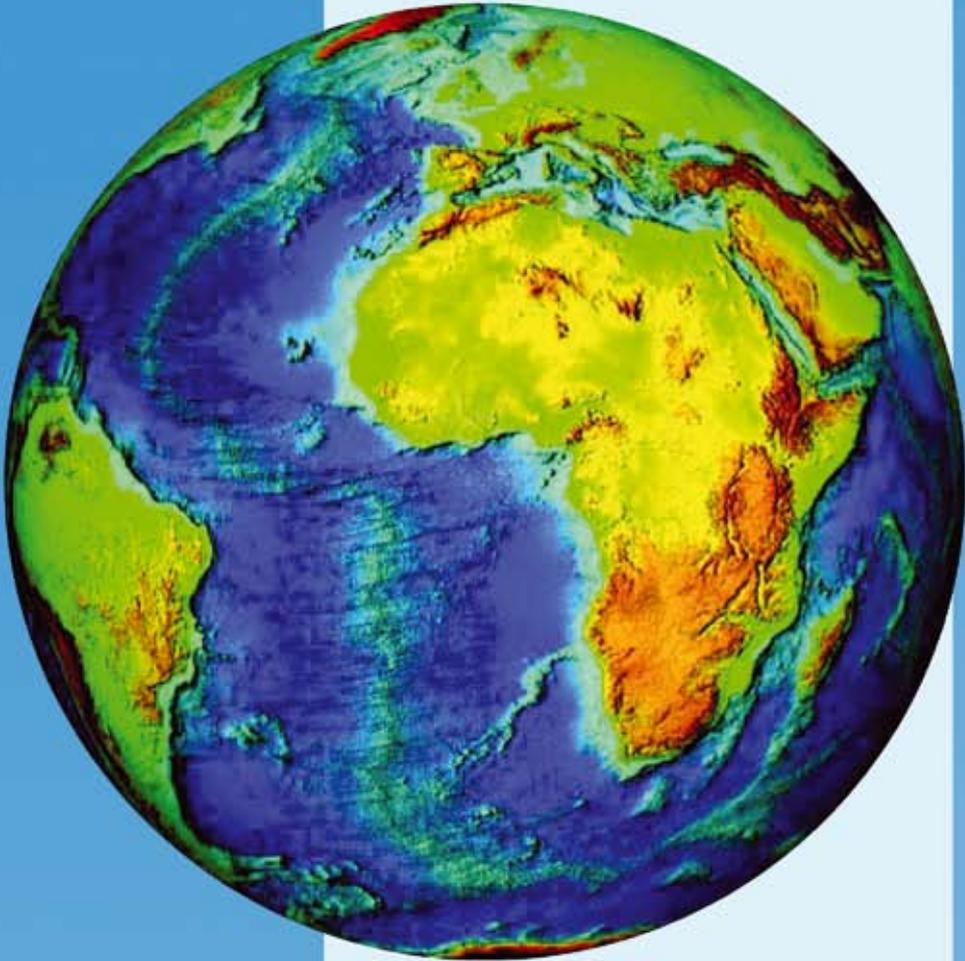


Chapter 1:

WHY WATER?



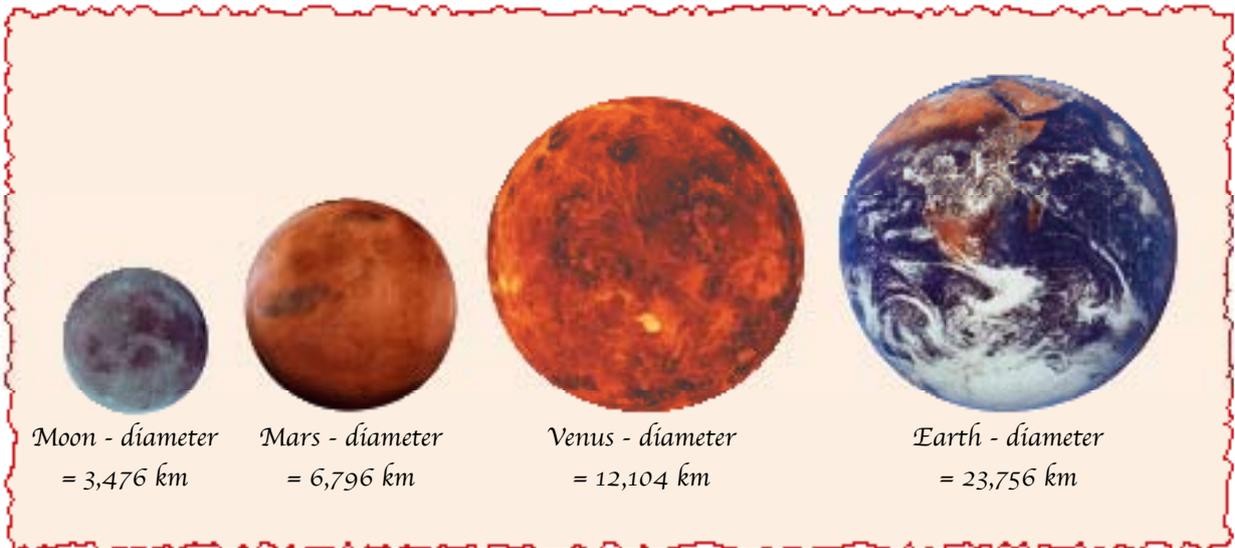


PLANET EARTH - A VIEW FROM SPACE

Activity 1:

Which is the most blue?

Below are images of the planets Earth, Venus, and Mars, and a picture of the Moon. Use the pictures to answer the following questions:



1. What are some similarities and differences between Earth, Venus, Mars, and the Moon?

Similarities:

Differences:

2. What are the characteristics of the Earth when compared to Venus, Mars, and the Moon?
How is this shown in the images?

3. Why is the Earth called “The Blue Planet”?

4. If the Earth’s surface was covered by oceans, what would be the color of the Earth from space?



*Surfing the
Internet*

<http://www.windows2universe.org/>

Visit the website “Windows to the Universe” at the above address. Click on “Solar System.” Choose a planet to study.

Mission: Access the websites that provide information about the planets in the Solar System. Prepare identification cards for these planets: Jupiter, Mars, Venus, Mercury, and Earth. Remember to include the following data for each planet: distance from the Sun, surface temperature, presence of liquid water, and the composition of the atmosphere.

What does your gathered data suggest about the possibility of finding life on each of these planets?

Activity 2:

The closer object is green

In the previous activity, we learned that the Earth is called “The Blue Planet” because the oceans, whose color is blue, cover $\frac{2}{3}$ of the surface. In this activity, we will explore this fact further.

1. Look at the picture below. Which is the Earth, and which is the Moon? Explain.
2. Imagine that you are on a space journey to the Earth from the moon. The photograph shows how the Earth would look at the beginning of the trip. What other details about the surface can you gather as the spacecraft reaches the height at which airplanes normally fly?



3. Can you see these surface details when we go to other planets? Explain.
4. Explain the connection between the two statements below:
 - a. The planet Earth is apparently the only planet in the Solar System that has liquid water.
 - b. The planet Earth is apparently the only planet in the Solar system in which there are living beings.



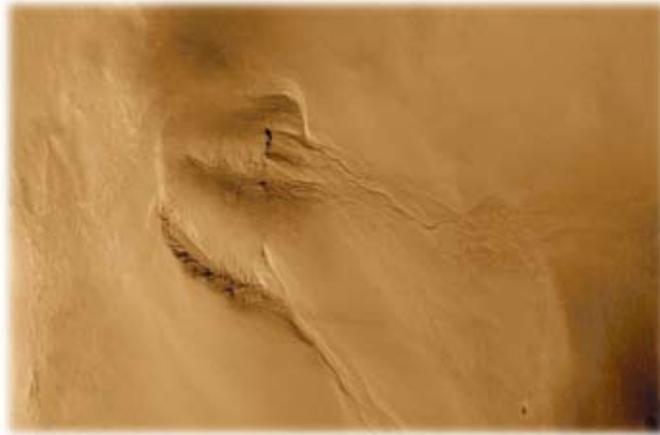
*Surfing the
Internet*

<http://www.windows2universe.org/>

Visit the website “Windows to the Universe” at the above address. Click on “Solar System.” Choose Mars.

Mission: Exploration of Mars

1. One of the objectives of Mars exploration is to investigate whether there is life on the surface of this planet. Find and explore websites with photographs and information about Mars.
2. What evidence is shown in the pictures that suggests the presence of liquid water in Mars’ geologic past?
3. According to the information you read, what evidence suggests that liquid water was present on Mars in the geologic past?
4. A geological analysis of photographs taken by the spacecraft Pathfinder, which landed on the surface of Mars in 1998 clearly shows that there were rivers that flowed on the surface of Mars in the geologic past. Do you think that this discovery necessarily proves that there was life on the surface of Mars at one time? Explain.



View of Mars

Activity 3:

What type of environment sustains life on Earth?

In this activity, you will try to understand where the water on Earth originated.

Two important features of the “Blue Planet” are the large amount of liquid water present, and the existence of living beings.

The investigation of **planets** like Mercury, Venus, Mars, and Jupiter shows that these planets do not have **liquid water** and there is no evidence of the existence of **living beings**.

The planets **Mercury** and **Venus** are relatively close to the sun, therefore the temperature on these planets are relatively high (over 100° Celsius). This is why they have no water.

The planets **Mars** and **Jupiter** are relatively far from the Sun, therefore the temperatures are relatively low (below 0° Celsius). It is reasonable to assume that if there were water on these planets, it would be frozen water.

The distance between Earth and the Sun is such that the temperature range on Earth allows for the existence of liquid water and living beings.





Surfing the Internet

Use Google to search for the phrase “origin of water on Earth.” Read about the theories on the origin of water on Earth. As you’re reading, write down the various factors that likely contributed to the water on Earth, and answer the questions below.



Questions

Read through the information again and answer the following questions:

1. What are the various accepted theories about the origin of water on the Earth’s surface?
2. According to researchers, what evidence suggests that Earth’s water came from comet impacts?
3. What interesting scientific ideas did you learn from the reading?
4. Draw a diagram that represents a chain of events that lead to the existence of living beings on Earth.



Surfing the Internet

Next, do a Google search for the phrase “formation of the oceans.” Read and explore this topic.

Based on the new information, do you agree with the previous conclusions you made regarding the conditions that lead to life on Earth?



B:

NO LIFE WITHOUT WATER



In the previous chapter, we looked at the link between the presence of liquid water and the presence of living beings on Earth. This chapter examines the relationship between life and water, and will help you understand why all living things need water.

To examine this question, first investigate whether water is actually an important component of living things.

Activity 1:

How much water is in living things?

How much water is contained in the human body?

How much water is contained in a tomato?

What is the relationship between the questions above and the question below:

How much water is needed for the activities of living things?



The table below describes the ratio of the amount of water relative to body weight in various organisms.

Organism	Amount of water in the body, as a percentage of body weight
Human	66
Bacteria	70
Chicken	75
Frog	78
Worm	80
Jellyfish	98
Sunflower Seed	9
Pineapple	84
Tomato	88



Questions

Look at the data in the table above and answer the following questions:

1. Write three conclusions you can make from the data table above.
2. Organize the organisms according to their amount of water, from highest to lowest.
3. Which organism has the most water? Which organism is the driest?
4. A sunflower seed contains 9% water. What is needed for a sunflower seed to germinate (begin growing)?
5. What are the most important ideas you have learned, and what can you conclude from the analysis of these data?
6. In the previous activity, we learned that living things contain water. Describe where water is found in living things, including humans.

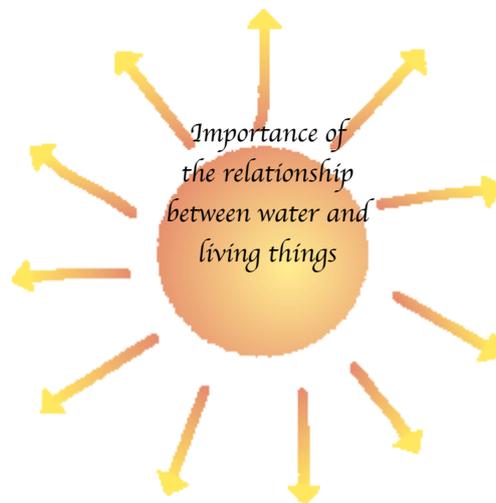
Activity 2:

What have I learned so far about the relationship between water and living things?

In the previous activity, we learned that most living things contain a lot of water. Now, we

can analyze the relationship between water and the characteristics of life.

1. For each arrow, record an idea that describes the relationship between water and life.



2. In the table on the next page, there are two columns: “living things” and “non-living things”:
 - a. Classify each of the elements found in the left column under “living” or “non-living” as appropriate.
 - b. Write an explanation of each choice in the comments column.
 - c. If you could not classify any of the items, describe and explain in the comments column.



	Living	Non-Living	Comments
Domestic cat		
Flowing river		
Large truck		
Dry leaf		
Human-shaped robot (<i>humanoid</i>)		
Goldfish		
Limestone (<i>calcareous rock</i>)		
Chicken egg		
Wild mushrooms		
Romaine lettuce		
Sheep's wool		
Cypress tree		

3. Below is a list of “characteristics of living things” and a list of “definitions.” Connect the dots so that the characteristics match up with the appropriate definition.

Characteristics of living things		Definition	
1. Metabolism	●	●	a. Living things are sensitive to stimuli such as light, sound, humidity, and temperature, and react to them.
2. Cell structure	●	●	b. Process of respiration and nutrition that maintains life and generates energy, by using substances taken from the environment.
3. Reaction to stimulus	●	●	c. Living things grow by cell division, differentiation, and shape change.
4. Reproduction and heredity	●	●	d. Living things can reproduce and have offspring that resemble them in their characteristics.
5. Growth and development	●	●	e. All living things are made of a cell or several cells. Every living cell (in unicellular or multicellular organisms) has all the characteristics of living things.

4. In your opinion, how can one or more of the five characteristics of living things above, occur in an environment without water?
Explain your idea.



Creatures living in an aquatic environment

Activity 3:

The relationship between metabolism and water



One of the characteristics of life is metabolism which is a process that takes place in living organisms. During the process of breathing, oxygen (O_2) is captured, and carbon dioxide (CO_2) is released. To check whether the process of respiration occurs in seeds, use bromothymol blue, a compound that is used to detect the presence of carbon dioxide.

The following experiment illustrates one of the changes that occur in a living thing - the seed of a bean plant - as it absorbs water.

Laboratory Materials: 3 graduated test tubes with stoppers, seeds of a bean plant, bromothymol blue solution, straws (like those used to sip liquids).



Experiment

Part One: What substance do we exhale?

1. In front of you are two test tubes with a bromothymol blue solution, diluted in water (2 cm high). What color is the solution?



Additional Information

Bromothymol blue is a compound used to detect carbon dioxide. In other words, the presence of carbon dioxide will cause the solution to change color. It is a pH indicator.

2. Using the straw, blow slowly into the test tube. What was the color change?
3. How do you explain the change that occurred in the color of the solution as a result of the blowing?



Part Two: How does water influence seeds?

You have two graduated test tubes in front of you. In the first tube, there are 20 dry bean seeds. In the second, there are 20 bean seeds that have been soaked in water for 24 hours.

1. What are the differences between the seeds of the two test tubes?
2. In your opinion, what is the reason for the observed differences?
3. Add a third test tube and keep it empty. Add 10 mL of bromothymol blue to each of the three test tubes. Close each test tube with a stopper, and wait 20 minutes.
4. What do you think will happen in each of the test tubes? Explain.
5. Observe the test tubes after about 20 minutes. Summarize the results in the following table:

Treatment	Color of the solution in the test tube at the beginning of the experiment	Color of the solution in the test tube at the end of the experiment
Seedless		
Dry seeds		
Wet seeds soaked in water		

6. Which seeds breathed faster: dried or those that were soaked in water? What is the basis of your conclusion?
7. What is the importance of water in this metabolic activity of breathing?
8. Which test tube is the control? Explain.
9. The snail is enclosed in its shell during the summer, hibernating. When the rainy season arrives, the snail comes out of hibernation. In your opinion, how does the metabolism of the snail change with the onset of the rainy season?
10. Which characteristic of living things have we studied with this activity?
11. What is the importance of water for activities related to this characteristic of living things?





Synthesis

1. How would you explain to your classmates, as clearly as possible, what you have learned?
2. In the tombs of Egyptian pharaohs, 3,000 year old wheat seeds were found. Investigators proposed a quantitative experiment to examine whether the seeds were dead, or in a state of hibernation.



Thinking Scientifically

Scientific research often seeks to answer new questions posed by research studies.

1. What is the research question posed in this case?

A scientific experiment examines how a system reacts to changes. It examines how a variable (factor) affects another variable.

For example, in the experiment you just completed, the variable that influences (independent) is the water content in the seed, as a result of soaking. The variable that is influenced (dependent) is seed respiration. Because the variable “**seed respiration**” depends on the variable “**water content in the seed**”, that is called the dependent variable. Therefore, the research question is: How is seed respiration (a characteristic of living things) influenced by water content?

2. To answer this research question, what changed in this experiment with bean seeds?

In any scientific experiment, you want to verify that the conclusions made are related to the changes, and not to other factors. The part of the experiment that performs this function is known as a **control**.

3. In the first part of the experiment, which of the test tubes is the control?

4. In the second part of the experiment, which of the test tubes is the control?

In any scientific experiment, you want to ensure that the observations made are accurate, and that you can draw appropriate conclusions.

The factors influencing the authenticity of the observations are:

- a. Measurement error: In this experiment, for example, 10 mL of bromothymol blue were added to the test tube. If you add a little more, the color of the solution in response to the respiration of the bean seeds can vary.
 - b. Changes in the properties of the objects being measured: A large bean seed can produce more carbon dioxide (CO₂) than a small seed.
5. To verify that the results obtained are accurate, it is standard procedure to conduct the experiment at least three times, and to take the average of all observations.
6. In your opinion, was the experiment conducted in a scientifically reliable way?

Generally, in a classroom, each group of students carried out the experiment, so that across the entire group, there are 5-6 similar trials (repetitions of the same experiment). In this case, given the trials of all the groups, we can reach scientific conclusions based on these observations.

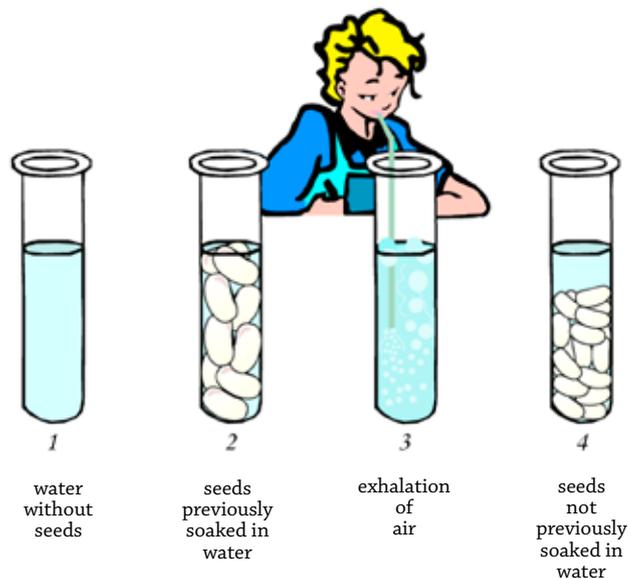


Classification

What role does each of the test tubes play in the experiment?

Below, draw lines that show the relationship between the components of the experiment (in the test tubes) and the function of each test tube (factors being explored).

Components of the experiment		What is the function?
1. Plain water	● ●	a. Examine whether the presence of water in the seed gives rise to respiration.
2. Seeds previously soaked in water	● ●	b. Examine whether the absence of water in the seed releases CO_2 , and if so, what the rate of respiration is compared with the seeds soaked in water.
3. Exhaled air	● ●	c. Verify that the factor causing the color change in the bromothymol blue solution is, in fact, carbon dioxide (CO_2).
4. Seeds not previously soaked in water	● ●	d. Verify that the CO_2 comes from seeds, and not water.



Activity 4:

What is the importance of water for living?

In the next few pages, you will find five different activities that deal with learning a single theme - the importance of water for living. Although all activities deal with the same subject, each has been addressed based on learning in a different way. The premise of this style of learning is that different students achieve understanding in different ways. There are those who understand better when they read written material. Some students find it easier to understand the way you use facts and figures that provide different arguments. There are those who understand best through activities that involve listening, rhythm, music, etc.

Choose your preferred way of learning by following these instructions:

Choosing the style you prefer: Place an X next to the statements that you agree with. The learning method that has the most Xs is likely the method that best suits you.



Learning Method 1

- I ask lots of questions about how things work.
- I solve arithmetic problems quickly.
- I like math.
- I like to play chess, checkers, or other games of strategy.
- I like to solve logic puzzles and other riddles.
- I like putting things into categories or hierarchies.



Total Score ____

Learning Method 2

- I write better than the average person.
- I love creating stories and telling jokes and stories.
- I enjoy verbal games.
- I enjoy reading.
- I like rhymes, puns, expressions formed by homonyms, etc.
- I pay attention well by listening (listening to stories, programs, talk radio, audio books, etc.)

Total Score ____



Learning Method 3

- I have the ability to identify songs, musical dissonance, or an instrument out of tune.
- I remember the melodies of songs.
- I play a musical instrument or sing in a choir or other choral group.
- I hum a lot.
- I am sensitive to environmental sounds (e.g., drops of rain falling on the roof).
- I have a positive reaction when I hear music.

Total Score ____



Learning Method 4

- I understand maps and graphics much more easily than text.
- I like activities that have an artistic aspect.
- I like drawing in complex ways.
- I like puzzles, mazes, and other similar activities.
- I like building relatively interesting 3D structures (e.g., using Legos®).
- I enjoy images more than text.

Total Score ____



Learning Method 5

- I excel at one or more sports.
- I move often, and have difficulty when I must sit in one place for a long time.
- I like taking things apart and then putting them back together.
- I like to play with everything I see.
- I like running, jumping, wrestling, or similar activities.
- I like working with clay /experimenting with other materials (e.g., painting landscapes).

Total Score ____

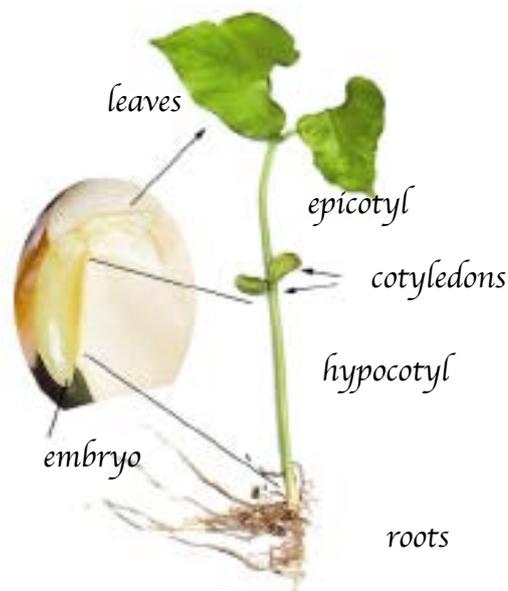


Learning Method 1

The relationship between water and growth and development

In front of you is a seed tray and a pot with some bean seedlings.

Gently pull out some seedlings from the soil and try to identify the structural components.



Bean seedling

- In the bean seedling root, identify the part that crosses the seed coat and penetrates down into the soil. This physically holds the seedling root in the Earth. Try to determine whether the root has any additional function.
- Identify the cotyledons (first leaves). Do these reach for the sun, or remain underground?
- Identify the stem (hypocotyl and epicotyl) and leaves.
- Try to design an experiment that describes the relationship between growth and development and water.
 - What is the research question in this experiment?
 - In the experiment you're designing, what is the variable that influences (independent) and what is the variable that is influenced (dependent)?

3. Is it important to have a control in this experiment? Why? If your answer is yes, what is the control in the experiment you're planning?
4. How would you determine if the observation you made was accurate and whether reliable inferences can be made from it?
5. How can you avoid measurement errors, and errors due to changes in the characteristics of the objects being measured?



Synthesis

How can you communicate to your peers the most important issues you have learned?

Prepare a flow chart on a sheet of paper that describes the germination of a seed, as a result of absorption of water.



Learning Method 2

The relationship between reproduction and water (1)



Additional Information

Read the following paragraph, and then answer the questions:

Multicellular organisms reach adulthood when their reproductive systems mature and are ready for reproduction. The process of reproduction involves the union of the **sperm** (male sex cell) with the **egg** (female sex cell) to produce a fertilized **egg cell** or **zygote**. The zygote contains genetic material from the father and mother, and it is an **embryo** whose development results in an **offspring**. The process of union of sperm and egg can only occur in a moist environment. In nature, there are at least two ways to ensure that this process occurs in a **moist environment**.

Among animals that live in water, such as fish and amphibians, **fertilization** (of the **fertilized egg**) is **external**. Females lay their eggs in the water, and males deposit their sperm into the liquid water. The sperm move around in the water, and when they find an egg, they are united and fertilization occurs (union of the genetic components).

Among land animals, such as mammals, birds, insects, and reptiles, **fertilization** is **internal**. In this type of fertilization, the egg is inside the moist environment of the female body. During courtship, the male and female send signals about their intentions in preparation for mating. During mating, sperm are moving (in a fluid medium) directly from the male to the female, entering the reproductive system of the body. Within the moist reproductive environment of the female, the sperm finds the egg in the fallopian tubes or oviducts. When the sperm meets the egg, fertilization occurs. In some terrestrial animals, there are organs that help the transfer of sperm from the male body to the female body. These organs are known as coupling bodies, and their purpose is to prevent sperm from being exposed to dry conditions, thereby increasing the chances of fertilization. In **human beings**, considered terrestrial animals, fertilization is internal. Sperm are transferred

through the male reproductive organ (penis) to the woman's body (vagina). The sperm then move toward the uterus. Fertilization occurs in the moist environment of the fallopian tubes, which connect the ovaries to the uterus.

Also in **plants**, fertilization is internal, and is protected within the flower. A plant that is flowering is mature, and able to reproduce. The **gynoecium**, or **pistil** is the female reproductive organ of the flower, and eggs are produced there. The pistil has a flared base called the ovary. In the ovaries, eggs* are produced along with several other cells, one of which is the female sex cell. The eggs are protected in a moist environment by several layers. The flower also has **stamens**, which are the male reproductive system of the flower that produce male sex cells known as **pollen grains**. Pollen travels in various ways from the stamen to the female reproductive organ of the same flower or another flower, and there, the egg is fertilized in the moist environment.

After fertilization, the fertilized egg develops into an embryo inside the seed, and the ovary becomes the fruit.



Questions

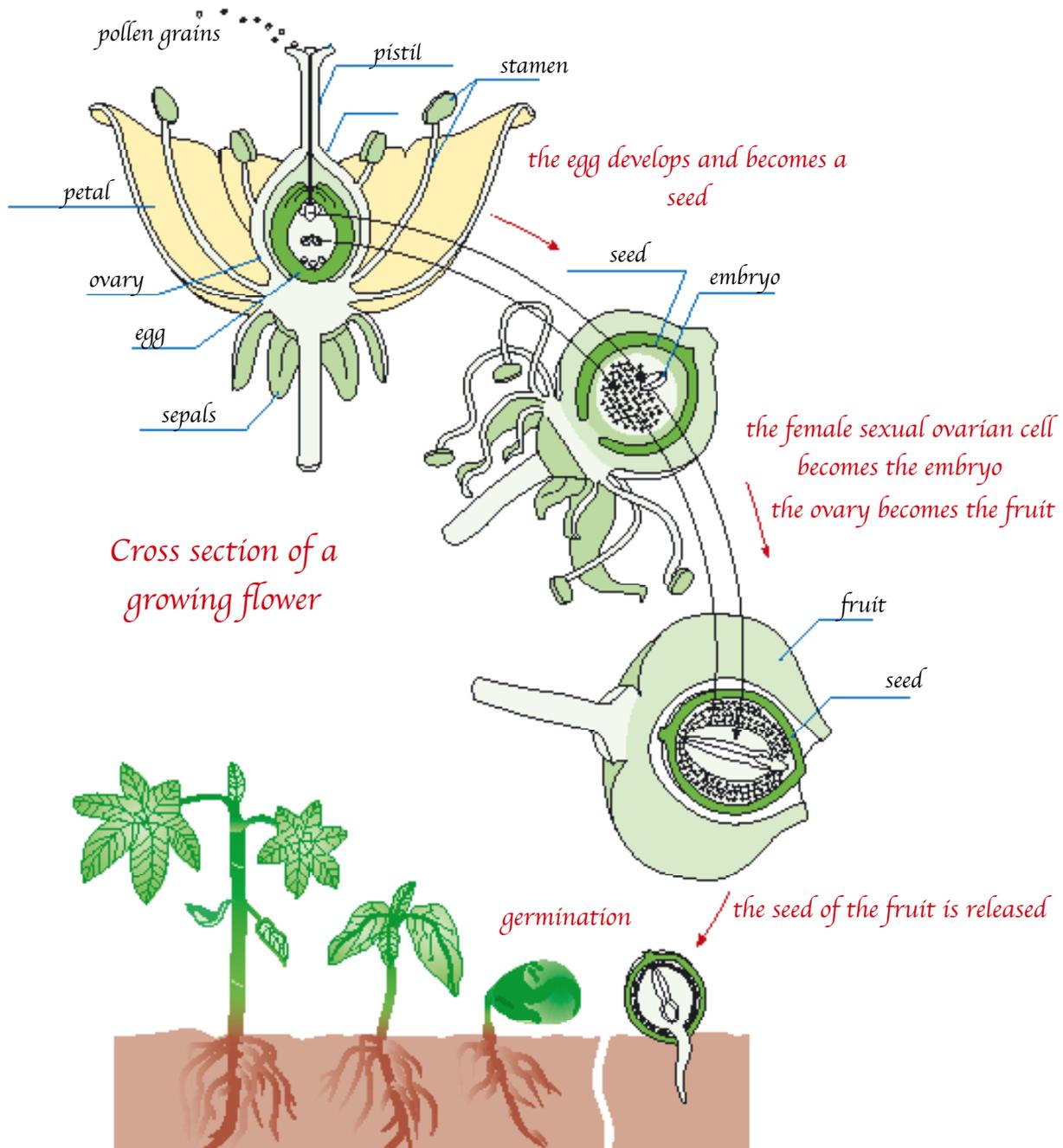
1. Provide examples of creatures that live in the water. Try to infer how fertilization occurs for each creature.
2. Provide examples of creatures that live on dry land. Try to infer how fertilization occurs for each creature.
3. How do creatures that live on dry land ensure a moist environment for fertilization?
4. What are the advantages of internal fertilization for creatures that live on Earth?



African lynx (caracal) - Animal that lives in a desert environment (picture courtesy of the Hadvarim Teva Newspaper)

* When dealing with processes that are carried out in animals, we can use the concept of the egg to describe the female sex cell. However with plants, we must make a distinction between the two concepts because the female sex cell develops into the egg, along with other cells in the ovaries, as explained above.

5. The illustration below describes the life cycle of a plant, from the pollen grains to the growth and development of an entire plant.
 - a. Record two new facts you learned from this illustration.
 - b. Record two questions you have regarding the process shown in the illustration.
6. What characteristic of life is described in this activity?



The life cycle of the plant from the grain of pollen to adult plant



Synthesis

1. Write a summary of the importance of water in activities related to reproduction.
2. How can you best convey this summary and what you've learned to your classmates?
3. Choose an option from the list below, and describe the way in which the sperm reaches the egg in an aqueous environment.
 - a. Concept map or flow chart.
 - b. Short story.
 - c. Power Point® presentation.



Learning Method 3

The relationship between reproduction and water (2)



Movie

1. Watch the first two minutes of the movie “Look Who’s Talking.” (search youtube.com for “Look Who’s Talking opening credits”). Pay attention closely.
 - a. Identify the steps involved in the fertilization process, and write down what you see.
 - b. Read the following passage, and note the processes that occur in both the passage and the movie.

In **humans**, fertilization is internal. During copulation, or sexual union, the sperm moves in liquid directly from the male sexual reproduction system to the female sexual reproductive system. In humans, who live on dry land, our bodies help the sperm move from the male body to the female body. These organs are called sexual organs, and their purpose is to prevent the sperm from being exposed to dry conditions. In the female reproductive system, sperm are transferred to the egg through the fallopian tubes. When the sperm meets the egg, fertilization occurs, and it is carried out in the moist environment of the fallopian tubes, which connect the ovaries to the uterus.

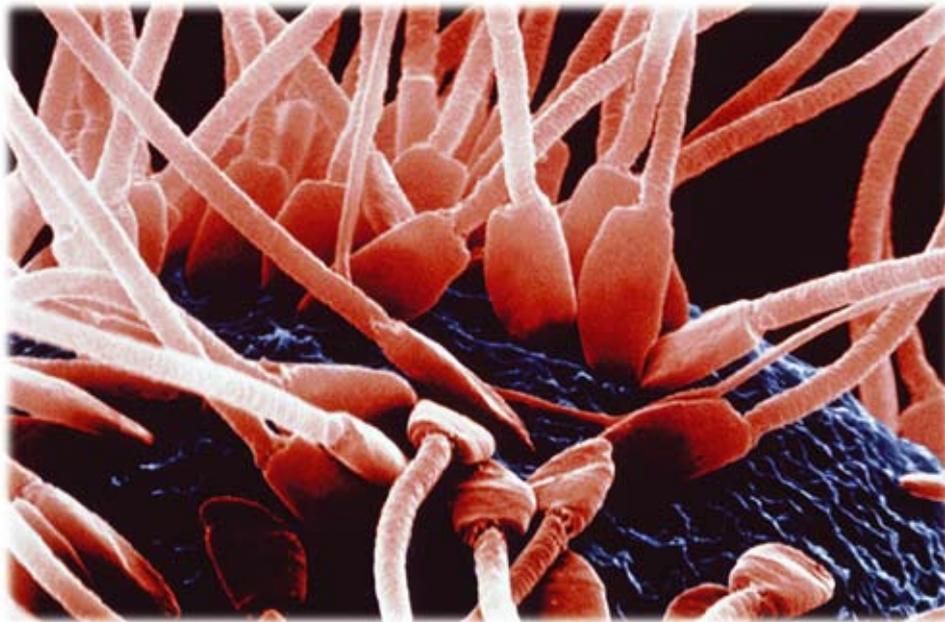


2. In your opinion, does liquid water serve another function at this stage of pregnancy?
3. Which characteristic of living things are shown in this portion of the movie?
4. How does the music that accompanies this portion of the film contribute to your understanding of the topic?



Synthesis

1. How can you convey the major points you've learned to your classmates? Prepare a synthesis.
2. Prepare a short story that describes the path of the sperm to the egg within an aqueous (wet) environment.
3. Compose a song whose lyrics can be used as an accompaniment to the soundtrack of this movie. In the song, you should include a comprehensive explanation about the phenomenon you've studied.



The sperm in the process of trying to penetrate the egg. Taken with a scanning electron microscope (magnification 4,000X).



Learning Method 4

The link between cellular structure and water

Part One: Observation of the plant “impatiens” (*Impatiens wallerana*)

1. Below are two photographs of the plant “impatiens.” Describe how the two plants are similar and different:

Similarities:

Differences:

2. In your opinion, what caused the difference between the two plants?
3. The first photo below was taken one day, and the second photo was taken after six days of not being watered. Try to infer the relationship between the physical appearance of the plant and the action of not watering the plant.



Impatiens wallerana

Part Two: Building a model

In this activity, you must build a model that is similar to the two plants you’ve observed. The materials available include: a bowl of water, two plastic bags, and tape.

1. In your opinion, to what extent does this model represent the plants you observed in the photos in Part One?

2. What difficulties did you encounter during the process of building the model?
3. Try to relate the components of the model with the natural phenomenon you are simulating. Copy the following table in your notebook, and match the items in the two columns.

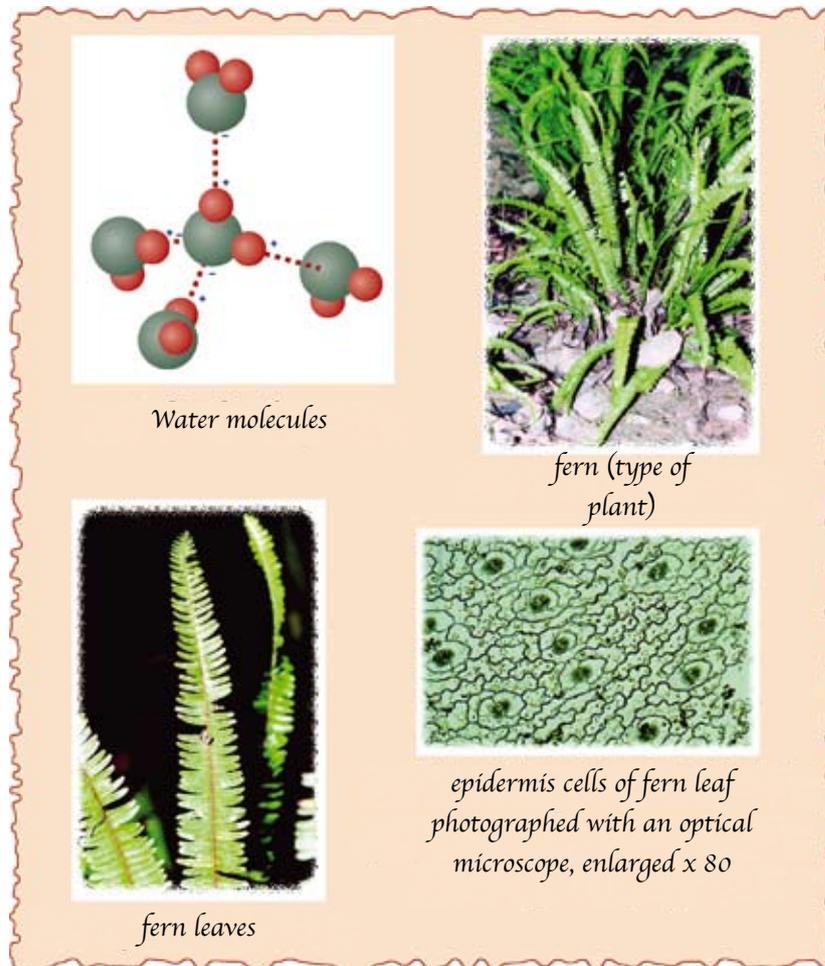
Components of the Simulation		Components of the Natural Phenomenon
1. Water container (bowl)	● ●	a. Plant tissue
2. Bag	● ●	b. Plant cells
3. Spaces in the bag	● ●	c. Water in living organisms
4. The plastic that makes up the bag	● ●	d. Does not exist in nature
5. Tape	● ●	e. The plant
6. Does not exist in the simulation	● ●	f. The cell wall

4. Again, note the two plants. One photo shows the plant wilting, while the other looks healthy. Where is the water in the plants located?

It is important to understand where water is found inside the plant.

Part Three: Where is the water in living organisms?

1. Following are four images that describe a plant and its components on four different scales of magnitude. Rank the images according to the actual size of the objects that appear in the photographs. Record the names of the objects from largest to smallest.



Water molecules

fern (type of plant)

fern leaves

epidermis cells of fern leaf
photographed with an optical
microscope, enlarged x 80

Components of a plant at different scales



Additional Information

Water maintains the shape of a body

In this activity, you learned that water plays an important role in maintaining the shape of a body in living things. You noticed that when a cell loses some of its water, it loses part of its volume or turgor, and looks more **wilted**. Also, when the whole plant lacks water, it withers and becomes flaccid. The reason lies in the role that water plays in maintaining the volume and cell turgor, and firmness of the body as a whole. As you know, all living things are composed of cells that contain a certain amount of water. A cell filled with water is swollen like a bag full of water. A cell that lacks water is flaccid and wrinkled. This phenomenon applies to all living things. Further, in living organisms, like the worm and the jellyfish, which lack a solid skeleton, water

fills the internal volume and gives strength to the entire body.

How will you explain what you've learned in this activity to your classmates as clearly as possible?

Prepare your explanation for the class.



Learning Method 5

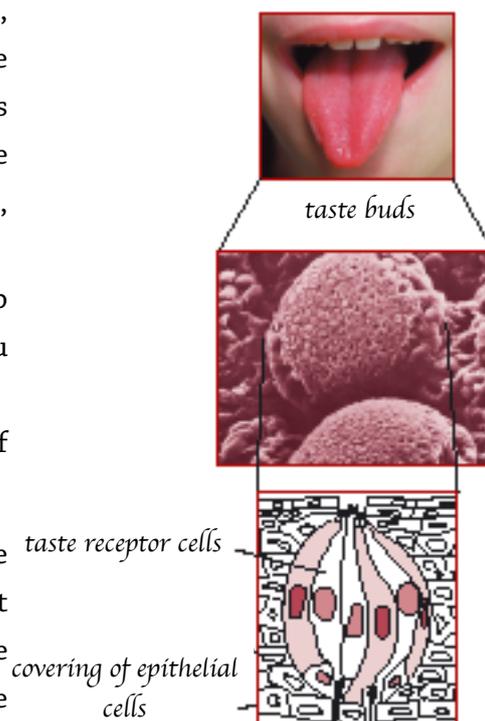
The relationship between water and response to a stimulus

Part One: The link between taste and water on the tongue

The sense of taste allows us to identify different substances. Our tongues can easily discriminate between different types of food. In fact, we only perceive four tastes or flavors: sweet, sour, salty, and bitter. The tongue has different areas that are sensitive to these different tastes. The taste sensation you get happens when different substances come into contact with sensors, or special receptors found within your taste buds. Most taste buds are concentrated at the tip, in the back, and along the perimeter of the tongue.

Due to the contact of flavor compounds with receptors found on the surface of the cells responsible for taste, the sense of taste (stimulus) is transmitted to the brain. The connection between the flavor compounds and the receptors on the tongue, and then the transmission of the sensation of taste to the brain, can only occur in an aqueous environment.

1. Dry your tongue very well with a tissue. On the tip of your tongue, place a few grains of sugar. Do you taste the sugar?
2. What is the importance of water in the sense of taste?
3. Some people associate the sense of smell with the sense of taste. When we do not feel well, we do not taste well. Is water also an important factor for the sense of smell? Try to infer how our noses enable us to taste flavors.



Schematic illustration of the tongue

Part Two: The link between eyesight and the presence of water in the eye

1. Look closely at a classmate's eye. Notice that the eye looks "wet." The eye is filled with liquid known as vitreous humor (like glass), which is composed mostly of water.



2. Where is the water in the eye?
3. The fluid in the eye is very important for the sense of sight, and for focusing light rays. Try to come up with at least two questions about the link between the sense of sight and the presence of water in the eye.



Synthesis

1. What characteristic of living organisms did we work with in this activity?
2. Summarize for yourself the importance of water for life activities related to this characteristic.
3. How will you explain what you learned in this activity to your classmates? Prepare an explanation for the class.



Knowledge Organization

What is the importance of water to the function of living beings?

1. Ask your teacher for a copy of the table on the next page.
2. Each group should use the table to record the feature of living organisms that you studied, which depended on the presence of water.
3. Each group should record on their table how their observations led to each of the findings and conclusions.

Characteristics of Living Organisms	Observations and Conclusions
Group that dealt with Growth and Development	Observations Conclusions
Group that dealt with Reproduction (1)	Observations Conclusions
Group that dealt with Reproduction (2)	Observations Conclusions
Group that dealt with Cell Structure	Observations Conclusions
Group that dealt with Reaction to Stimuli	Observations Conclusions

