

Water in Israel

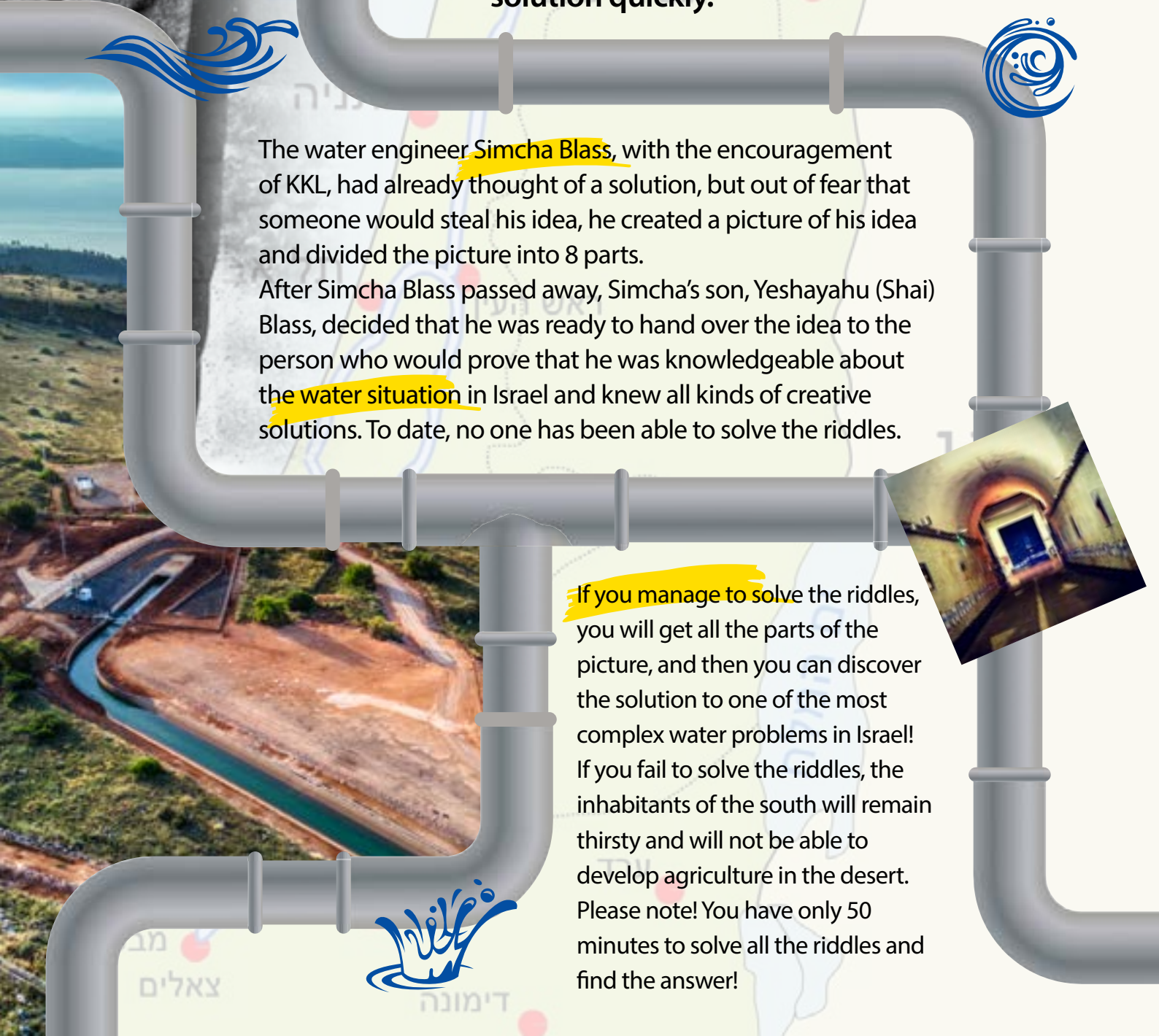
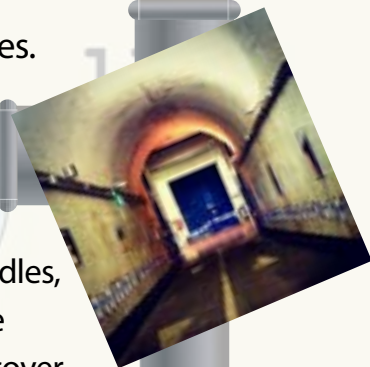


In the 1950s and 1960s, many Jews came to Israel and dozens of settlements were established in the Negev. One of the main problems was the lack of water. The leaders of the State of Israel realized that in the north and center of the country, there is an abundance of water, while the settlers in the south, which is mostly a desert area, suffer from a lack of water. They need to find a solution quickly.

The water engineer **Simcha Blass**, with the encouragement of KKL, had already thought of a solution, but out of fear that someone would steal his idea, he created a picture of his idea and divided the picture into 8 parts.

After Simcha Blass passed away, Simcha's son, Yeshayahu (Shai) Blass, decided that he was ready to hand over the idea to the person who would prove that he was knowledgeable about the **water situation** in Israel and knew all kinds of creative solutions. To date, no one has been able to solve the riddles.

If you manage to solve the riddles, you will get all the parts of the picture, and then you can discover the solution to one of the most complex water problems in Israel! If you fail to solve the riddles, the inhabitants of the south will remain thirsty and will not be able to develop agriculture in the desert. Please note! You have only 50 minutes to solve all the riddles and find the answer!



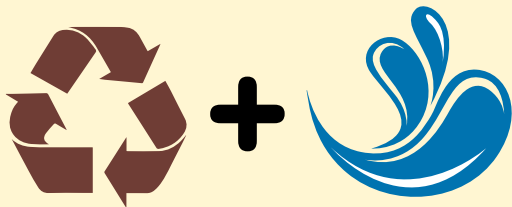
Innovation in Agriculture

Hi, this is Shai- I really hope that you will be able to solve my riddles so that there will be someone who will continue the life's work of my father, Simcha.

You should know that Israel is one of the leading countries in innovation in the field of desert agriculture in the world! David Ben-Gurion, who was a close friend of my father, decided that the Negev must flourish. Many people decided to settle in the Negev, and as a result, the need arose to find ways to overcome the hot and dry climate and the great lack of water. My father and I (and other people, of course) wanted to show that the desert in Israel could be a flourishing area full of agriculture.

The farmers in the Land of Israel created new irrigation methods that no one had thought of; they used recycled water and invented the drippers (the truth is that my father and I invented them), and they watered the olive trees with brackish water that is abundant in the desert.

In the next step, the high-tech industry entered the picture. An abundance of fruits and vegetables are grown with great success in special high-tech greenhouses to this day. In these greenhouses, we created cherry tomatoes and made them sweet and delicious- nature's candy. In the south of the Negev, farmers have renewed agriculture that was there thousands of years ago and grow grapes for wines that have won many awards. In the Arava and further north in the Jordan valley, a special date called Majhool is grown, including a special type known as "Bonbon," which is so successful that it is marketed to 30 countries around the world.



RIDDLE

To succeed in desert agriculture, you need several things. Find the expressions that are hidden behind the riddles, and you can discover the main things that helped desert agriculture succeed:



Treated Waste Water in Israel

OK, let's keep going! Now, I want to tell you about treating water in Israel. A lot of water goes to waste, and in the state of Israel, where there is a lack of water, they decided that it is worth recycling this water. Don't worry; no one drinks this water, but it is good, after a process of cleaning and purification, for watering agricultural crops. From the beginning of the 1980s, a factory called Shafdan started purifying the sewage water of the Gush Dan area, which is actually the area of Tel Aviv and the surrounding cities. The process is a bit complicated, so let's see if you understand. In the first step, the sewage water is injected into sand dunes in the area of the city of Rishon LeZion. The sand is a natural filter that cleans the water. In the next step, the clean water is pumped and transported through pipes to huge reservoirs that KKL built in the Negev. From there, the water travels to the farmers through pipes. Today, most of the water that the farmers in the Negev use is from Shepdan. It is very important to remember! Recycled water is mainly good for irrigation; under no circumstances should you drink it!

RIDDLE

With the help of the pictures in your hand, put together the sewage water treatment process.



Water Desalination in Israel

Hi again, it's Shai. Right, there's a water shortage in Israel? How is one small Kinneret and rainwater supposed to be enough for ten million people? So it is that if you look at the map of Israel towards the west, you will see that there is a sea there! With lots of water! But what's the problem? You cannot drink this water because it contains salt. But wait, what if we could separate the water and the salt? Is that even possible? It turns out that it is! Not easy, but possible. This process is called desalination. Before I explain to you how it works, it is important for me that you know that the first desalination facility in Israel was in the southernmost city in Israel, Eilat, after which they established four more facilities throughout the country. Today, almost half of the drinking water in Israel comes from water desalination. Desalination of water saved Israel from a water crisis, and the State of Israel even sells water to its neighbors!

So what happens in this process? How do you actually turn salt water into freshwater? There are several steps. First of all, the water has to be pumped directly from the sea through huge pipes to the desalination plant. The water is filtered through special filters. Then, the filtered water passes through a high-pressure pump and is pumped into very high-pressure reverse osmosis tubes that separate the salt from the water. At the end of the process, the water is sent directly to the municipal water systems. What do we do with the remaining water, you ask? They are simply returned to the sea.

RIDDLE

Here is a board with letters- can you the phrase hidden here?

Here's a clue: disassemble the letters and put them back together

S E E R R E V

S I O O M S S

Research Stations and Agricultural Development

Scattered throughout the Land of Israel are 8 stations where agriculture is studied and means are developed for a better use of the existing natural resources. At these stations, farmers and scientists sit together with the KKL team to think of the best ways to help farmers get the most out of the water and the soil, all in order to continue to develop agriculture in Israel. Look at what things they managed to develop with the help of these stations: significant improvement in all kinds of crops - grapes, citrus fruits, peppers, flowers, dates, and more! They even developed the cultivation of mushrooms inside rooms (!) and the cultivation of ornamental and edible fish.

RIDDLE

Find the differences! Here are two pictures. Find at least three differences between them. After you find them, answer the question: What do the three things you found have in common?



Stream Restoration in Israel

For many years, the streams in Israel have suffered from people harming them. Spring water, which is fed into the streams, was used for domestic, agricultural, and industrial purposes. In their place, toxic water was poured into the streams, which increased the risk to the environment and polluted the streams. But don't worry, there is still hope!

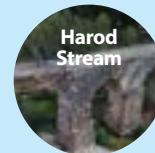
For some time now, the KKL experts have been working on the restoration of the streams. A tailored plan is built for each stream according to its characteristics, and they are really succeeding in returning clean water, plants, and animals to the streams. In this video, you will see how they took a polluted stream and turned it into a beautiful city park.
https://www.kkl.org.il/parks_and_forests/beer_sheba_park/

In the last ten years, KKL has restored a lot of streams! Here are some of them: Nahal Alexander in the Emek Hefer area, Nahal Harod in the Lower Galilee, the Jordan River that flows from the Sea of Galilee to the Dead Sea, Nahal Sorek in the Jerusalem mountains, Nahal Lachish which flows into the Mediterranean Sea near Ashdod, Nahal Zippori in the Lower Galilee, Nahal Taninim which begins in the Carmel area and flows into the Mediterranean Sea (to Don't worry, there really aren't crocodiles - taninim - there), and Nahal Besor that flows in the Negev.



RIDDLE

Let's see if you can remember where each stream is. You can see a map of the Land of Israel with all the streams that appear on the information card. Let's see if you can put each name in the right place. If you succeed you will get another piece of the puzzle. Good luck!



Desert Floods and Surface Runoff

Hi again, it's Shai. This time I want to tell you about a really interesting, natural phenomenon. Sometimes in the desert, it seems that there is too much water- this happens once or twice in the winter when there are floods in the desert streams. There are winters where all the rain of that winter falls over just a few days. This rain floods the streams in the desert, the ground swells and instead of absorbing the water, it flows all at once through the streams and sweeps away everything that stands in the way. When this happens, you have to be very careful because sometimes the water is so strong that it can also sweep people away.

So what do we do with all this water? As you already understand, in Israel, they try to take advantage of every drop of rain that falls. In the Negev and Arava regions, KKL built dams, and their purpose is to stop the flood water, store it, and from there, it reaches the farmers. Instead of this water simply flowing away, it irrigates Israel's thriving agriculture!

RIDDLE

Answer the following riddles to receive the next puzzle piece:

I stop the water, creating a reservoir that prevents the water from spilling into the sea. What am I?

It is hot during the day and cold at night, there is not much water but when there is, be careful. Who am I?

I'm good for washing my hands, paddle in me as much as you want, but if you see me coming towards you at high speed, run for your lives. What am I?

We're trying to get in but we just can't! We're used to seeping in but here it's not working. What are we?

Brackish Water

What exactly is **brackish water**? I will explain what they are not and maybe that will make it clear. Brackish water is not sea water which is very salty and it is also not water found in springs, which is fresh water. Brackish water is in between, not really fresh so you can't drink it, and not really salty. In the south there is a lot of brackish water underground- it's a shame not to take advantage of it, but how?

First of all, you can desalinate them- remember we talked about that? But you can also use them as they are. There are several types of crops that can be irrigated with brackish water - dates, grapes, cherry tomatoes, olives, and cotton. An interesting fact that scientists discovered is that there are certain fruits that, when irrigated with salty water become sweeter. That's why the cherry tomatoes that grow in Israel are the sweetest in the world! Another interesting use is in fish ponds. Because the brackish water resembles sea water, the farmers in the Negev built fish ponds that are filled with brackish water taken from underground directly into the ponds.

RIDDLE

Solve the following math problem. Each of the fruits that grow in the desert (the fruits - grapes, dates, olives and cherry tomatoes) received a numerical value.

Solve the following equation to understand how much each fruit is worth

$$24 = \text{grape} + \text{grape} + \text{grape}$$

$$20 = \text{date} + \text{date} + \text{grape}$$

$$18 = \text{olive} + \text{olive} + \text{grape}$$

$$\text{cherry tomato} = 2 - \text{olive} - \text{grape} + \text{date}$$

Lake Hula

When the Jewish people arrived in Israel before the establishment of the state, they discovered that much of the land was swampy, which prevented them from growing fruits and vegetables. The settlers decided to drain these swamps and they did so very successfully, but it turns out that one of these swamps is very important for the environment, and it is called Lake Hula. Forty years after the settlers dried up the marsh, KKL decided to restore part of the lake in order to bring back the birds and maintain the balance of nature. Within two years they managed to balance the amount of water that flows there, turning the valley from a swamp into a beautiful lake full of vegetation, fish, and migrating birds. They turned a swamp into a tourist site that is like no other in the whole world! This place is called Lake Hula.

Lake Hula Park is a unique ecological tourism site where you can experience a rare natural experience combined with historical stories of pioneerism. KKL established a bird-watching park and twice a year more than 500 million waterfowl, birds of prey, and songbirds pass through it.

RIDDLE

Here's a sentence written in a special, secret script. If you manage to decode it, you will get the next puzzle piece.

Fccicccvccccc
hcuccnccdcrrcccd
mcicclcciccccoen
bciercdccs pccaccscs
tchercocuccgccch
Lcacckccce Hcuccclca
eccvceccrcy yceccaccr.