a polar molecule. The molecules in the oil are more evenly spaced out, and therefore do not have charges on the opposite ends of the molecule. These are called non-polar molecules. Since the water and oil molecules are different types, they do not mix. When the dishwashing liquid is added, it causes the bonds between the molecules to change, and allows the liquids to mix.



# Word Fill

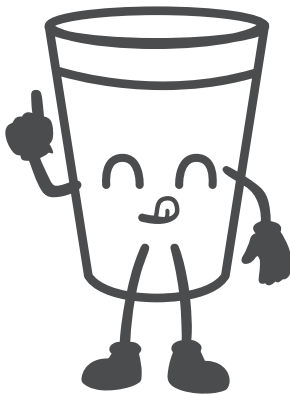
Help Hydro to fill in the blanks below.

## Word Bank

fruits • live • body • Lake Erie • vegetables • rivers  
water mains • lakes • Hydro • oceans • water treatment • clothes

Do you know how important water is? We need water to

1. \_\_\_\_\_. In fact, over half of your 2. \_\_\_\_\_ is made up of water. We need water to grow 3. \_\_\_\_\_ and 4. \_\_\_\_\_, wash our 5. \_\_\_\_\_, and keep ourselves clean. Most of the water on earth is in our 6. \_\_\_\_\_. You cannot drink this water because it is salt water. We have to get drinking water from 7. \_\_\_\_\_, 8. \_\_\_\_\_, mountains, and even underground. Cleveland Water gets its fresh water from 9. \_\_\_\_\_. Cleveland Water makes the water safe to drink at our 10. \_\_\_\_\_ plants so you can use it. After the water is made safe, we send it to your home through 11. \_\_\_\_\_ underground for you to use. Remember, it takes a lot of time and effort to have safe water so 12. \_\_\_\_\_ wants you to use your water wisely.



Answers: 1. = live, 2. = body, 3. = fruits, 4. = vegetables, 5. = clothes, 6. = oceans, 7. = lakes, 8. = rivers, 9. = Lake Erie, 10. = water treatment, 11. = water mains, 12. = Hydro

## Looking for a speaker or plant tour?

Children in grades K-8 enjoy interactive, educational experiments and activities led by our team of speakers. This would be ideal for clubs, scouts, youth organizations and schools.

Our speakers also present at high schools, colleges, universities, chambers, rotaries, senior groups and other community organizations.

For more information, please visit us online at:  
[www.clevelandwater.com/EducationAndOutreach](http://www.clevelandwater.com/EducationAndOutreach) or  
call 216.664.3173.



### ***Cleveland Water***

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