

1. What do you think? Select the correct answer: a, b or c.

- I. How many people can count on running water in the world?
a) **7 out of 10** b) 5 out of 10 c) 2 out of 10
- II. Few cities are experiencing a potential shut off of water supply.
a) True b) **False**
- III. By what year have researchers predict that countries will become water-stressed?
a) 2025 b) 2030 c) **2040**



2. Fill in the gaps with the words from the box.

Existential Inflection Arid Bountiful Absurdly Embedded Scarce

1. There is an incorrect perception that water is available in bountiful amounts.
2. We are at an inflection point where if we're not careful we may not have water anymore.
3. 98% of water is embedded in all the ingredients that were used to make a bottle.
4. Because water is priced below its value, humans use water in absurdly wasteful ways.
5. As water becomes more scarce, we may have to turn to new ways to find clean water.
6. Growing water-intensive crops should not be done in arid climates.
7. Mexico City is facing an existential water crisis.

3. A simile uses "like" or "as" in a sentence. Eg. She runs as fast as a cheetah. Eg. She is tall like a giraffe.

Explain the use of this simile in the video: "*Groundwater is like a savings account.*"

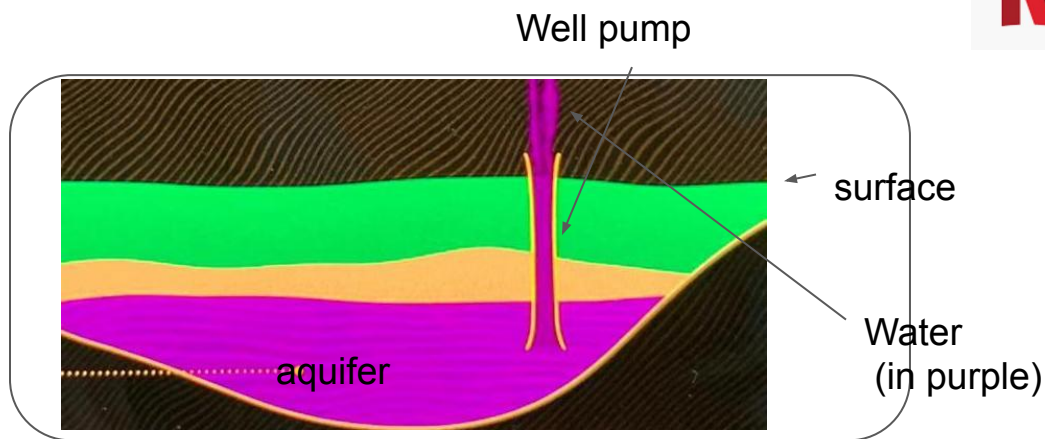
This simile expresses a parallel between using up water and drying up your funds. Groundwater is similar to a savings account in that it takes a long time to build up an underground reservoir of water or aquifer that can be used to keep large populations hydrated. This is similar to a bank account where you draw money out to spend. However, once used up, both water and money take a long time to replenish.

A metaphor makes a direct comparison. Eg. The snow is a white blanket. Create two of your own similes or metaphors to describe the following global issues:

1. Rate of water depletion: To Mother Nature, bodies of water such as rivers, lakes, and streams are drying up as fast as a blink of an eye.
2. Competition for water: In some developing countries, people often have to fight like barbarians just to get a small amount of clean water.
3. Unfair access to water: Corporations are the kings of the jungle. Once they decide to open a new factory in a country that desperately needs jobs, they can gain an unfair advantage to access the city's water supply.

4. Draw a cross-sectional diagram of groundwater.

Include and label these parts: **aquifer, surface, well pump** and color in the part that has water.



Explain what happens when we use groundwater.	Effect #1: Groundwater depletion	Effect #2: Sinking
	<ul style="list-style-type: none"> Using groundwater results in depletion of water in the aquifer 	<ul style="list-style-type: none"> Causes the ground above the aquifer to sink which impacts buildings above

5. Fill-in the proportion of Liquid Freshwater use on Earth:

Personal use = 8%

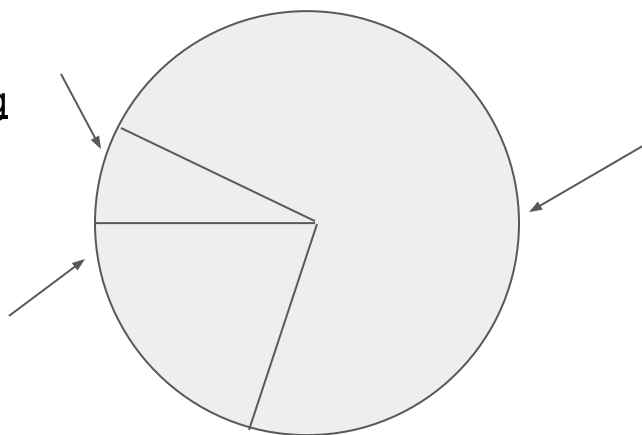
Examples:

Showering, brushing our teeth, toilet flushing washing our clothes

Industry use = 22%

Examples:

Making plastics such as bottles requires water.



Agricultural use = 70%

Examples:

Watering crops such as fruits, and vegetables

6. The video highlights the number of liters of freshwater required to make common everyday items such as soft drinks, coffee, and meat. Explain the concept of “embedded water”.

Embedded water is a total calculation of water that is used to make a product. For example, 98% of the water is embedded in the ingredients that were grown to make the bottle of Coca Cola. 74 liters are used to make a glass of beer and 130 liters are used for a cup of coffee. Meat contains one of the highest amounts of embedded water. Growing a kilogram of Alfalfa, feed for cows, takes about 510 liters of water, and given a cow takes 12 kg of feed a day, a quarter pound of a hamburger patty, requires 1650 liters of water to produce.

7. Please answer the following questions after you have finished watching the video:

A. What are two benefits of valuing water at a higher price?

Humans use water as though it is in unlimited supply. The benefit of valuing water is to send a price signal to everyone. For example, people will stop growing crops in arid conditions to increase the efficiency of crop output. Governments may also repair water infrastructure so that water isn't wasted due to leakage and broken pipes. Mexico City is one city that loses half of its drinkable water to leakage.

B. What is the problem with letting governments regulate access to water such as the opening of the brewery by Constellation Brands in Mexico City?

Constellation Brands may have an economic interest in gaining access to water in Mexico City. Governments tend to have power in picking who has more or less access to water. Conflict of interest and corruption may accelerate problems with water usage if there is a lack of regulation.

C. Explain the connection between water scarcity and war and give examples:

Water scarcity drives violent conflict around the world. For example, in northeast Nigeria, the drying up of Lake Chad created tension between people and the government, claiming lives.

D. Why do we desalinate water and what are some obstacles that we are facing in using this method?.

Desalination of water makes up less than 1% of the water we use. It is extremely expensive to treat it to water standards and a huge amount of energy. However, the cost of consumer goods such as groceries and produce would increase significantly.

E. In terms of water, what does it mean to “value an invaluable resource while ensuring that everybody has access to it.”

Water is an invaluable resource; without it, we would not survive. However, the difficulty is that if the price of water is increased to promote conservation, the greatest impact will land on the poor. Therefore access to water for everyone becomes more difficult to achieve. Some cities such as Philadelphia, U.S., have made their citizens pay for water prices based on the income they make.

8. Essay and Discussion Questions

1. Is it ethical to charge everyone on the use of water-based on your level of income similar to what governments in Philadelphia (U.S) started to do in 2017?
2. What methods or policies can governments introduce to ensure that all individuals in society will conserve and use water in sustainable ways?
3. The UN recognized access to water and sanitation as a human right in 2010. Propose 1-2 new methods in valuing water so that both the rich and poor can have access to it.
4. Compare the benefits and disadvantages of using surface vs. groundwater.
5. Research a few organizations that are using or developing technologies to desalinate water and advise whether the advantages outweigh the costs of using this technology.