شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية

حل مراجعة استعداداً للامتحان النهائي انسباير

التواصل الاجتماعي بحسب الصف السادس




روابط مواد الصف السادس على تلغرام

التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات

المزيد من الملفات بحسب الصف السادس والمادة علوم في الفصل الثالث

1	حل أسئلة الامتحان النهائي الالكتروني بريدج
2	حل أسئلة الامتحان النهائي الالكتروني انسباير
3	أسئلة الامتحان النهائي الورقي بريدج
4	تدريبات مهمة للجزء الكتابي وفق الهيكل الوزاري مع الإجابات النموذجية
5	مراجعة نهاية الفصل وفق الهيكل الوزاري انسباير

Grade 6

EOT Preparation file

By Dr Nazam Sachdeva

AL Taleea School

Reproduction and Growth of plants- U2M1L4 page 72

Aspect	Sexual Reproduction in Flowering Plants	Asexual Reproduction in Flowering Plants
Definition	Involves fusion of male and female gametes for genetic variation.	Does not involve fusion of gametes; offspring are clones.
Method of Reproduction	Pollination and fertilization.	Vegetative propagation or budding.
Genetic Variation	Offspring inherit traits from both parent plants.	Offspring are genetically identical to the parent plant.
Examples	Production of seeds in angiosperms.	Formation of bulbs, tubers, runners, or plantlets.
Advantages	Increased genetic diversity and adaptation to changing environments.	Rapid reproduction and colonization of new areas.
Disadvantages	Dependency on pollinators for successful reproduction.	Limited genetic diversity and reduced adaptability.

Reproduction and Growth of plants- U2M1L4 page 72

Aspect	Seed Plants	Seedless Plants
Definition	Plants that reproduce through the formation of seeds.	Plants that reproduce without the formation of seeds.
Reproduction Mechanism	Reproduce via the dispersal and germination of seeds.	Reproduce through other means, such as spores or vegetative propagation.
Examples	Flowering plants (angiosperms) and conifers (gymnosperms).	Ferns, mosses, and liverworts.
Importance	Dominant group of plants on Earth; vital for ecosystem functioning.	Important in early stages of plant evolution; contribute to biodiversity.
Adaptability	Seeds provide protection and adaptability to various environments.	Relatively less adaptability due to limited dispersal methods.
Reproductive Structures	Flowers, fruits, and cones.	Spores or specialized structures like rhizomes or runners.
Role of Water	Water is not always required for fertilization.	Often require water for the movement of reproductive cells.
Reproductive Efficiency	Efficient reproduction due to the production and dispersal of numerous seeds.	Less efficient reproduction with limited spore production or vegetative propagation.

Questions pg 72

- **Which type of reproduction involves the fusion of male and female gametes?**
- a) Sexual reproduction in flowering plants
- b) Asexual reproduction in flowering plants
- c) Seedless reproduction in plants
- d) None of the above

- **What is a characteristic of sexual reproduction in flowering plants?**
- a) Offspring are genetically identical to the parent plant.
- b) It does not require the involvement of pollinators.
- c) It results in increased genetic diversity.
- d) It only occurs in seed plants.

Questions pg 72

- **Which of the following is an example of asexual reproduction in flowering plants?**
- a) Production of seeds in angiosperms
- b) Formation of bulbs or tubers
- c) Pollination and fertilization
- d) Germination of seeds

- **Seed plants include which of the following groups?**
- a) Flowering plants and conifers
- b) Ferns and mosses
- c) Liverworts and gymnosperms
- d) Algae and lichens

Questions pg 72

- **What is the primary mode of reproduction in seed plants?**
- a) Spore dispersal
- b) Vegetative propagation
- c) Seed dispersal and germination
- d) Pollination and fertilization

- **Which type of reproduction contributes to increased genetic diversity and adaptation to changing environments?**
- a) Asexual reproduction in flowering plants
- b) Sexual reproduction in flowering plants
- c) Seedless reproduction in plants
- d) None of the above

- **What is the main advantage of sexual reproduction in flowering plants?**
- a) Rapid reproduction and colonization of new areas
- b) Production of genetically identical offspring
- c) Increased genetic diversity and adaptability
- d) Independence from pollinators

Reproduction and Growth of plants- U2M1L4 page 72

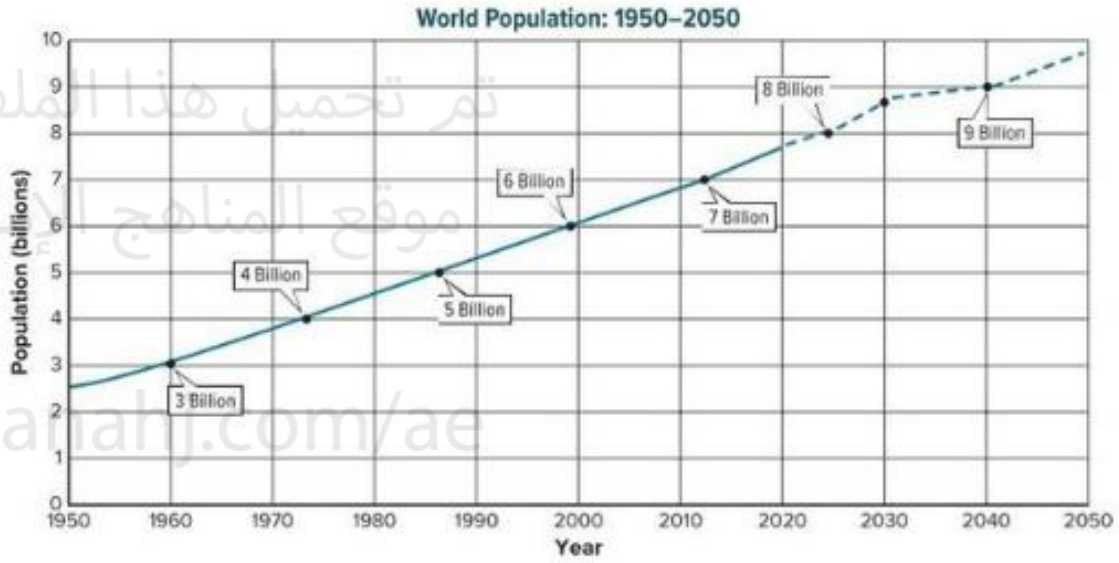
- **How do seed plants ensure adaptability to various environments?**
- a) Through spore production and dispersal
- b) Through vegetative propagation
- c) By producing seeds that can withstand different conditions
- d) By relying on pollinators for reproduction

- **What reproductive structures are unique to seed plants?**
- a) Flowers, fruits, and cones
- b) Spores and rhizomes
- c) Bulbs, tubers, and runners
- d) Mosses and liverworts

Impact on Land- U4M1L1 page 10

How does a growing population impact Earth?

Scientists estimate that there were about 300 million humans on Earth a thousand years ago. Today there are more than 7 billion humans on Earth, as shown below. By 2050, there could be over 9 billion.



PRACTICE QUESTIONS

- **How does a growing population impact land resources?**
- a) It leads to the depletion of natural resources.
- b) It increases the availability of land for agriculture.
- c) It has no effect on land resources.
- d) It decreases the demand for land resources.

- **Which of the following is a consequence of land resource depletion due to population growth?**
- a) Increased biodiversity and ecosystem health.
- b) Improved soil fertility and agricultural productivity.
- c) Loss of natural habitats and biodiversity.
- d) Decreased water scarcity and improved water quality

Impact on Land- U4M1L1 page 10

Typically as the human population increases, so does the consumption of natural resources. A **natural resource** is something from Earth that living things use to meet their needs. Every human being needs certain things, such as food, clean water, and shelter, to survive. As the human population grows, people need to build more houses and roads and clear more land for crops. Land itself is a resource. How does a growing population impact land as a resource?

PRACTICE QUESTIONS

- **What is the definition of land resources?**
- a) The availability of land for construction purposes
- b) The total area of land within a country's borders
- c) Natural resources found within the earth's crust
- d) The various features and capabilities of land that are valuable to humans

- **What does land use refer to?**
- a) The total area of land within a country's borders
- b) The process of converting agricultural land into urban areas
- c) The different ways in which land is utilized or managed
- d) The measurement of land productivity and fertility

Impact on Land- U4M1L1 page 21

Landfills and Hazardous Waste Land is also used when consumed products are thrown away. About 60 percent of our garbage goes into landfills. Some of these wastes are dangerous. Examine the table below to learn more about the impacts of landfills and hazardous waste.

Landfills	Hazardous Waste
	
About 34 percent of our trash is recycled and composted. About 11 percent is burned, and the remaining 55 percent is placed in landfills. Landfills are areas where trash is buried. Since many materials do not decompose in landfills, or they decompose slowly, landfills fill with garbage, and new ones must be built. Locating an acceptable area to build a landfill can be difficult. Type of soil, the depth to groundwater, and neighborhood concerns must be considered.	Some trash cannot be placed in landfills because it contains harmful substances that can affect soil, air, and water quality. This trash is called hazardous waste. The substances in hazardous waste also can affect the health of humans and other living things. Both industries and households generate hazardous waste. For example, hazardous waste from the medical industry includes used needles and bandages. Household hazardous waste includes used motor oil and batteries.

Pollution Runoff that contains chemicals from landfills, mineral mines, and agricultural fields can pollute and affect the quality of soil and water. **Pollution** is the contamination of the environment with substances that are harmful to life. Pollution can be devastating to many plant and animal species.

PRACTICE QUESTIONS

- **What is a landfill?**
- a) A facility where hazardous waste is safely stored
- b) A designated area where recyclable materials are collected
- c) A site for the disposal of solid waste in a controlled manner
- d) An underground storage facility for radioactive materials

- **Why is proper management of landfills important?**
- a) To prevent the formation of new landfills
- b) To maximize the production of renewable energy
- c) To minimize the release of harmful substances into the environment
- d) To promote the growth of plants and wildlife in landfill areas

PRACTICE QUESTIONS

- **What is hazardous waste?**
- a) Waste materials that are flammable or explosive
- b) Waste materials that are biodegradable and eco-friendly
- c) Waste materials that are easily recyclable
- d) Waste materials that pose a risk to human health or the environment

- **How can hazardous waste impact the environment?**
- a) By reducing air pollution and improving air quality
- b) By enhancing soil fertility and promoting plant growth
- c) By contaminating soil, water, and air with toxic substances
- d) By supporting the growth of beneficial bacteria and microorganisms

- **Which of the following is an example of hazardous waste?**
- a) Compostable food waste
- b) Plastic bottles for recycling
- c) Used batteries containing toxic chemicals
- d) Glass containers for reuse

Impact on Water- U4M1L2 page 25

Reduce, Reuse, Recycle Developed countries such as the United States use more natural resources than other regions. Ways to conserve resources include reducing the use of materials, and reusing and recycling materials.

Reusing an item means finding another use for it instead of throwing it away. Using material again is called recycling. When you recycle wastes such as glass, paper, plastic, steel, or tires, you help conserve Earth's land resources. You can use yard waste and vegetable scraps to make rich compost for gardening, reducing the need for synthetic fertilizers. Compost is a mix of decayed organic material, bacteria, other organisms, and small amounts of water. Reducing means limiting the amount used initially.

The human population explosion already has had an effect on the environment and the organisms that inhabit Earth. It's unlikely that the population will begin to decline in the near future. To make up for this, resources must be used wisely. Conserving resources by reducing, reusing, and recycling is an important way that you can make a difference.

PRACTICE QUESTIONS

- **Which of the following is an example of the "reduce" principle?**
- a) Throwing away plastic bottles after one use
- b) Buying single-use plastic utensils instead of reusable ones
- c) Using a refillable water bottle instead of buying disposable ones
- d) Purchasing new clothes frequently without considering the old ones

- **What does the "reuse" principle encourage?**
- a) Using items for a single purpose and then discarding them
- b) Repurposing or finding new uses for items to extend their lifespan
- c) Recycling materials to create new products
- d) Increasing consumption and buying more items than necessary

- **Which of the following is an example of the "recycle" principle?**
- a) Donating used clothes to a local charity
- b) Repairing a broken electronic device instead of buying a new one
- c) Sorting and separating waste into different recycling bins
- d) Throwing away plastic bottles in the regular trash bin

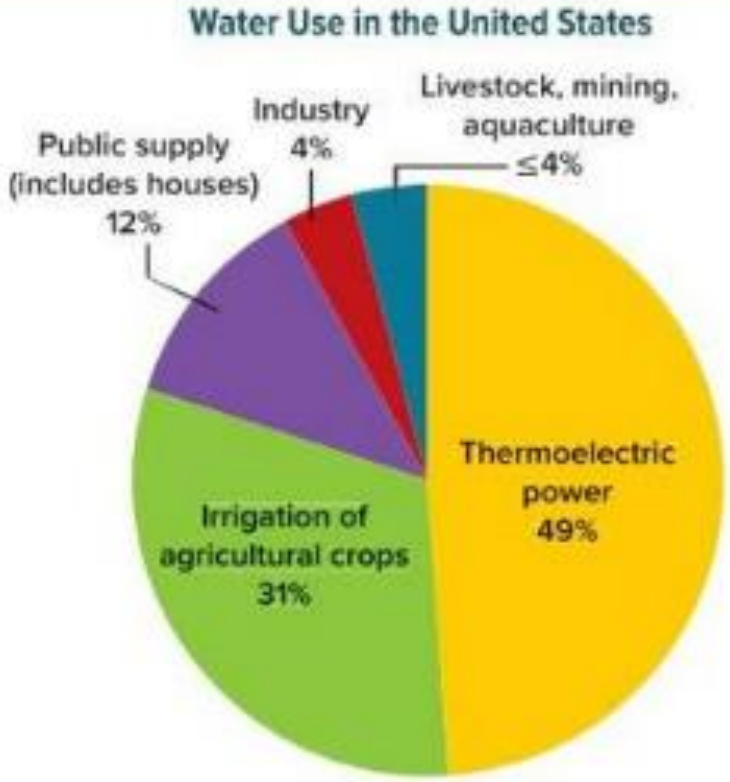
PRACTICE QUESTIONS

- **How does practicing the "reduce, reuse, and recycle" principles benefit the environment?**
- a) It increases pollution and waste generation
- b) It conserves natural resources and reduces landfill waste
- c) It promotes excessive consumption and resource depletion
- d) It has no impact on the environment

- **Which of the following is an example of recycling?**
- a) Donating old books to a local library
- b) Repurposing glass jars for storage containers
- c) Composting organic waste for fertilizing gardens
- d) Melting plastic bottles to create new plastic products

Impact on Water-U4M1L2 page 39

Human Water Usage As the human population increases, so does its impact on water usage. Humans also use water in ways that other organisms do not. People wash cars, do laundry, and use water for agriculture, recreation, and transportation. Household activities, however, make up only a small part of human water use. As shown to the right, most water in the United States is used by power plants. The water is used to generate electricity and to cool equipment. The use of water as a resource impacts the environment in many different ways.



PRACTICE QUESTIONS

- **Which of the following activities uses the largest amount of water in households?**
- a) Showering and bathing
- b) Flushing toilets
- c) Washing dishes
- d) Watering the garden

- **How can individuals reduce their water usage in daily life?**
- a) Taking longer showers to save water
- b) Leaving the tap running while brushing teeth
- c) Fixing leaks and dripping faucets
- d) Watering the garden during peak sunlight hours

- **What is the main cause of water scarcity in many regions?**
- a) Insufficient rainfall
- b) Excessive water conservation efforts
- c) Industrial water usage
- d) Inefficient irrigation practices

PRACTICE QUESTION

- **What is the purpose of water conservation?**
- a) To increase water consumption rates
- b) To ensure an unlimited supply of water for future generations
- c) To deplete natural water sources
- d) To promote water pollution

- **What is the approximate percentage of Earth's freshwater available for human use?**
- a) 50%
- b) 25%
- c) 10%
- d) 1%

Inheritance-U2M1L1 page 10

- Phenotype:

Phenotype refers to the observable characteristics or traits of an organism, which are the result of both genetic and environmental factors.

- Examples of Phenotypic Traits:
- 1. Physical traits: Eye color, hair color, height, skin color, etc.

- . Factors Influencing Phenotype:
- 1. Genetic factors: Inherited traits determined by genes passed down from parents.
- 2. Environmental factors: External factors such as nutrition, exposure to sunlight, climate, and lifestyle choices.

Inheritance-U2M1L1 page 10

- Heredity is the process by which traits are passed from parents to offspring through the transmission of genetic information.

Questions

- **Which of the following best defines phenotype?**
- a) The genetic factors that determine an organism's traits.
- b) The observable characteristics of an organism influenced solely by environmental factors.
- c) The observable characteristics of an organism influenced by both genetic and environmental factors.
- d) The process by which traits are passed from parents to offspring.

- **Which of the following is an example of a phenotypic trait?**
- a) The presence of a specific gene in an organism.
- b) The inherited eye color of an individual.
- c) The genetic information passed down from parents.
- d) The interaction between an organism and its environment.

Questions

- **What influences an organism's phenotype?**
- a) Only genetic factors inherited from parents.
- b) Only environmental factors like nutrition and climate.
- c) Both genetic factors and environmental factors.
- d) Random variations occurring during the organism's development.

- **Which of the following is an example of an environmental factor that can influence phenotype?**
- a) The genetic makeup inherited from parents.
- b) The presence of specific genes responsible for a trait.
- c) Exposure to sunlight during the organism's development.
- d) The segregation of alleles during gamete formation.

Types of Reproduction-U2M1L2 page 39

Three-Dimensional Thinking

2. A tree produces seeds in pods when wind-borne pollen from another tree of the same species reaches the flowers. Each seed contains genetic information so the seed can grow into an adult tree. Which do you predict would be the effect of this process?

A The tree produces a large number of genetically diverse offspring.

B The tree produces a large number of genetically identical offspring.

C The tree produces a small number of offspring that are identical to the female parent.

D The tree produces a small number of offspring that are identical to the male parent.

Hydras are organisms that live in freshwater environments. They have a tubelike body and a mouth at one end. Around the mouth are stinging tentacles that help to capture food. Depending on the conditions, hydras can reproduce sexually or asexually.

3. Based on your observations, which statement best explains what is happening to the hydra in the figure above?

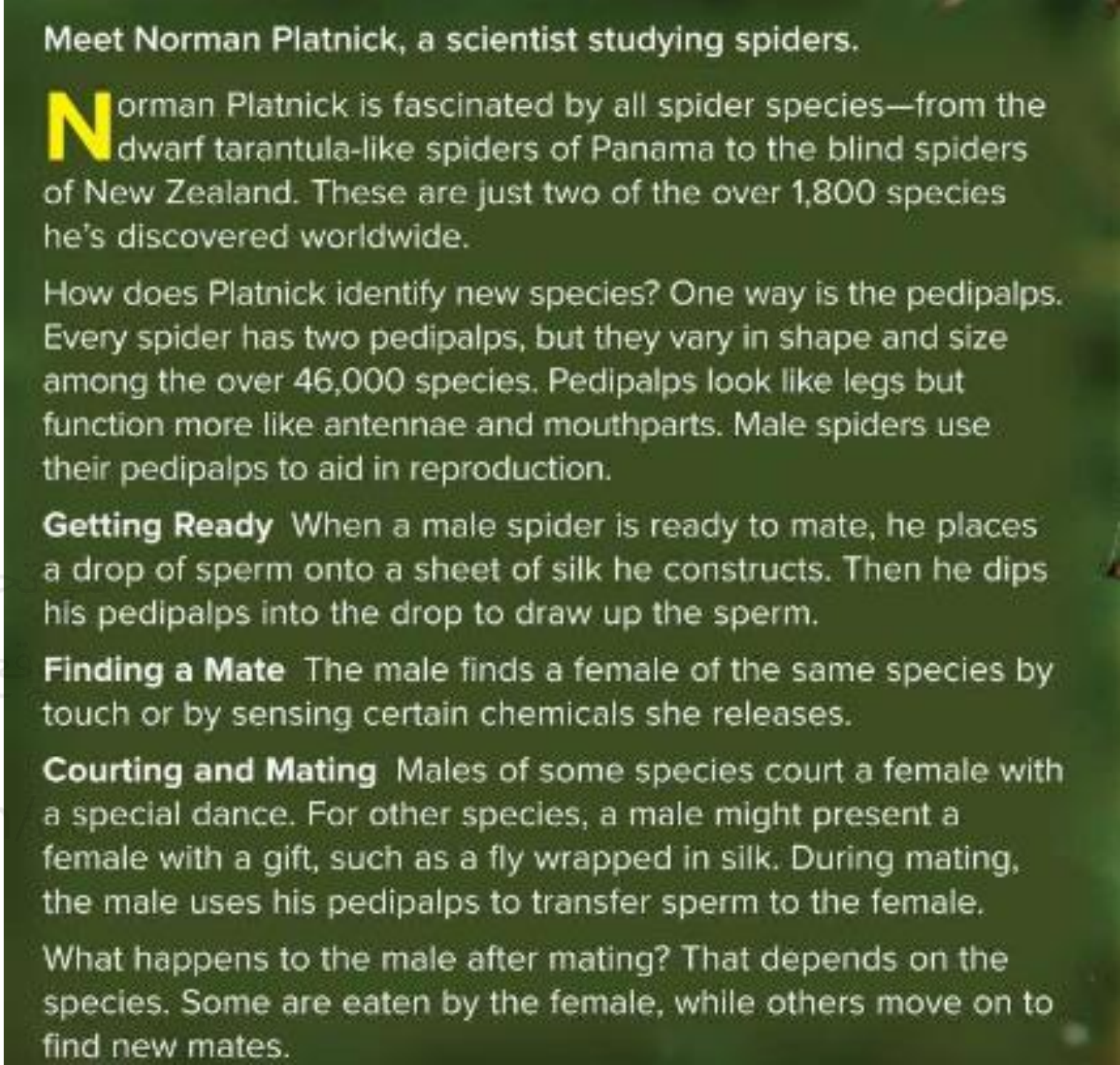
A The hydra is reproducing asexually by budding a new hydra.

B The hydra is reproducing asexually by splitting in two.

C The hydra is reproducing sexually by grafting to another hydra.

D The hydra is reproducing sexually by releasing sex cells into the water.

Reproduction and Growth of Animals- U2M1L3 page 50



Meet Norman Platnick, a scientist studying spiders.

Norman Platnick is fascinated by all spider species—from the dwarf tarantula-like spiders of Panama to the blind spiders of New Zealand. These are just two of the over 1,800 species he's discovered worldwide.

How does Platnick identify new species? One way is the pedipalps. Every spider has two pedipalps, but they vary in shape and size among the over 46,000 species. Pedipalps look like legs but function more like antennae and mouthparts. Male spiders use their pedipalps to aid in reproduction.

Getting Ready When a male spider is ready to mate, he places a drop of sperm onto a sheet of silk he constructs. Then he dips his pedipalps into the drop to draw up the sperm.

Finding a Mate The male finds a female of the same species by touch or by sensing certain chemicals she releases.

Courting and Mating Males of some species court a female with a special dance. For other species, a male might present a female with a gift, such as a fly wrapped in silk. During mating, the male uses his pedipalps to transfer sperm to the female.

What happens to the male after mating? That depends on the species. Some are eaten by the female, while others move on to find new mates.

Reproduction and Growth of Animals- U2M1L3 page 50

PRACTICE QUESTIONS

- **What is the purpose of the mating dance performed by male spiders?**
- a) To find food
- b) To attract prey
- c) To communicate with other spiders
- d) To attract a female mate

- **How do male spiders typically communicate their interest to female spiders during the mating dance?**
- a) By making loud vocal sounds
- b) By releasing a strong scent
- c) By performing a specific pattern of movements
- d) By offering food as a gift

PRACTICE QUESTIONS

Q. Which of the following statements is true about spider mating dances?

- a) Only female spiders perform the mating dance.
- b) The mating dance is performed by spiders of all species.
- c) The mating dance is primarily performed by male spiders.
- d) The mating dance is a solitary behavior and not influenced by other spiders.

- **Q. What is the primary purpose of a male spider using its pedipalps and gifting behavior, such as offering a fly wrapped in silk, during courtship?**

- a) To protect itself from predators
- b) To build a nest for the female spider
- c) To ensure successful mating and reproductive success
- d) To mark its territory and establish dominance over other males

Reproduction and Growth of Animals- U2M1L3 page 63

Three-Dimensional Thinking

In order to attract a mate, male peacocks fan out their colorful feathers and dance. Females tend to choose males that have larger displays of feathers and feathers with more eyespots. The peahen then builds her nest by scraping a hole in the ground in a hidden area. Once the chicks hatch, the peahen stays close to them, teaching them what foods to eat and defending them from predators.

2. Which of the following is a courtship behavior that increases the probability of successful reproduction for the peacock?

A fanning feathers
B nest building
C protecting from predators
D all of the above

Reproduction and Growth of Animals- U2M1L3 page 63

Observe the hamsters' environment below.

3. Which of the following is NOT an environmental factor that would affect the hamsters' growth?

A the amount of food the hamster is given
B gene for fur color
C the amount of time spent on the exercise wheel
D interactions with other hamsters

Impact on Land- U4M1L1 page 14

ENVIRONMENTAL Connection Next, research how cutting old growth forests of North America's Pacific Northwest impacts the northern spotted owl and ultimately the biodiversity and viability of this natural system. Record your findings below.

Humans are cutting down forests for resources. More resources are needed as populations increase. Cutting down forests results in the destruction of habitats. If a species depends on a certain environment to live successfully, and that environment is destroyed, the species will not flourish. This results in a decline of the species and throws off the balance of the ecosystem.

Impact on Land- U4M1L1 page 14

Impact of Deforestation As you calculated in the previous activity, a significant amount of forests have been reduced globally. An increased need for resources produced by trees, or the land on which the trees grow, has led to a decrease in the amount of forests.

What's the impact? Deforestation leads to loss of animal habitats, which can lead to the endangerment or extinction of a species. In tropical rain forests—complex ecosystems that can take hundreds of years to replace—deforestation is a serious problem. Tropical rain forests are home to an estimated 50 percent of all species on Earth.

In addition, deforestation affects the atmosphere. Trees remove carbon dioxide from the atmosphere during photosynthesis. Rates of photosynthesis decrease when large areas of trees are cut down, and more carbon dioxide remains in the atmosphere.

People also clear land for development and agriculture. Let's investigate the impact of agriculture on land resources.

PRACTICE QUESTIONS

- **What is the main environmental impact of deforestation?**
- a) Increased biodiversity and ecosystem health
- b) Improved air quality and reduced pollution
- c) Loss of habitats and decreased species diversity
- d) Enhanced soil fertility and agricultural productivity

- **How does deforestation contribute to climate change?**
- a) By increasing the absorption of carbon dioxide by trees
- b) By promoting the growth of new forests in cleared areas
- c) By releasing large amounts of carbon dioxide into the atmosphere
- d) By reducing the greenhouse gas emissions from the land

PRACTICE QUESTIONS

- **Which of the following is a social impact of deforestation?**
- a) Increased availability of land for farming and development
- b) Preservation of indigenous cultures and traditions
- c) Improved access to clean water and sanitation
- d) Displacement of local communities and loss of livelihoods

- **How does deforestation affect water resources?**
- a) By reducing the risk of floods and soil erosion
- b) By increasing water pollution and decreasing water quality
- c) By replenishing groundwater reserves and aquifers
- d) By promoting the growth of aquatic ecosystems

- **What is one way to address the impacts of deforestation?**
- a) Increasing logging activities for economic growth
- b) Promoting sustainable forestry practices and reforestation
- c) Encouraging rapid urbanization and infrastructure development
- d) Ignoring the issue and focusing on other environmental concerns

Impact on Water- U4M1L2 page 41

Changing the Flow of Surface Water People worldwide depend on sources of freshwater for their water supplies. Another method to obtain water is through dams. Streams and rivers are often dammed to create reservoirs that store water.

The large concrete structure shown to the right is the Hoover Dam in Nevada. The dam was built to control water flow and flooding along the Colorado River. Notice the large reservoir, Lake Mead, behind the dam. Freshwater from Lake Mead is used for recreational purposes, drinking water, irrigation, and hydroelectric power.

But dams can also have negative consequences on the environment and the biodiversity of ecosystems around the river. Dams can increase the rate of erosion along the banks of the streams. They also act as a geographic barrier for migratory fish. Because of dams, some rivers, such as the Colorado River, are nearly dry before they reach the ocean.

PRACTICE QUESTIONS

- **What is the process of altering the natural flow of surface water called?**
- a) Erosion
- b) Flooding
- c) Diversion
- d) Filtration

- **Which of the following is an example of human activities that can change the flow of surface water?**
- a) Planting trees along riverbanks
- b) Building dams and reservoirs
- c) Allowing natural wetlands to flourish
- d) Implementing water conservation practices

- **How can changing the flow of surface water impact ecosystems?**
- a) By improving biodiversity and species habitats
- b) By reducing the risk of flooding and erosion
- c) By disrupting aquatic ecosystems and habitats
- d) By promoting the growth of native vegetation

PRACTICE QUESTIONS

- **What is the primary purpose of diverting surface water?**
- a) To ensure a constant supply of water for agricultural irrigation
- b) To maintain healthy water levels in rivers and lakes
- c) To prevent pollution of water sources
- d) To enhance recreational opportunities for communities

- **What are some potential consequences of altering the flow of surface water?**
- a) Improved water quality and reduced sedimentation
- b) Increased risk of water shortages and droughts
- c) Enhanced natural filtration processes
- d) Preservation of natural water cycles and hydrological balance

Impact on the atmosphere-U4M1L3 page 66

CFCs In the 1970s, scientists suggested that CFCs could destroy ozone in the upper atmosphere. Studies revealed a thinning of the ozone layer, particularly over Antarctica.

All of the CFCs in the atmosphere are a result of human activity. CFCs are released from products such as old refrigerators and air conditioners, and propellants in aerosol cans. Ozone in the upper atmosphere absorbs harmful UV rays from the Sun. CFCs react with sunlight and destroy ozone molecules. As a result, the ozone layer thins and more UV rays reach Earth's surface. This, in turn, can harm the tissues of plants and animals.

While CFCs indirectly harm organisms, another form of pollution has a direct effect on Earth's biosphere. Let's explore.

PRACTICE QUESTIONS

- **What is the primary environmental impact of CFCs?**
- a) Depletion of the ozone layer
- b) Acid rain formation
- c) Global warming
- d) Soil erosion

- **How do CFCs contribute to the depletion of the ozone layer?**
- a) By trapping heat in the atmosphere
- b) By releasing greenhouse gases
- c) By breaking down ozone molecules
- d) By causing deforestation

- **What are some of the negative consequences of ozone layer depletion?**
- a) Increased risk of skin cancer and eye damage
- b) Improved air quality and reduced pollution
- c) Enhanced agricultural productivity
- d) Preservation of biodiversity

Impact on the atmosphere-U4M1L3 page 66

- Impact on the atmosphere-U4M1L3 page 66

How would you describe the atmosphere in the above locations? What might cause the differences you observed?

The air appears clear in the photo on the left, and smoky in the photo on the right; dust and smoke from industrial processes.

Particulate Matter The mix of both solid and liquid particles in the air is called **particulate matter.** Solid particles include smoke, dust, and dirt. These particles enter the air from natural processes, such as volcanic eruptions and forest fires. Human activities, such as burning fossil fuels at power plants and in vehicles, also release particulate matter. Inhaling particulates can cause asthma, bronchitis, and lead to heart attacks. It can also interfere with the processes of cellular respiration and photosynthesis in plants.

PRACTICE QUESTIONS

- **What is particulate matter?**
- a) Tiny solid particles found in the air
- b) Chemical gases emitted from factories
- c) Microorganisms present in soil
- d) Sediments found in bodies of water

- **How can particulate matter affect human health?**
- a) It has no impact on human health
- b) It can cause respiratory problems and lung damage
- c) It enhances the immune system and prevents diseases
- d) It promotes healthy skin and hair growth

Impact on the atmosphere- U4M1L3 page 68

How would you describe the state of the trees in the two photos?

Students should note that the trees appear dead or in poor health in the photo on the right.

Acid Precipitation The trees you observed above were affected by acid precipitation. **Acid precipitation** is rain or snow that has a lower pH than that of normal rainwater. The pH of normal rainwater is about 5.6.

Acid precipitation forms when gases containing nitrogen and sulfur react with water, oxygen, and other chemicals in the atmosphere. Although volcanoes and marshes add sulfur gases to the atmosphere, burning fossil fuels is a major source of sulfur emissions. Acid rain can pollute soil and harm trees and other plants. When it falls into lakes and rivers, it can harm fish and other organisms. Many living things cannot survive if the pH of water or soil becomes too low.

Now that you understand the causes and effects of acid precipitation, see if your region experiences this type of air pollution. In the following lab, you will test the rainwater around your home.

PRACTICE QUESTIONS

- **What is acid precipitation?**
- a) Rainfall that is slightly acidic in nature
- b) Rainfall that contains high amounts of carbon dioxide
- c) Rainfall that is polluted by chemical emissions
- d) Rainfall that occurs in areas with high humidity

- **What is the primary cause of acid precipitation?**
- a) Industrial emissions releasing sulfur dioxide and nitrogen oxides
- b) Natural volcanic activity
- c) Excessive deforestation
- d) Increased sunlight exposure

- **How does acid precipitation affect the environment?**
- a) It improves soil fertility and promotes plant growth
- b) It enhances the biodiversity of aquatic ecosystems
- c) It damages forests, soils, and aquatic habitats
- d) It reduces air pollution and improves air quality

Impact on climate-U4M1L4 page 86

Scientific Consensus As you just investigated in *For the Record,* temperature records show that Earth is getting warmer. Climate scientists have been studying this change and the possible causes of it. Studies show that these changes are due to an increase in greenhouse gases in Earth's atmosphere.

What are greenhouse gases and how do they affect climate?

Gases in the atmosphere that absorb Earth's outgoing infrared radiation are called **greenhouse gases.** Carbon dioxide (CO_2) is an important greenhouse gas. Other greenhouse gases include methane (CH_4) and nitrous oxide (N_2O). What is happening to greenhouse gas concentrations in the atmosphere?

PRACTICE QUESTIONS

- **What are greenhouse gases?**
- a) Gases released during volcanic eruptions
- b) Gases emitted from factories and vehicles
- c) Gases produced by burning fossil fuels
- d) Gases that trap heat in the Earth's atmosphere

- **How do greenhouse gases impact the environment?**
- a) They promote the growth of plants and trees
- b) They reduce air pollution and improve air quality
- c) They cause global warming and climate change
- d) They contribute to the depletion of the ozone layer

PRACTICE QUESTIONS

- **Which of the following is a greenhouse gas?**
- a) Oxygen (O2)
- b) Nitrogen (N2)
- c) Carbon dioxide (CO2)
- d) Hydrogen (H2)

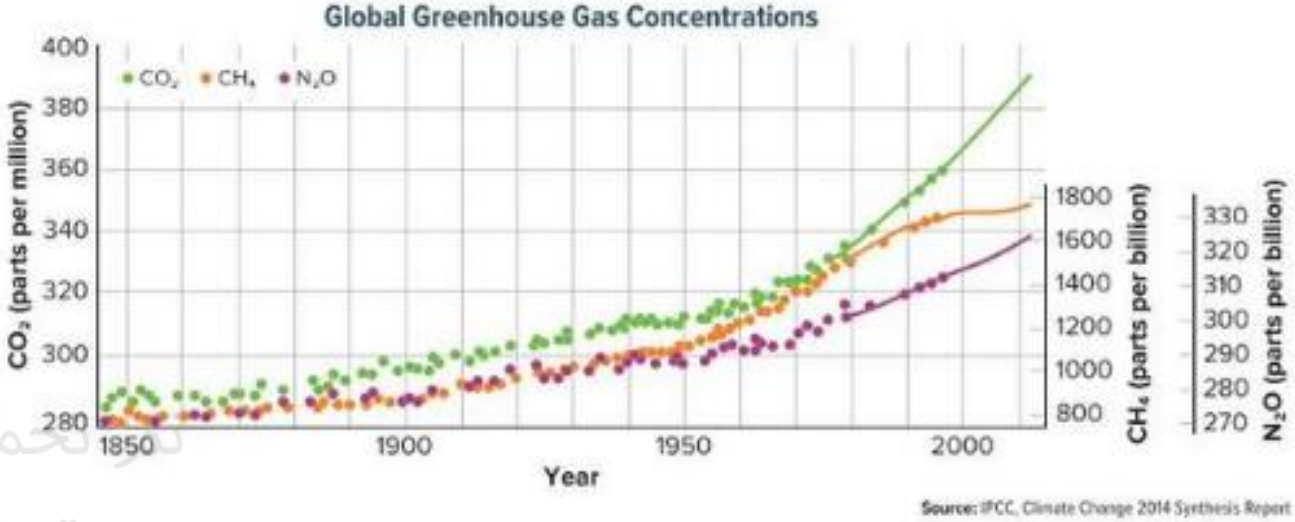
- **What is the primary source of greenhouse gas emissions?**
- a) Natural geological processes
- b) Volcanic activity
- c) Human activities, such as burning fossil fuels
- d) Emissions from plants and trees

- **What are the consequences of increased greenhouse gas emissions?**
- a) Reduced biodiversity and species extinction
- b) Enhanced soil fertility and agricultural productivity
- c) Rising sea levels and more frequent extreme weather events
- d) Improved water quality and increased availability

Impact on climate- U4M1L4 page 86

Greenhouse Gases

Study the graph of atmospheric greenhouse gas levels determined from ice core data (dots) and from direct atmospheric measurements (lines).



Source: IPCC, Climate Change 2014 Synthesis Report

1. What has happened to the levels of CO_2, CH_4, and N_2O in the atmosphere over the last century?

Over the recent past, globally averaged greenhouse gas concentrations in the atmosphere have increased.

2. What is one question that you have about the data? Record your question in your Science Notebook.

Inheritance-U2M1L1 page 13

Reappearing Traits

When Mendel cross-pollinated two hybrid plants with purple flowers, some of the offspring had white flowers. This trait was absent in the first generation but always reappeared in the second generation.

PRACTICE QUESTIONS

- **What are reappearing traits?**
- a) Traits that appear only in certain individuals
- b) Traits that are inherited from both parents
- c) Traits that skip a generation
- d) Traits that manifest in multiple generations

- **Which of the following is an example of a reappearing trait?**
- a) Eye color in humans
- b) Ability to swim in fish
- c) Feather color in birds
- d) Photosynthesis in plants

Inheritance- U2M1L1 page 13

Look Both Ways Before Crossing the Seed

Mendel counted and recorded the traits of offspring from many experiments in which he cross-pollinated hybrid plants. Data from these experiments are shown below.

Results of Hybrid Crosses

Characteristic of Hybrid Parent	Trait and Number of Offspring	Trait and Number of Offspring	Trait Comparison
Flower Color (purple x purple)	 Purple 705	 White 224	$\frac{705}{224} = \frac{3.15}{1}$
Seed Color (yellow x yellow)	 Yellow 6,022	 Green 2,001	$\frac{6,022}{2,001} = \frac{3.01}{1}$
Seed Shape (round x round)	 Round 5,474	 Wrinkled 1,850	$\frac{5,474}{1,850} = \frac{2.96}{1}$
Pod Shape (smooth x smooth)	 Smooth 882	 Bumpy 299	$\frac{882}{299} = \frac{2.95}{1}$

1. **MATH Connection** Calculate the relationship of purple to white flowers, yellow to green seeds, round to wrinkled seeds, and smooth to bumpy pods by dividing the higher number by the lower number. Record the answers in the table above.

2. What patterns do you notice in Mendel's data?

Students should notice that in each comparison, one trait is seen approximately three times more often than the other.

Inheritance- U2M1L1 page 15

What controls traits?

When other scientists studied the parts of a cell and combined Mendel's work with their work, Mendel's factors were more clearly understood. Scientists discovered that inside each cell is a nucleus that contains threadlike structures called chromosomes. Over time, scientists learned that chromosomes contain genetic information that controls traits. We now know that Mendel's "factors" are parts of chromosomes and that each cell in offspring contains chromosomes from both parents. These chromosomes exist as pairs—one chromosome from each parent.

Scientists have discovered that each chromosome can have information about hundreds or even thousands of traits.

- A **gene** (JEEN) is a section on a chromosome that has genetic information for one trait. The genes on each chromosome can be the same or different, such as purple or white for pea flower color.
- The different forms of a gene are called **alleles** (uh LEELs).
- The two alleles that control the phenotype of a trait are called the trait's **genotype.**

Scientists use symbols to represent the alleles in a genotype, as shown in the table below. In genetics, uppercase letters represent dominant alleles and lowercase letters represent recessive alleles. The table shows the possible genotypes for both round and wrinkled seeds phenotypes.

PRACTICE QUESTIONS

- **What is a genotype?**
- a) The physical expression of a trait
- b) The genetic makeup of an organism
- c) The observable characteristics of an organism
- d) The study of inheritance patterns

- **What is a trait?**
- a) The genetic material found in the nucleus of a cell
- b) The combination of alleles that determines a specific characteristic
- c) The physical features or characteristics of an organism
- d) The process of passing on genetic information from one generation to the next

PRACTICE QUESTIONS

- **What are Mendelian factors?**
- a) Genes that are passed on from parents to offspring
- b) Environmental factors that influence traits
- c) The process of DNA replication
- d) Mutations that occur during genetic recombination

- **What is an allele?**
- a) A specific form of a gene
- b) The combination of genes in an organism
- c) The physical appearance of a trait
- d) The process of genetic mutation

- **How many alleles does an organism inherit for each trait?**
- a) One allele from one parent
- b) Two alleles from one parent
- c) One allele from each parent
- d) Three alleles from each parent

Inheritance- U2M1L1 page 15

Scientists use symbols to represent the alleles in a genotype, as shown in the table below. In genetics, uppercase letters represent dominant alleles and lowercase letters represent recessive alleles. The table shows the possible genotypes for both round and wrinkled seeds phenotypes.

Phenotype and Genotype			
Phenotypes (observed traits)	 **Round**		 **Wrinkled**
Genotypes (alleles of a gene)	Homozygous dominant (*RR*)	Heterozygous (*Rr*)	Homozygous recessive (*rr*)

A round seed can have two genotypes—*RR* and *Rr*. Both genotypes have a round phenotype. A wrinkled seed can have only one genotype—*rr*.

- When the two alleles of a gene are the same, its genotype is **homozygous.**
- Both *RR* and *rr* are homozygous genotypes.
- If the two alleles of a gene are different, its genotype is **heterozygous.**
- *Rr* is a heterozygous genotype.

PRACTICE QUESTIONS

- **<u>What does it mean for an organism to be homozygous?</u>**
- a) It has two different alleles for a specific trait.
- b) It has two identical alleles for a specific trait.
- c) It has no alleles for a specific trait.
- d) It has three alleles for a specific trait.

- **<u>What does it mean for an organism to be heterozygous?</u>**
- a) It has two identical alleles for a specific trait.
- b) It has two different alleles for a specific trait.
- c) It has no alleles for a specific trait.
- d) It has three alleles for a specific trait.

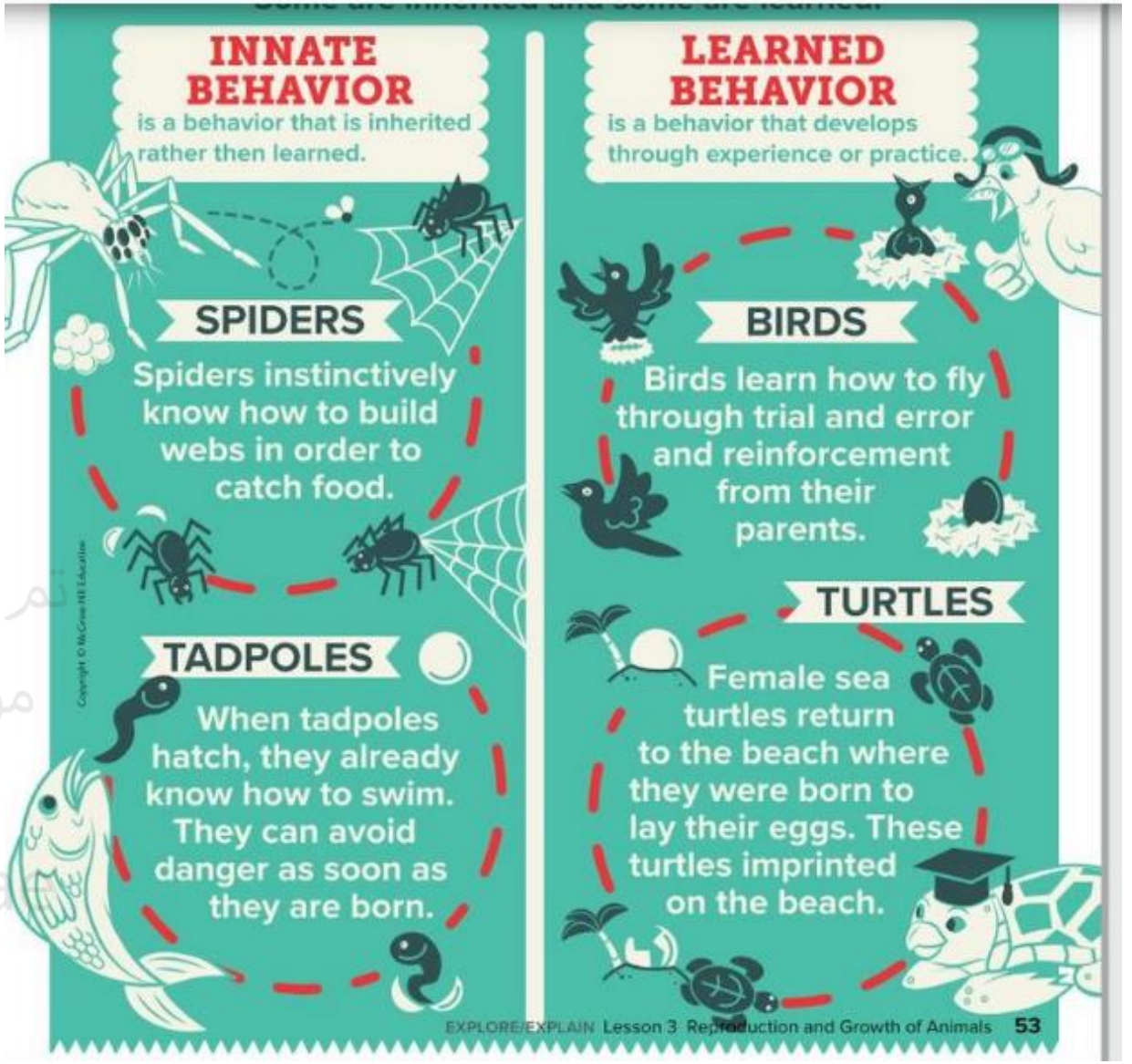
PRACTICE QUESTIONS

- **Which of the following is an example of a homozygous genotype?**
- a) Aa
- b) BB
- c) AB
- d) ABBA

- **Which of the following is an example of a heterozygous genotype?**
- a) AA
- b) CC
- c) TT
- d) Bb

- **What is the difference between homozygous and heterozygous genotypes?**
- a) Homozygous has more alleles than heterozygous.
- b) Homozygous has two different alleles, while heterozygous has two identical alleles.
- c) Homozygous has two identical alleles, while heterozygous has two different alleles.
- d) Homozygous and heterozygous have the same genotype.

Reproduction and Growth of Animals- U2M1L3 page 53



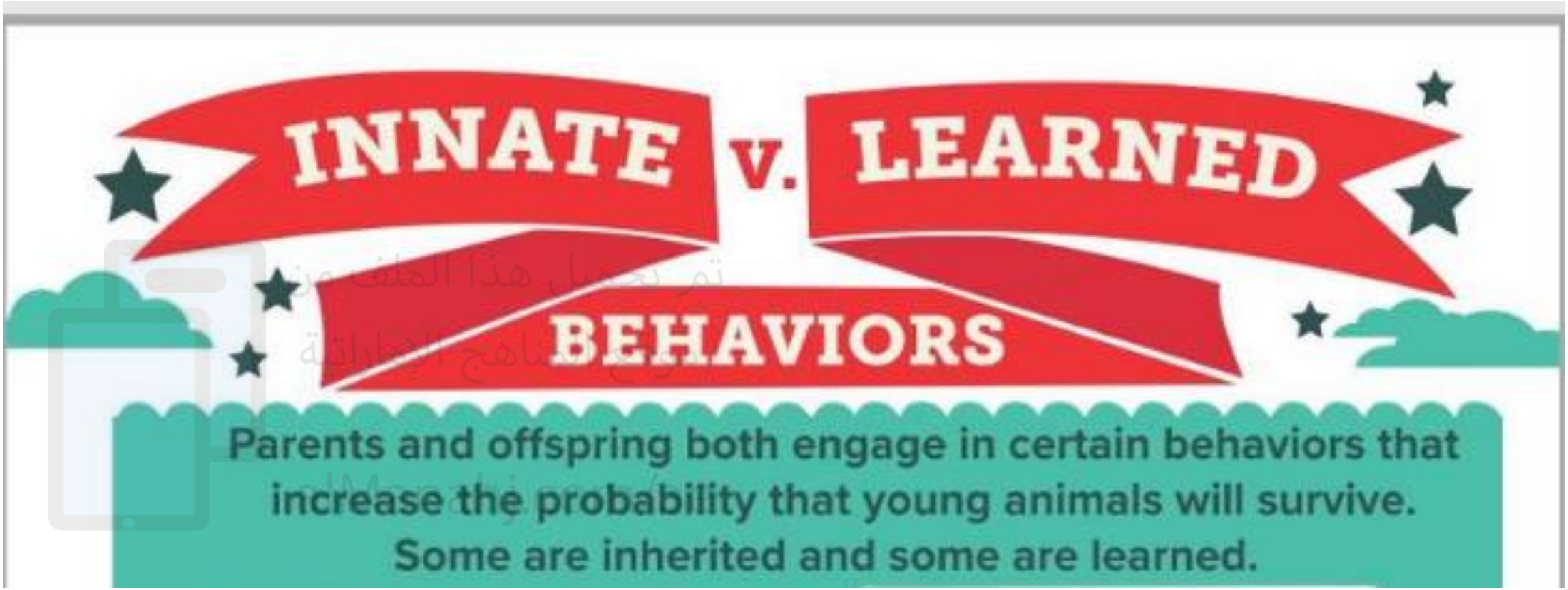
PRACTICE QUESTIONS

- **What are innate behaviors?**
- a) Behaviors that are inherited and present at birth
- b) Behaviors that are learned through experience
- c) Behaviors that are acquired from other individuals
- d) Behaviors that are influenced by the environment

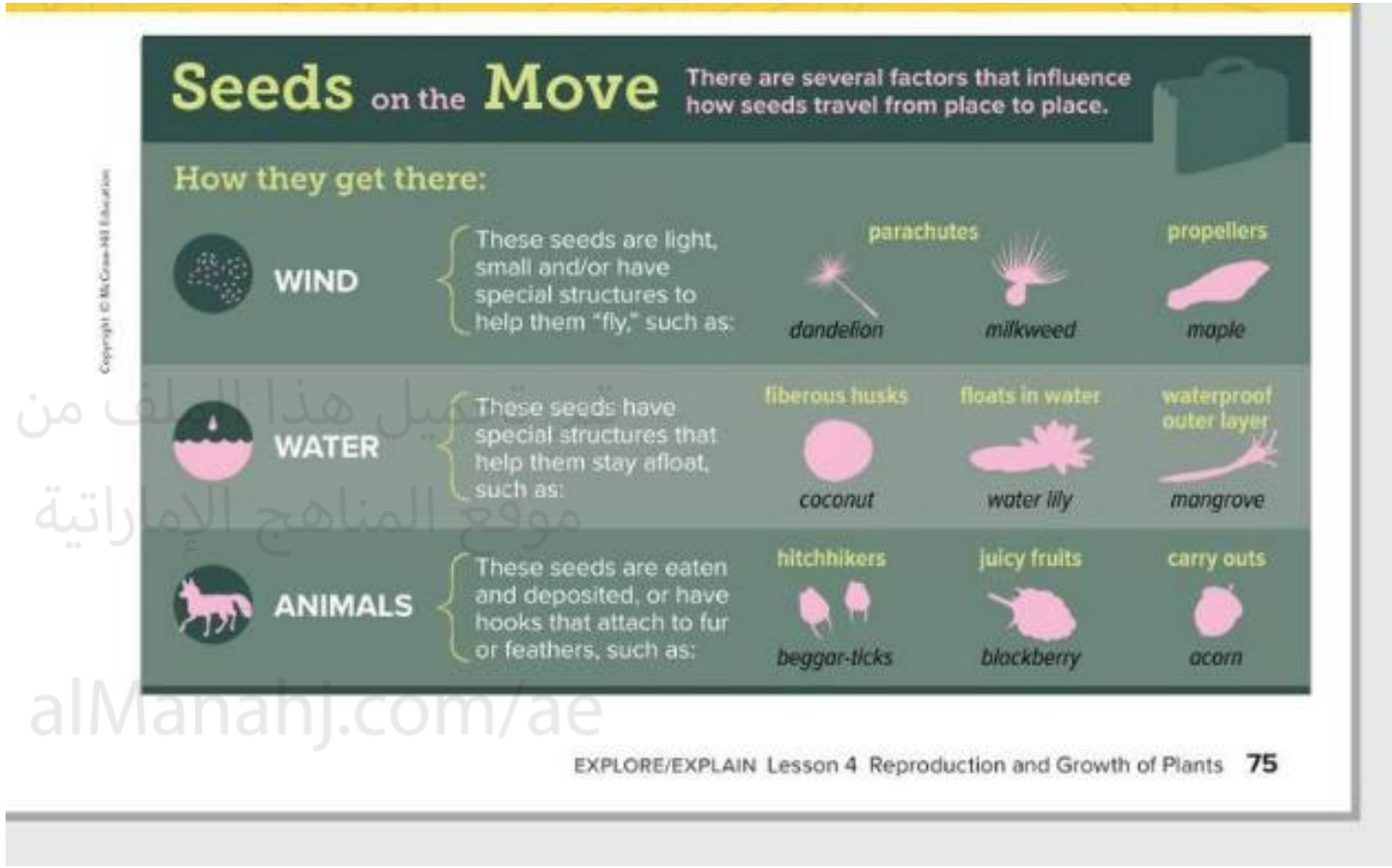
- **Which of the following is an example of an innate behavior?**
- a) Riding a bicycle
- b) Speaking a language
- c) Flying south for the winter
- d) Solving a math problem

- **What are learned behaviors?**
- a) Behaviors that are inherited from parents
- b) Behaviors that are instinctual and automatic
- c) Behaviors that are acquired through experience and practice
- d) Behaviors that are genetically determined

Reproduction and Growth of Animals-U2M1L3 page 53



Reproduction and Growth of plants-U2M1L4 page 75



PRACTICE QUESTIONS

- **What is pollination?**
- a) The process of transferring pollen from the stigma to the anther
- b) The process of transferring pollen from the anther to the stigma
- c) The process of transferring seeds from one plant to another
- d) The process of transferring nutrients from the soil to the plant

- **Which of the following is the primary agent of pollination in most flowering plants?**
- a) Wind
- b) Water
- c) Insects
- d) Birds

- **What is self-pollination?**
- a) The transfer of pollen between flowers of the same plant
- b) The transfer of pollen between flowers of different plants
- c) The transfer of pollen by wind or water
- d) The transfer of seeds by animals

PRACTICE QUESTIONS

- **What is cross-pollination?**
- a) The transfer of pollen between flowers of the same plant
- b) The transfer of pollen between flowers of different plants
- c) The transfer of pollen by wind or water
- d) The transfer of seeds by animals

- **Why is pollination important for plants?**
- a) It helps plants absorb nutrients from the soil
- b) It helps plants grow taller and stronger
- c) It allows for the production of seeds and fruits
- d) It protects plants from diseases and pests