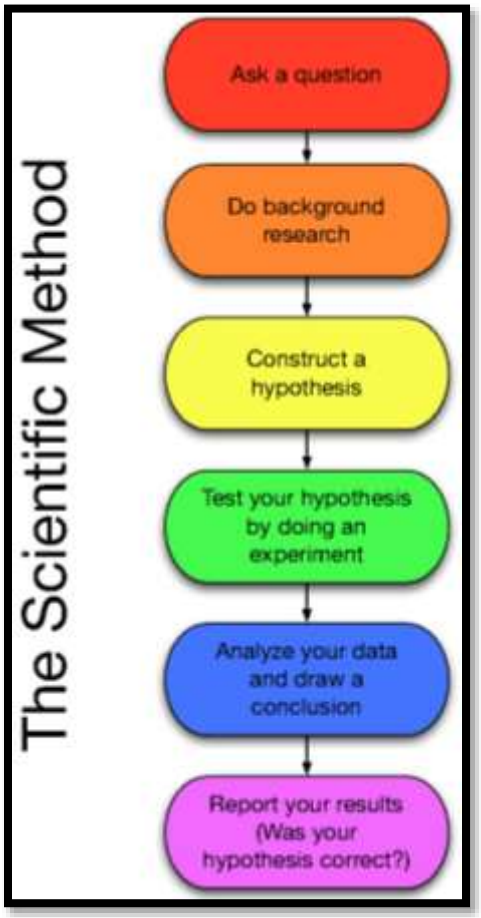
CHAPTER 1 – BUILDING A BETTER SCIENTIST

- **LESSON 1 – BECOMING A SCIENTIST**

Vocabulary:

Science	Way of learning about natural world
Observation	Using 1 or more of your senses to learn about something
Inference	Conclusion you form from the information you have
Controlled Experiment	An investigation where you change 1 factor and observe the effects.
Model	How you represent an object
Independent Variable	What you change in an experiment
Dependent Variable	What you are measuring in an experiment
Scientific Theory	To explain something that is happening again and again in the natural world
Scientific Law	A rule that explains a pattern happening in the natural world.
Technology	Practical use of science



Scientific inquiry starts with an observation.

When you see something in the world you start asking WHY?

Then you research and try to find out the answers.

You collect lots of information and then study your results.

You make a conclusion at the end from all your information.

Scientific Investigation is a way to answer some scientific questions.

When you carry out an investigation you want to find out about how different things effect 1 thing. So you carry out an EXPERIMENT.

Controlled Experiment is an investigation where you change 1 factor and observe the results.

Variables in an investigation are factors that you are changing and searching the cause and effect relationships.

When an experiment is completed by 1 scientist, other scientists will do the same experiment and check the results.

Meetings are held to discuss all the results.

Technology has helped humans and science develop and improve.

Transportation technology has allowed humans to travel quickly from one place to another.

Communication technology allows humans to communicate with others quickly.

Science has many branches. Life science, Earth Science, Physical science, Chemistry.

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Why is it important for scientists to communicate their findings to others?

It allows other scientists to know their findings and use them to answer other questions**.**

What types of things are important for the scientist to communicate?

The results of the investigation and the how the investigation was carried out, the methods that were used

What are some ways that scientists communicate with others?

Publishing their findings in scientific journals, presenting their research at conferences

What might happen if scientists did not communicate their findings?

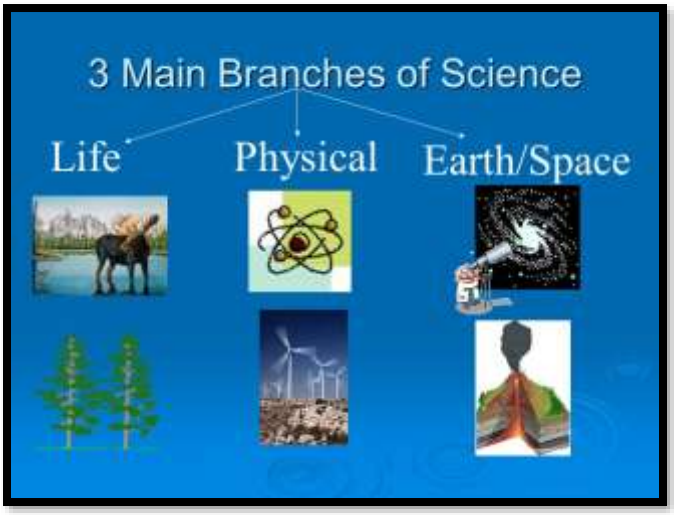
Other scientists would not know about the findings

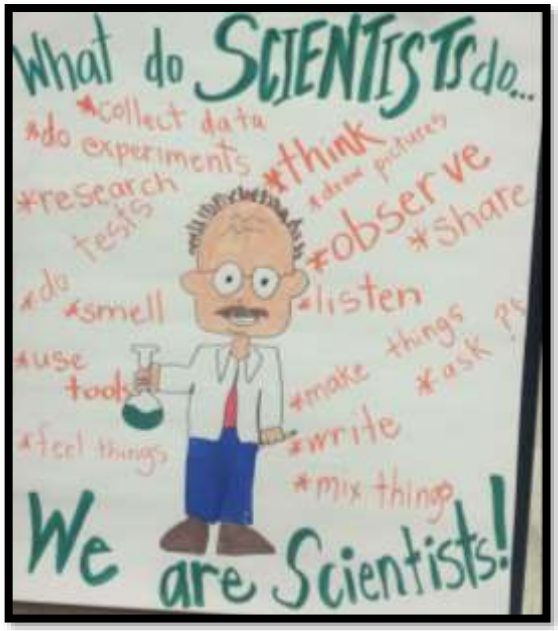
How has communication technology affected our lives today?

It allows for fast communication over long distances.

What invention allowed images to be sent quickly over distances?

Television





CHAPTER 1 – BUILDING A BETTER SCIENTIST

- **LESSON 2 – THE SCIENTIFIC METHOD**

Vocabulary:

Scientific method	Series of steps scientists follow during an investigation
Hypothesis	Possible answer or prediction
Data	Information gathered during an investigation

How do scientists conduct investigations?

Scientists conduct investigations following a series of steps called the scientific method.

What is the scientific method?

The scientific method is a series of steps that scientists use when investigating.

What is one thing that is important for all scientists to do when conducting investigations?

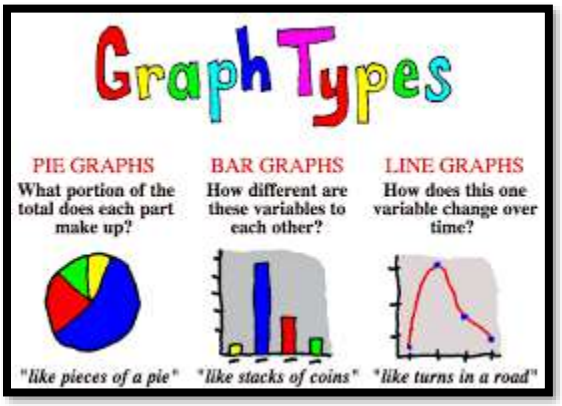
Keep careful records

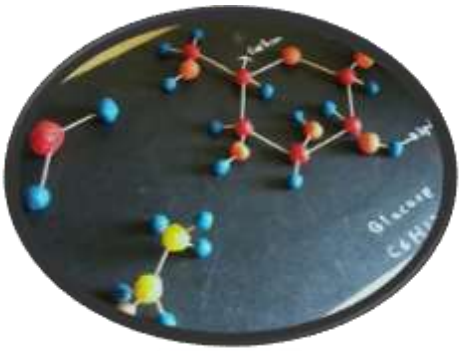
Why is using the scientific method important to a scientist's research?

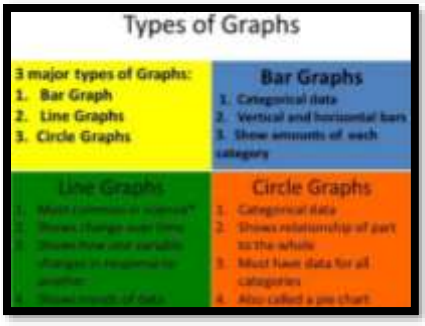
Other scientists can repeat the procedures and their results can be checked.

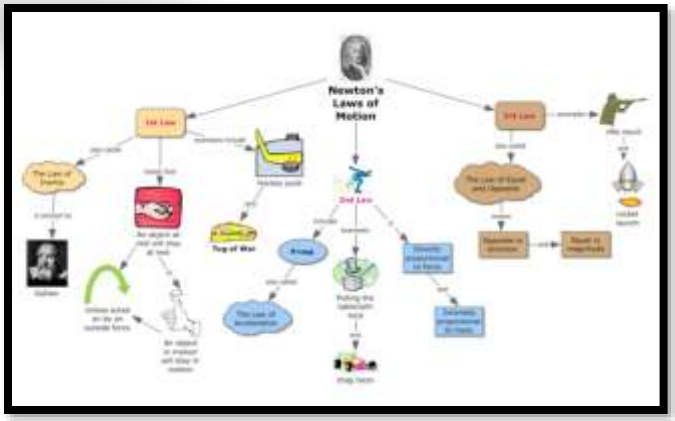
What are some ways to organize data so that it can be analyzed?

Data can be organized in a table, graph, diagram, map, model, or a sequence of images









CHAPTER 1 – BUILDING A BETTER SCIENTIST

LESSON 3 – TOOLS OF THE SCIENTISTS

Vocabulary:

Quantitative data	This data can be measured using some quantity or amount.
Qualitative data	This data cannot be measured using some quantity, so it is not numeric
Description	A summary of observations
Explanation	an interpretation of why something occurs
Precision	How close repeated measurements are to each other
Consistency	Ability to repeat something with little or no changes
Mean	the number that is halfway between the high and low number of the data set
Median	the middle number between the high and the low number
Range	the difference between the highest and the lowest values

What are some variables you might measure in a scientific investigation?

mass, height, volume, time, distance, temperature

How would you organize the data you collect during a scientific investigation?

The data can be organized in a table.

What are some things that would be measured using quantitative data?

height, age, length, weight

What are some things that would be measured using qualitative data?

texture, color, smell

What is the difference between a description and an explanation?

A description is simply a summary of the observations.

An explanation is an interpretation of why something occurs.

How could you increase the precision of a measuring tool?

Make the units on the tool smaller.

What are some visual ways in which scientists can organize and communicate data?

tables and graphs

What is an advantage to organizing data in a graph?

It easily and quickly gives us a picture of the relationship between the variables involved.

What role do statistics play in communicating information about data?

Statistics summarize and help to evaluate the data.

When is a line graph most appropriate?

When you want to show the relationship between two variables.

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When is a circle graph most appropriate?

When you want to show how a complete set of data is divided into parts.

When is a bar graph most appropriate?

When you want to show the relationship between several variables.

How do you find the median of the data set?

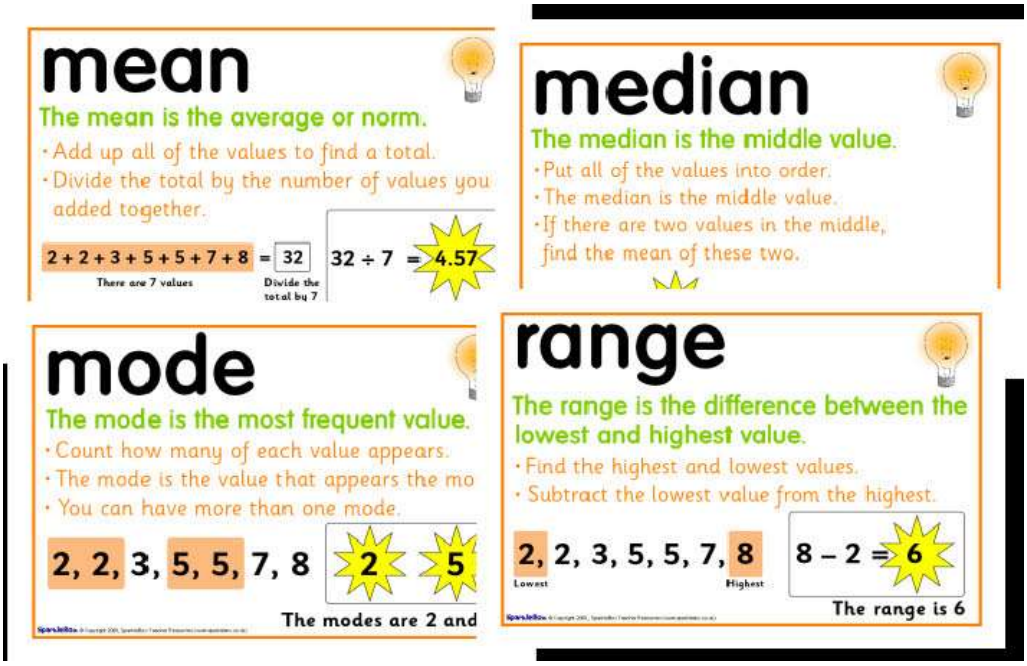
Arrange the numbers from least to greatest and find the middle value. If there are two middle values find the mean of these.

What are the steps for finding the mean?

Add all of the numbers together and divide the sum by the number of entries in the data set.

How do you find the range of the data set?

Subtract the lowest number from the highest number in the data set.



What things can be worn to protect yourself in the lab?

safety goggles, gloves, apron

What other things should you do to stay safe in the lab?

Know where the safety equipment is located; read and follow directions; always wash hands before and after an investigation.

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LESSON 4 – MAKING MEASUREMENTS

What properties of matter can you measure?

height, weight, temperature

What tools do you use to measure length, weight and temperature?

ruler, scale, thermometer

Why is it important to know how to measure matter?

Measured amounts can be compared. Sometimes you might need to know how much of something you have.

Why is it important to know how to observe matter?

So matter can be compared, to describe objects

What are some properties you can use to describe objects?

You can use physical properties size, shape, weight and color.

How does a hand lens help scientists observe objects?

It magnifies an image of the object so that scientists can make more detailed descriptions.

Why are microscopes important in scientific work?

Scientists can observe and describe the physical properties of very small objects, such as cells

Which properties can be used to measure a backpack?

length, width, weight

Why is it useful to use measurements when describing physical properties?

to be more precise

How do we find the measurable properties of an object, such as length or weight?

We use tools such as rulers and scales.

How could you measure the distance around a ball?

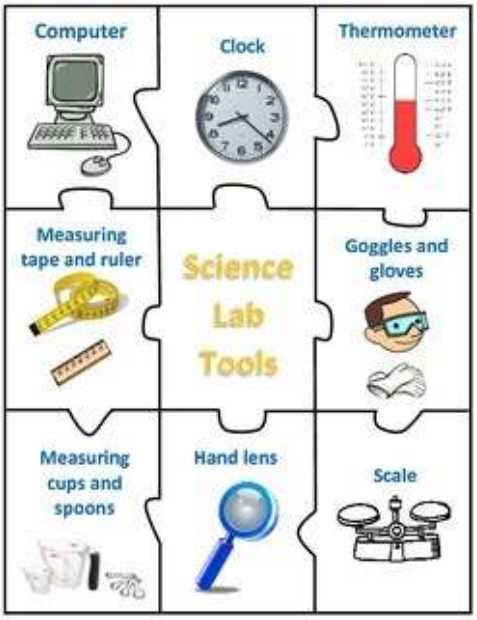
Use a tool that measures length such as a tape measure.

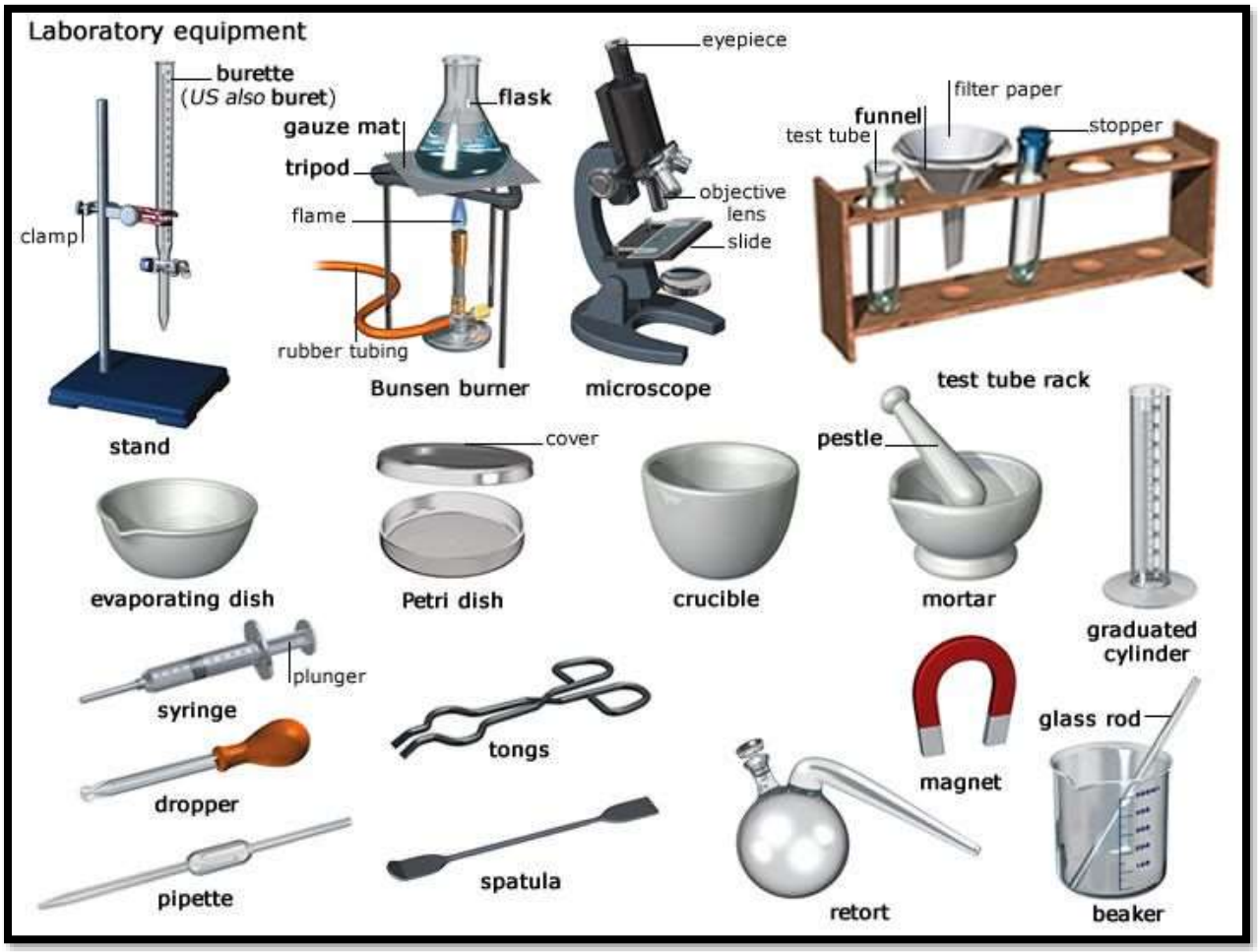
Which metric unit would you use to measure the thickness of a Dirham?

Millimeter

Which metric unit would you use to measure the length of a guitar?

Meter





How is a balance like a scale?

They both are instruments used for measurement.

How is a balance different from a scale?

A balance compares known masses to unknown masses.

What units do scientists use to measure mass?

Grams, kilograms

How many grams in a kilogram?

1,000

Suppose you see a temperature written as "35 degrees". Is this a complete measurement? Why?

No, the measurement must say what unit the temperature was measured in.

How is the Kelvin scale different from the Celsius scale?

It has no negative numbers, and does not use the word degrees.

At what temperature does water boil in degrees Celsius? and in kelvin?

100 °C; 373 kelvin

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Grade: 5

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Chapter 1 Practice Questions

1. **Science:**

• different types of information that can be collected to answer a scientific question.
• is a way of learning about the natural world.
• is using one or more of your senses to identify or learn about something.
• a series of steps that scientist use when conducting a scientific investigation.

2. **Hypothesis:**

• the practical use of science.
• a description of how close repeated measurements are to each other.
• is conclusion formed from available information or evidence.
• is a prediction that can be tested in investigation.

3. **Earth science:**

• a rule that describes a pattern in nature. Ex: gravity force.
• The study of living things. Ex: study plants and animal.
• the study of matter (Chemistry) and energy (Physics).
• the study of earth and space. Ex: study rocks, soils, oceans, clouds, rivers and climate system.

4. **Dependent variables:**

• the variable that is being measured during an investigation.
• a rule that describes a pattern in nature. Ex: gravity force.
• is an attempt to explain a pattern observed repeatedly in the natural world.
• the variable that is changed in controlled experiment.

5. Observation:

• different types of information that can be collected to answer a scientific question.
• is a way of learning about the natural world.
• is using one or more of your senses to identify or learn about something.
• a series of steps that scientist use when conducting a scientific investigation.

6. Precision:

• is conclusion formed from available information or evidence.
• a description of how close repeated measurements are to each other.
• the practical use of science.
• is a prediction that can be tested in investigation.

7. Inference:

• a description of how close repeated measurements are to each other.
• the practical use of science.
• is conclusion formed from available information or evidence.
• is a prediction that can be tested in investigation.

8. Technology:

• the practical use of science.
• a description of how close repeated measurements are to each other.
• is conclusion formed from available information or evidence.
• is a prediction that can be tested in investigation.

9. Scientific method:

• different types of information that can be collected to answer a scientific question.
• is a way of learning about the natural world.
• is using one or more of your senses to identify or learn about something.
• a series of steps that scientist use when conducting a scientific investigation.

10. Independent variables:

• the variable that is being measured during an investigation.
• a rule that describes a pattern in nature. Ex: gravity force.
• is an attempt to explain a pattern observed repeatedly in the natural world.
• the variable that is changed in controlled experiment.

11. Scientific law:

• a rule that describes a pattern in nature. Ex: gravity force.
• the variable that is being measured during an investigation.
• is an attempt to explain a pattern observed repeatedly in the natural world.
• the variable that is changed in controlled experiment.

12. Data:

• different types of information that can be collected to answer a scientific question.
• is a way of learning about the natural world.
• is using one or more of your senses to identify or learn about something.
• a series of steps that scientist use when conducting a scientific investigation.

13. Life science:

• The study of living things. Ex: study plants and animal.
• a rule that describes a pattern in nature. Ex: gravity force.
• the study of matter (Chemistry) and energy (Physics).
• the study of earth and space. Ex: study rocks, soils, oceans, clouds, rivers and climate system.

14. Scientific theory:

• the variable that is changed in controlled experiment.
• the variable that is being measured during an investigation.
• a rule that describes a pattern in nature. Ex: gravity force.
• is an attempt to explain a pattern observed repeatedly in the natural world.

15. Physical science:

• the study of earth and space. Ex: study rocks, soils, oceans, clouds, rivers and climate system.
• a rule that describes a pattern in nature. Ex: gravity force.
• The study of living things. Ex: study plants and animal.
• the study of matter (Chemistry) and energy (Physics).

16. Quantitative data:

o an interpretation of observation.

o data that can be measured. Ex: length, width, height, volume, mass and weight.

o descriptive data that cannot be measured. Ex: colors, texture, smells and tastes.

o a summary of observations.

17. Median:

o the sum of the numbers in a data divided by the number of entries in the data set .

o the set of data in the difference between the highest and lowest values .

o a precise expression of a physical property as length and mass in a specific unit such as centimeters or grams .

o the middle number in a set of data when the data are arranged in numerical order.

18. Metric balance:

o used to measure an object's mass.

o scales hat use spring to measure the object weight.

o the amount of space that matter takes up. Volume= length * width* height.

o the amount of matter in an object.

19. Graduated cylinder:

o used to measure an object's mass

o is used to measure temperature in Fahrenheit scale (°F) or Celsius scale (° C)

o is a tall, narrow, clear container used for measuring the volume of a liquid in milliliter (ml) or Litters (L).

o scales hat use spring to measure the object weight.

20. Consistency:

o display information in rows and columns

o the ability to repeat a task with little variation.

o are used to organize and summarize data in a visual way. Ex: bar graphs, circle graph and maps.

o how close repeated measurements are to each other.

21. Qualitative data:

o a summary of observations.

o an interpretation of observation.

o descriptive data that cannot be measured. Ex: colors, texture, smells and tastes.

o data that can be measured. Ex: length, width, height, volume, mass and weight.

22. Volume:

o the amount of matter in an object.

o used to measure an object's mass.

o scales hat use spring to measure the object weight.

o the amount of space that matter takes up. Volume= length * width* height.

23. Tables:

o how close repeated measurements are to each other

o the ability to repeat a task with little variation.

o are used to organize and summarize data in a visual way. Ex: bar graphs, circle graph and maps.

o display information in rows and columns.

24. Mean:

o a precise expression of a physical property as length and mass in a specific unit such as centimeters or grams.

o the middle number in a set of data when the data are arranged in numerical order.

o the sum of the numbers in a data divided by the number of entries in the data set.

o the set of data in the difference between the highest and lowest values.

25. Measurement:

o the set of data in the difference between the highest and lowest values.

o a precise expression of a physical property as length and mass in a specific unit such as centimeters or grams.

o the sum of the numbers in a data divided by the number of entries in the data set.

o the middle number in a set of data when the data are arranged in numerical order.

26. Description:

o descriptive data that cannot be measured. Ex: colors, texture, smells and tastes.

o a summary of observations.

o an interpretation of observation.

o data that can be measured. Ex: length, width, height, volume, mass and weight.

27. Mass:

o scales hat use spring to measure the object weight

o the amount of space that matter takes up. Volume= length * width* height.

o used to measure an object's mass.

o the amount of matter in an object.

28. Graphs:

o the ability to repeat a task with little variation.

o are used to organize and summarize data in a visual way. Ex: bar graphs, circle graph and maps.

o display information in rows and columns.

o how close repeated measurements are to each other.

29. Spring scales:

o the amount of space that matter takes up. Volume= length * width* height.

o the amount of matter in an object.

o used to measure an object's mass.

o scales hat use spring to measure the object weight.

30. Thermometer:

o a tall, narrow, clear container used for measuring the volume of a liquid in milliliter (ml) or Litters (L).

o scales hat use spring to measure the object weight.

o used to measure an object's mass.

o used to measure temperature in Fahrenheit scale (°F) or Celsius scale (° C).

31. Explanation:

o data that can be measured. Ex: length, width, height, volume, mass and weight.

o descriptive data that cannot be measured. Ex: colors, texture, smells and tastes.

o a summary of observations.

o an interpretation of observation.

32. Range:

o the middle number in a set of data when the data are arranged in numerical order.

o the sum of the numbers in a data divided by the number of entries in the data set.

o the set of data in the difference between the highest and lowest values.

o a precise expression of a physical property as length and mass in a specific unit

such as centimeters or grams.

33. Fill in each blank with the best term from the list.

Quantitative data Spring scales Qualitative data Precision Hand lens Consistency

- ----------is the ability to repeat a task with little variation
- ----------data that can be measured
- ----------is how close repeated measurements being to each other
- ----------Handheld magnification glass that makes objects look larger.
- ----------data that can be measured
- ---------- scales hat use spring to measure the object weight

34. Fill in each blank with the best term from the list.

Hypothesis Dependent variables Scientific method Hand lens Consistency

- ----------is the ability to repeat a task with little variation
- ----------prediction or answering question
- ----------Variable that being measured
- ----------Series step that scientist use hen conduction an investigation
- ----------Handheld magnification glass that makes objects look larger.

35. Put the steps of the scientific method in correct order.

Form hypothesis Observation Ask question Test hypothesis
Result Draw conclusion

- ----------
- ----------
- ----------
- ----------
- ----------
- ----------

Choose the correct answer

36. Which of these words is not example for earth science?

- Energy
- Rocks
- Soil

37. ----------is the middle number for set of a data

- Mean
- Median
- Range

38. Which tool is used to measure weight and what its unit?

- Spring scale/ g
- Ruler/ cm
- Graduated cylinder/ ml

39. To see small things clearer we use microscope.

- True
- False

40. Precision is how close repeated measurement to each other

- True
- False

41. Find the volume of regular shape if you know the length is 5, the width is 10 and the height is 2?

---

42. Convert.

1 a. 400 cm = _____ m 1 b. 3,000 m = _____ km

2 a. 700 cm = _____ m 2 b. 7,000 m = _____ km

3 a. 4,000 m = _____ km 3 b. 10 m = _____ cm

4 a. 100 cm = _____ m 4 b. 500 cm = _____ m

5 a. 3 m = _____ cm 5 b. 1,000 m = _____ km

6 a. 8 m = _____ cm 6 b. 6 m = _____ cm

7 a. 9,000 m = _____ km 7 b. 200 cm = _____ m

8 a. 5 km = _____ m 8 b. 6,000 m = _____ km

9 a. 2,000 m = _____ km 9 b. 900 cm = _____ m

10 a. 8,000 m = _____ km 10 b. 10 km = _____ m

United Arab Emirates

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Grade: 5

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o the amount of matter in an object.

28. Graphs:

o the ability to repeat a task with little variation.

o are used to organize and summarize data in a visual way. Ex: bar graphs, circle graph and maps.

o display information in rows and columns.

o how close repeated measurements are to each other.

29. Spring scales:

o the amount of space that matter takes up. Volume= length * width* height.

o the amount of matter in an object.

o used to measure an object's mass.

o scales that use spring to measure the object weight.

30. Thermometer:

o a tall, narrow, clear container used for measuring the volume of a liquid in milliliter (ml) or Litters (L).

o scales hat use spring to measure the object weight.

o used to measure an object's mass.

o used to measure temperature in Fahrenheit scale (°F) or Celsius scale (° C).

31. Explanation:

o data that can be measured. Ex: length, width, height, volume, mass and weight.

o descriptive data that cannot be measured. Ex: colors, texture, smells and tastes.

o a summary of observations.

o an interpretation of observation.

32. Range:

o the middle number in a set of data when the data are arranged in numerical order.

o the sum of the numbers in a data divided by the number of entries in the data set.

o the set of data in the difference between the highest and lowest values.

o a precise expression of a physical property as length and mass in a specific unit such as centimeters or grams.

33. Fill in each blank with the best term from the list.

• Consistency is the ability to repeat a task with little variation
• Quantitative data data that can be measured
• Precision is how close repeated measurements being to each other
• Hand lens Hand held magnification glass that makes objects look larger.
• Qualitative data data that can be measured
• Spring scales scales that use spring to measure the object weight

34. Fill in each blank with the best term from the list.

• Consistency is the ability to repeat a task with little variation
• Hypothesis prediction or answering question
• Dependent variables Variable that being measured
• Scientific method Series step that scientist use hen conduction an investigation
• Hand lens Handheld magnification glass that makes objects look larger.

35. Put the steps of the scientific method in correct order.

• Observation
• Ask question
• Form hypothesis
• Test hypothesis
• Result
• Draw conclusion

Choose the correct answer

36. Which of these words is not example for earth science?

• Energy
• Rocks
• Soil

37. ----------is the middle number for set of a data

- Mean
- Median
- Range

38. Which tool is used to measure weight and what its unit?

- Spring scale/ N
- Ruler/ cm
- Graduated cylinder/ ml

39. To see small things clearer we use microscope.

- True
- False

40. Precision is how close repeated measurement to each other

- True
- False

41. Find the volume of regular shape if you know the length is 5, the width is 10 and the height is 2?
5 x 10 x 2 = 100

42. Convert.

1 a. 400 cm = _____ m 1 b. 3,000 m = _____ km

2 a. 700 cm = _____ m 2 b. 7,000 m = _____ km

3 a. 4,000 m = _____ km 3 b. 10 m = _____ cm

4 a. 100 cm = _____ m 4 b. 500 cm = _____ m

5 a. 3 m = _____ cm 5 b. 1,000 m = _____ km

6 a. 8 m = _____ cm 6 b. 6 m = _____ cm

7 a. 9,000 m = _____ km 7 b. 200 cm = _____ m

8 a. 5 km = _____ m 8 b. 6,000 m = _____ km

9 a. 2,000 m = _____ km 9 b. 900 cm = _____ m

10 a. 8,000 m = _____ km 10 b. 10 km = _____ m

Answer Key

1 a. 4 m 1 b. 3 km

2 a. 7 m 2 b. 7 km

3 a. 4 km 3 b. 1000 cm

4 a. 1 m 4 b. 5 m

5 a. 300 cm 5 b. 1 km

6 a. 800 cm 6 b. 600 cm

7 a. 9 km 7 b. 2 m

8 a. 5,000 m 8 b. 6 km

9 a. 2 km 9 b. 9 m

10 a. 8 km 10 b. 10,000 m

United Arab Emirates

Ministry of Education

Grade: 5

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Chapter 1 Further Questions

1. **Students notice that the fall leaves of sugar maple trees turn red, but the leaves of the black oak trees turn brown. The students are making**

   a. an observation.

   b. a prediction.

   c. an inference.

   d. a conclusion.

2. **The instrument shown would best be used to measure which property?**

   a. mass

   b. length

   c. volume

   d. temperature

3. **What are the items shown?**

   a. Beakers

   b. Test tubes

   c. Reagent bottles

   d. Graduated cylinders

4. The tools shown would best be used to measure which property?

a. mass

b. length

c. volume

d. temperature

5. The object shown would be most useful for

a. protecting eyes.

b. transferring liquids.

c. magnifying objects.

d. measuring temperature.

6. In an experiment, to change something or make something different, is known as the

a. Independent Variable

b. Dependent Variable

c. Controlled Variable

7. A dependent variable is the

a. Result you are measuring.

b. Variable that the scientist changes.

c. Amount of something you add to a mixture.

d. Group you do not change.

8. Constants in an experiment.

a. do not change

b. always change

c. sometimes change

d. are seldom used

9. What are the items shown?

a. Beakers

b. Pipettes

c. Droppers

d. Test tubes

10. A description is a statement or drawing, detailing the physical properties of an object, organism, or event.

a. True

b. False

11. Which of the following is not a science safety rule?

a. Always read the directions prior to beginning an experiment.

b. Tie back long hair if working over an open flame.

c. You may eat and drink in the lab if you have on gloves.

d. Tell your teacher is you are injured in any way.

12. A tool used to measure temperature.

a. rain gauge

b. wind vane

c. thermometer

d. forecast

13. A hypothesis is

a. an educated guess that answers your question

b. the answer you get when you do an experiment

c. the conclusion of your experiment

14. Using one or more senses to gather information is called

a. classifying

b. observing

c. inquiry

d. communicating

15. If I see that the ground is wet and that there are very dark clouds in the sky, I can infer that it rained.

a. True b. False

16. Look at the picture. What does a ruler measure?

a. how much space matter takes up

b. the length of an object

c. how much matter an object has

d. how much time has passed

17. Mr. Kirchner's chair is red. This is a(n)

a. inference b. prediction c. observation d. classification

18. Identify the type of observation made in the following sentence: He ate twenty-five French fries today.

a. Qualitative
b. Quantitative

19. The table shows the steps of the scientific method in the wrong order.

Scientific Method	
Step	**Description**
A	Form hypothesis
B	Analyze data
C	Perform experiment
D	Communicate results
E	Ask question

Which sequence shows the steps of the scientific method in the correct order?

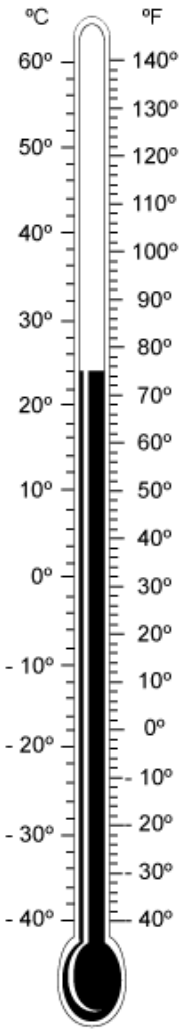
a. A, C, E, D, B
b. E, A, C, B, D
c. A, E, D, C, B
d. E, C, A, B, D
e. C, B, A, D, E

20. Which thermometer shows the higher temperature?

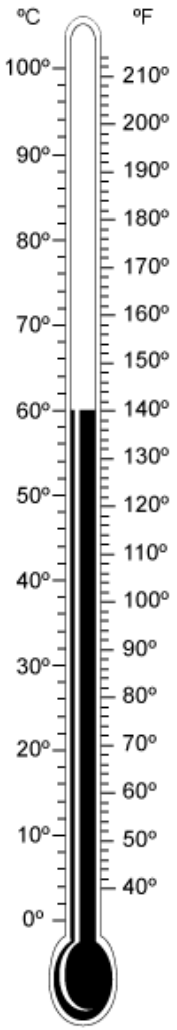
a. Thermometer A

b. Thermometer B

Thermometer A



Thermometer B



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Which sequence shows the steps of the scientific method in the correct order?

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b. E, A, C, B, D
c. A, E, D, C, B
d. E, C, A, B, D
e. C, B, A, D, E

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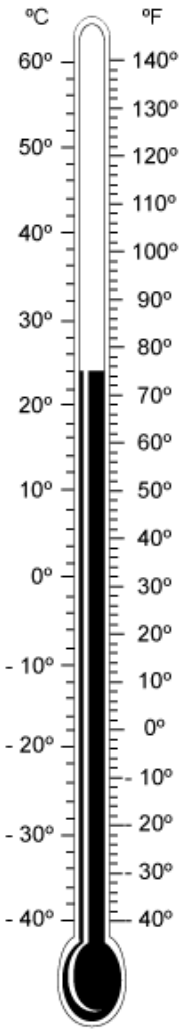
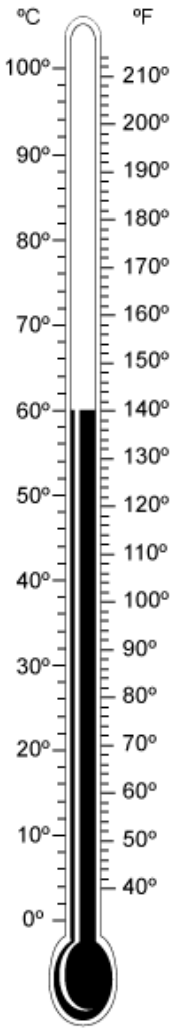
Thermometer A



Thermometer B



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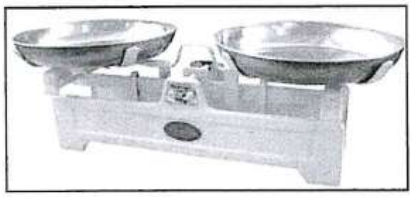
Past Exam Paper Questions

1. Hala is conducting an experiment to she works to see how high a rubber ball bounces when she it from different heights. Which is the independent variable in her experiment?

a. the rubber ball
b. the height from which the ball is dropped
c. the height the ball bounces
d. the mass of the ball

2. Faris is using the tool below. Which metric system unit is he most likely to Use with his data?

a. grams b. pounds
c. meters d. cubic centimeters



3. Which type of graph should be used to show the composition of gases in earth's atmosphere?

a. line graph b. Scatter plot c. optimum range d. circle graph

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Past Exam Paper Questions Answers

1	b. the height from which the ball is dropped
2	a. grams
3	d. Circle graph

CHAPTER 2 – PARENTS & OFFSPRINGS

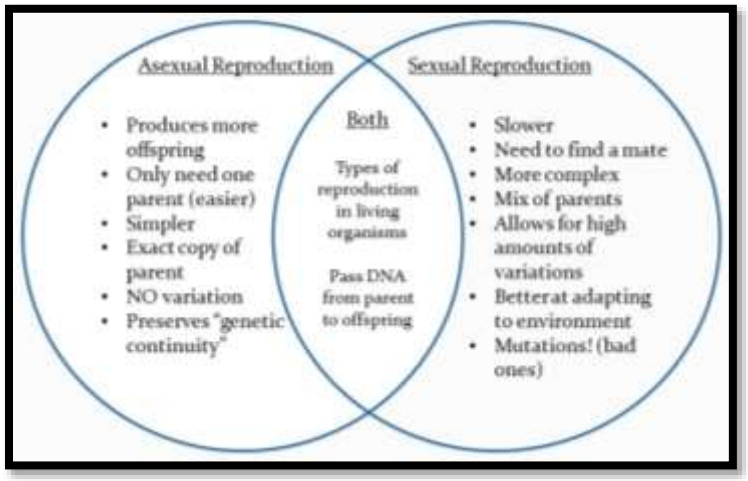
- **LESSON 1 – REPRODUCTION**

Vocabulary:

Sexual Reproduction	Production of an organism with 2 parent cells
Asexual Reproduction	Production of an organism with 1 parent cell
Fertilization	When sperm cell and egg cell join together to form an embryo
Vegetative Propagation	Asexual reproduction in plants
Runners	Plant stems that lie on the ground and start new plants
Embryo	Beginning of a new offspring
Offspring	a child of an animal, human or plant
Organism	an individual animal, plant, or single-celled life form

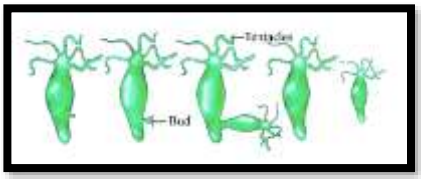
SEXUAL REPRODUCTION: A sperm cell (male) joins a egg cell (female) to make an embryo. This embryo will grow to become an individual. The new offspring will have traits from both parents.

ASEXUAL REPRODUCTION: When 1 parent organism makes a new offspring by *Splitting, Budding, Vegetative Propagation or Regeneration.*

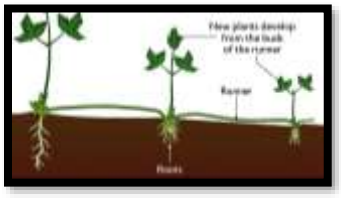


SPLITTING: Bacteria copies its genetic information and then splits into 2 new identical organisms

BUDDING: Hydra grows a bud on its own body with the same genetic information. Once the bud grows to adult size it breaks off.



VEGETATIVE PROPAGATION: New plants reproduce from roots or stems without seeds. Strawberries, potatoes.



CHAPTER 2 – PARENTS & OFFSPRINGS

- **LESSON 2 – PLANT LIFE CYCLES**

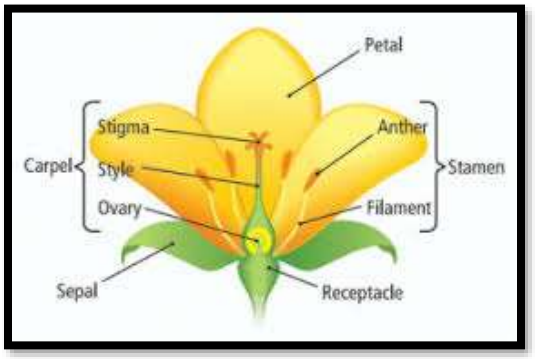
Vocabulary:

Life cycle	A series of differing stages of development
Pollen	Yellow powder that is found in flowers - male cells
Pollination	Transfer of pollen from anther to stigma
Angiosperm	All plants with flowers
Gymnosperm	All plants without flowers
Stamen	Male part of a flower
Pistil	Female part of a flower
Anther	Part of stamen where pollen is found
Ovary	The sac where all the eggs are found in the flower
Germination	Development of seed into a new plant
Seed coat	A tough outer cover on a seed
Monocot	A seed with 1 cotyledon (stored food)
Dicot	A seed with 2 cotyledons
Cotyledon	Stored food inside a seed
Conifer	A plant that has seeds but no flowers
Spores	Cells in a plant that can develop into new plants
Nectar	Sweet liquid produced by flowers.
Dispersion	The spreading of Seeds.

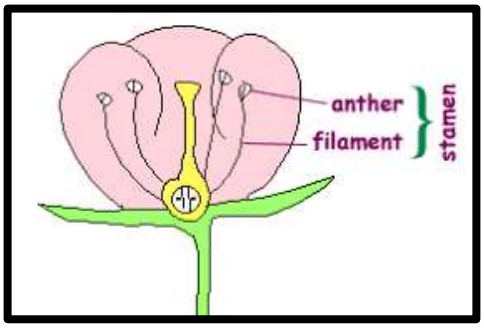
ANGIOSPERM: All plants that have flowers.

MOSS & FERNS LIFE CYCLE: Life cycle of moss begins with asexual reproduction and then sexual reproduction.

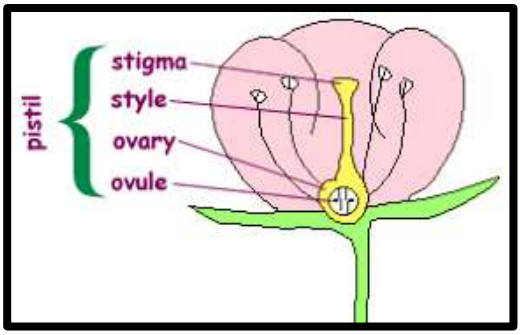
PARTS OF A FLOWER



MALE PARTS OF A FLOWER

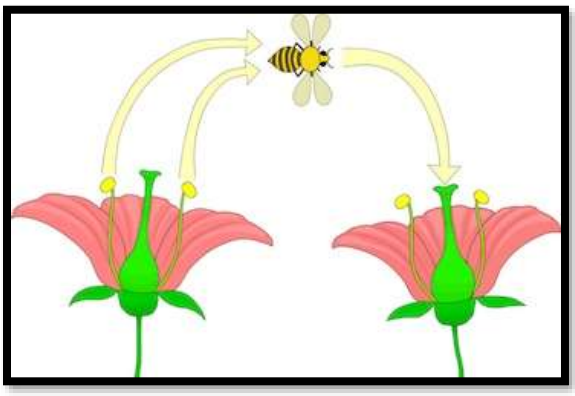


FEMALE PARTS OF A FLOWER



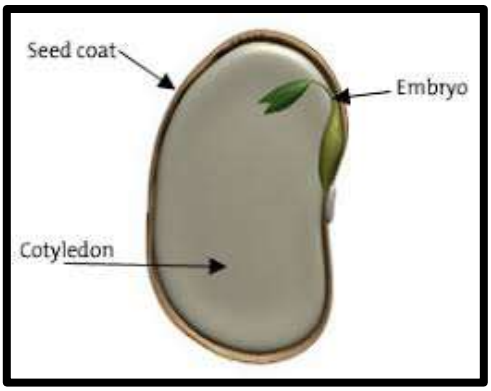
POLLINATION: When the yellow pollen is transferred from the anther to the stigma it is called Pollination. Fertilization cannot occur without Pollination. There are 2 types of pollination.

- *Self Pollination*: When a perfect complete flower pollinates itself.
- Cross Pollination: When pollen from one plant pollinates another.
    - *Wind Pollination*: The pollen is transferred through wind. Wind-pollinated flowers are dull and small and usually colourless.
    - *Animal Pollination*: The pollen is transferred through bees, butterflies and other animals. Animal-pollinated flowers are large, bright and colourful.



Perfect & Imperfect Flowers: Perfect flowers have female, male parts with petals, and sepals. Imperfect flower has 1 of the things missing. It can be pistil, stamen, or petals.

SEEDS:



A Seed is made of :

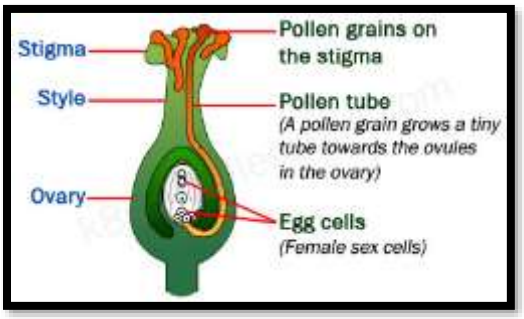
- **Tiny Embryo** – The baby plant.
- **Cotyledon** – The food supply.
- **Seed Coat** – Protects the Embryo from damage.

DISPERSION: Seeds can spread through:

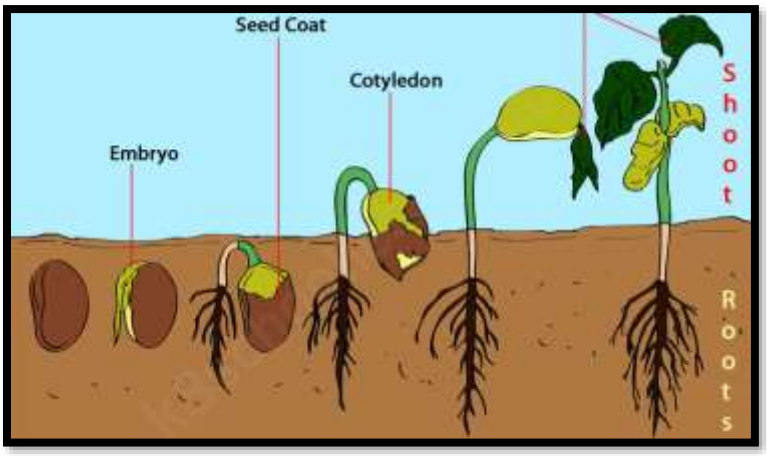
- Animals – By clinging onto the animal's fur or feathers. Or by entering the animals digestive system through fruits.
- Water – Floating through water.
- Wind – Being blown away by the wind.

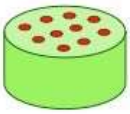
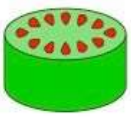
CHAPTER 2 – PARENTS & OFFSPRINGS

FERTILIZATION: Once a flower is pollinated, the pollen grows pollen tubes to the ovary and joins the eggs (ovules). Fertilization occurs and an embryo is formed. The embryo grows to become a seed.



GERMINATION: When the seed gets the right conditions it will start to grow into a new plant. This is called germination.



	Seed	Root	Vascular	Leaf	Flower
Monocot					
	One cotyledon	Fibrous roots	Scattered	Parallel veins	Multiples of 3
Dicot					
	Two cotyledon	Tap roots	Ringed	Net-like veins	4 or 5

GYMNOSPERM: Plants that have seeds but no flowers like Conifers or the Palm tree. Conifers have cones that have seeds in them that grow into new plants. They are dispersed only by the wind. (read details on page 112)

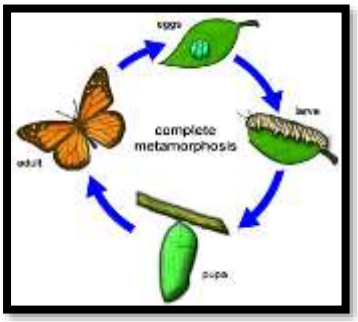
CHAPTER 2 – PARENTS & OFFSPRINGS

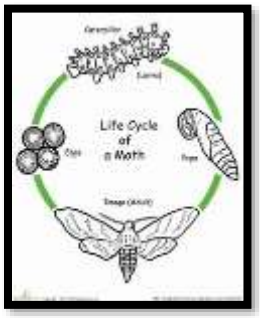
LESSON 3 – ANIMAL LIFE CYCLES

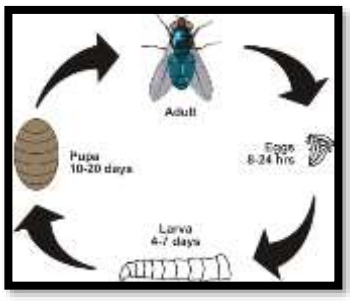
Vocabulary:

Life cycle	A series of differing stages of development
Metamorphosis	A series of distinct growth stages that are different from one another
Larva	an immature stage that does not resemble the adult.
Pupa	a nonfeeding stage during which a hard, case-like cocoon surrounds the organism.
Nymph	similar to an adult form, but it is smaller and lacks wings and reproductive structures
External Fertilization	joining of egg and sperm outside the female's body
Internal Fertilization	joining of sperm and egg cells inside a female's body

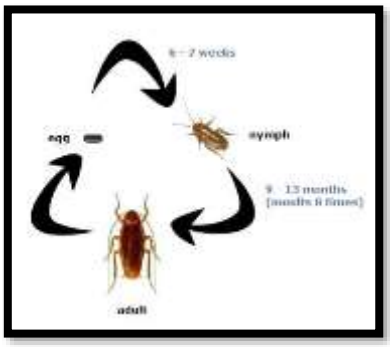
In **complete metamorphosis -** the animal goes through four distinct stages. The adult body form looks very different from the newly hatched animal**.**

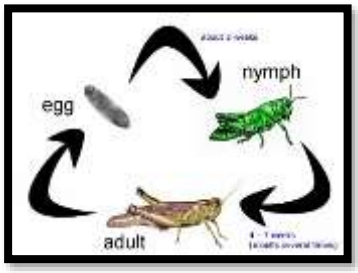






During **incomplete metamorphosis** the animal goes through three stages that occur gradually**.**





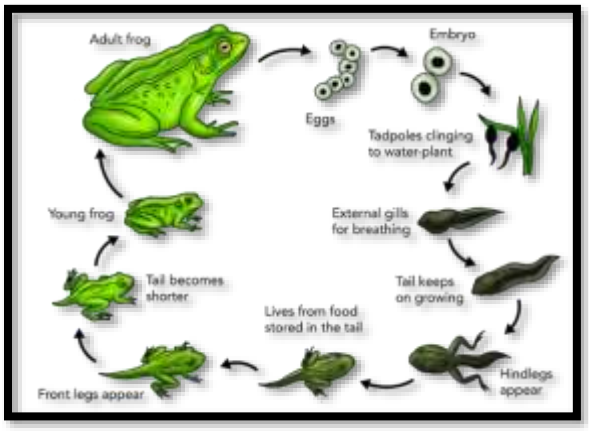
How does fertilization occur in animals?

Sexual reproduction in animals starts with fertilization. When a sperm cell combines with an egg cell, the resulting fertilized egg starts growing.

EXTERNAL FERTILIZATION: Many eggs produced.

Frogs, salamander and most fish release their sex cells into water.

1. The female digs a shallow nest in the gravel and releases her eggs.
2. Once the eggs are in place, the male releases sperm over them in the water.
3. This joining of egg and sperm outside the female's body is called external fertilization.
   IMPORTANT NOTE: External fertilization is a high-risk process.
   - Because ponds, lakes, rivers, and oceans are larger sometimes sperms cannot find the egg cells.
   - Some egg cells are eaten by other animals.
   - The sex cells can also be exposed to extreme temperatures and pollution in the water.

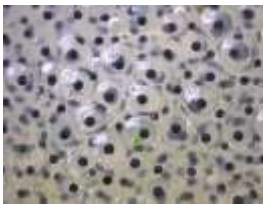


INTERNAL FERTILIZATION: **Few eggs produced.**

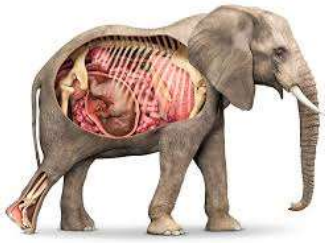
Mammals, birds and reptiles.

Internal fertilization is the joining of sperm and egg cells inside a female's body.
Internal fertilization increases the chances of fertilization and the offspring's survival.
It protects sex cells and fertilized eggs from drying out.
It also protects them from the dangers of bad weather and other animals eating the sex cells.

What happens to a fertilized egg?
Successful fertilization produces an egg with a developing embryo inside it.
Animals have different eggs depending on their structures and where they live.
Birds and some mammals, fish, amphibians and reptiles lay eggs.
Fish and frogs lay their eggs in water. A jellylike layer around the eggs provides some protection for the embryos.
The embryos get food from the yolks of the eggs.
Reptile and bird eggs have tough shells filled with a watery liquid. The liquid gives the embryo the wet environment it needs to develop and protects it from drying out.
Because of this, reptiles and birds can lay their eggs on land.
The yolk inside the egg provides the embryo with food.



Most mammals don't hatch their eggs. They let them develop inside the mother. This way the eggs are protected inside the mother. The embryo is fed directly by the mothers' body.



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دائرة التعليم والمعرفة
DEPARTMENT OF EDUCATION AND KNOWLEDGE

Chapter 2 Practice Questions

1. **The reproductive organs of plants**

o pollen o embryo o flowers o nectar

2. **The flower's female organ made of stigma, a style and an ovary**

o stamen o pistil o sepals o petals

3. **Stigma:**

o at the top of filament and produces pollen grains
o the long neck like structure that leads down to the ovary
o the opining at the top of the pistil.
o the thin stalk portion of the stamen

4. **Stamen:**

o the flower's female organ made of stigma, a style and an ovary
o the brightly colored outer parts of the flower
o the green part below petals and protects the flower's part when it just a bud
o the male part of the flower.

5. **The green part below petals and protects the flower's part when it just a bud**

o Petals o Pollen o Seed o Sepals

6. **Incomplete perfect flower:**

o a flower lack either a stamen or a pistil
o has both stamens and a pistil
o has both male and female structures but missing petals
o is missing one or more of the flower parts of a complete flower.

7. Petals:

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8. The long neck like structure that leads down to the ovary

o sepals o anther o style o stigma

9. The transfer of pollen from the stamen to the pistil.

o Life cycle o Germination o Pollination o Alternation of generation

10. Conifer:

o is a gymnosperm, a plant that has seeds but not flowers.
o a type of flower produces seeds with two cotyledons.
o a flower lack either male and female structures
o a type of flower that produces seeds with a single cotyledon

11. The thin stalk portion of the stamen.

o anther o style o filament o stigma

12. A type of flower that produces seeds with a single cotyledon

o perfect flower o monocot o dicot o conifer

13. The house of egg cells and it is the place where fertilization occurs.

o Seeds o Ovary o Anther o Pollen

14. Pistil:

o the brightly colored outer parts of the flower
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15. Metamorphosis:

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

16. A life cycle stage of grasshopper like an adult form but it is smaller and lacks wings and reproductive structures

o larva o nymph o pupa o adult butterfly

17. Reptiles lay eggs in the ----------

o Land o Water o Inside the adult female o Water and land

18. Which of the following has the complete metamorphosis life cycle?

o Butterfly o Grasshopper o Termites o bedbugs.

19. Which of the following organism lay eggs without shells?

o Fish o Mammals o Reptiles o birds

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21. The immature stage that doesn't resemble the adult in butterfly life cycle

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22. Which of the following reproduce by internal fertilization?

o Amphibians o Fish o Mammals o Frogs

23. Bird's egg has ----------shell to protect it from the harsh environment

o soft o jellylike o tough or hard o No shell

24. The mammals that ley eggs called

o Amphibians o Reptiles o Monotremes o Caterpillars

25. External fertilization:

o a series of distinct growth stages that are different from one another

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o Germination o Pollination o Alternation of generation o Life cycle

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o pistil o sepals o stamen o petals

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o has both stamens and a pistil

23. Filament:

o the long neck-like structure that leads down to the ovary
o the opining at the top of the pistil.
o the thin stalk portion of the stamen
o at the top of filament and produces pollen grains

24. Style:

o the thin stalk portion of the stamen
o at the top of filament and produces pollen grains
o the long neck-like structure that leads down to the ovary
o the opining at the top of the pistil.

25. The development of a seed into a new plant

o Pollination o Alternation of generation o Germination o Life cycle

26. Imperfect flower:

o has both stamens and a pistil
o has both male and female structures but missing petals
o is missing one or more of the flower parts of a complete flower.
o a flower lack either a stamen or a pistil

27. A sweet liquid produced by flowers to attract pollinators

o pollen o anther o nectar o seeds

28. The beginning of a new offspring

o Seeds o Embryo o Ovary o Anther

29. The cover surrounding the seed.

o Embryo o Anther o Coat o Style

30. Monocot:

o is a gymnosperm, a plant that has seeds but not flowers.

o a type of flower produces seeds with two cotyledons.

o a flower lack either male and female structures

o a type of flower that produces seeds with a single cotyledon.

31. Metamorphosis:

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

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o larva o nymph o pupa o adult butterfly

33. Reptiles lay eggs in the ----------

o Land o Water o Inside the adult female o Water and land

34. Which of the following has the complete metamorphosis life cycle?

o Butterfly o Grasshopper o Termites o bedbugs.

35. Which of the following organism lay eggs without shells?

o Fish o Mammals o Reptiles o birds

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o Amphibians o Fish o Mammals o Frogs

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o soft o jellylike o tough or hard o No shell

40. Complete metamorphosis

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

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o the growth type where animals go through four distinct stages

41. A non-feeding stage of butterfly life cycle during which a hard, case-like cocoon surrounds the organism.

o larva o nymph o pupa o adult butterfly

42. Internal fertilization:

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

o the joining of egg and sperm inside the female's body

43. Which of the following reproduce by external fertilization?

o birds o Fish o Mammals o Reptiles

44. Which of the following has the incomplete metamorphosis life cycle?

o Butterfly o Grasshopper o Moth o Flies

45. The mammals that ley eggs called

o Amphibians o Reptiles o Monotremes o Caterpillars

46. External fertilization:

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

47. Amphibians lay eggs in the ----------

o Land o Water o Inside the adult female o Water and land

48. The organisms that keep their eggs inside the mother body are----------

o Birds o Fish o Mammals o Reptiles

49. Which of the following organism lay eggs with jellylike shells?

o Fish o Mammals o Reptiles o Birds

50.

Complete metamorphosis grasshoppers incomplete metamorphosis butterflies nymph internal fertilization monotremes metamorphosis caterpillar Pupa external fertilization

• The joining of egg and sperm inside the female's body known as ----------

• ---------- is the growth type where animals go through four distinct stages

• An animal that has complete metamorphosis----------

• The series of distinct growth stages that are different from one another is----------

• Larva also known as ----------

• The non-feeding stage during which a hard, case-like cocoon surrounds the organism is----------

• ----------is the growth type where the animal goes through three stages that occur gradually

• The grasshopper growth stage that smaller and lacks wings and reproductive structures than the adult stage is ----------

• The joining of egg and sperm outside the female's body known as ----------

• ----------are the mammals that lay eggs

• An animal that has incomplete metamorphosis----------

51. Moses and ferns reproduce using...

o Seeds o Spores o Roots o Cones

52. The flowers of some plants are bright and colourful to

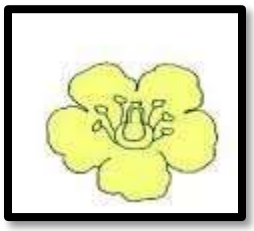
o Encourage people to cut them

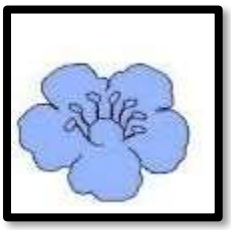
o Attract bees and butterflies

o Get sunlight

o Warn other animals of dangers

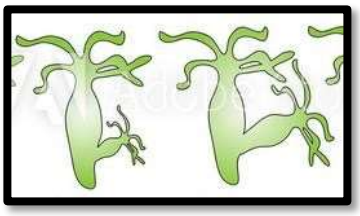
53. The diagrams below show a PERFECT flower and an IMPERFECT flower. Label them correctly.





_____ _____

54. Match the pictures correctly: Budding Splitting Vegetative propagation



_____ _____ _____

55. A male part of a flower is called….

o Pistil o Leaves o Stamen o Petals

56. A female part of a flower is called…

o Pistil o Leaves o Petals o Stamen

57. Pollen grows on the

o Ovary o Anther o Flower

o Sepal

58. • A monocot seed has _____ cotyledon (stored food)

o One o Two

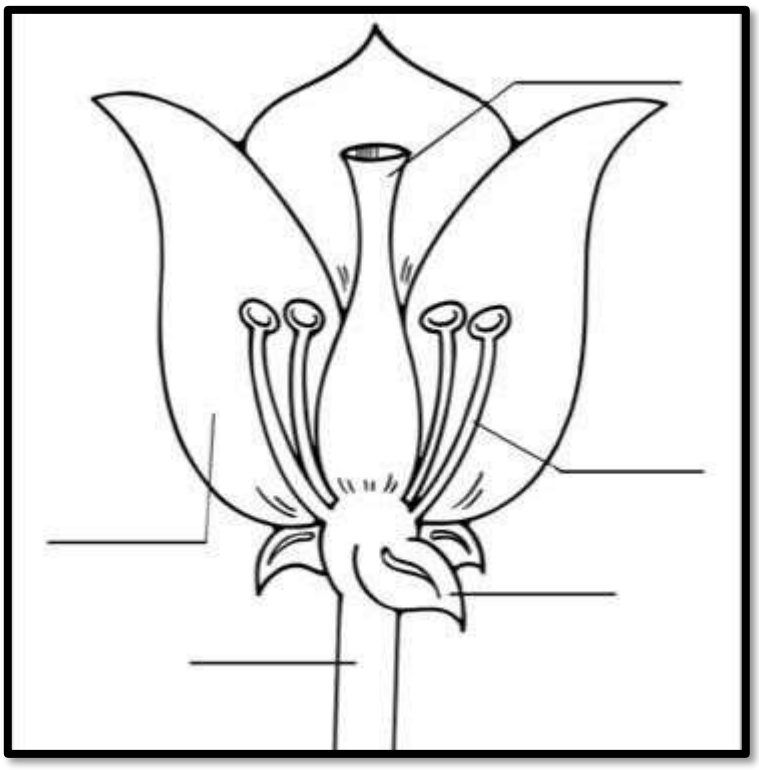
59. A seed with 2 cotyledons is called a

o Monocot o Dicot

60. Is the development of a seed into a new plant

o Pollination o Fertilization o Germination

61. Label the flower below using these words: Petal, Stamen, Sepal, Stem



62. The beginning of a new organism is called…

o Embryo o Petal o Flower o Plant

63. Flowers that are wind-pollinated are usually…

o Bright and colourful o Big o Dull and small o Colourful and small

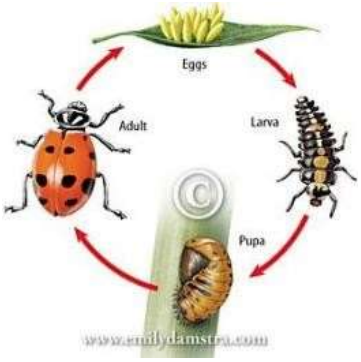
64. Select the 2 stages below that are parts of a butterfly's metamorphosis.

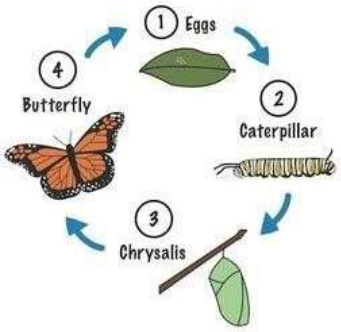
o Egg o Larva o Froglet o Toddler

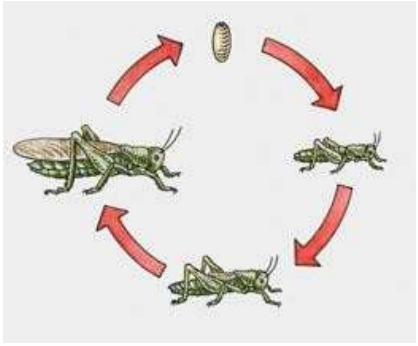
65. What do we call it when life repeats over and over again in the same order?

o Metamorphosis o Stages o Life cycle o Puberty

66. The diagrams below represent the life cycles of 3 different insects. Which of these insects goes through incomplete metamorphosis?







_____ _____ _____

67. What is the chrysalis stage of a butterfly called?

o Pupa o Middle Age o Egg o Tadpole

68. What do we call a butterfly and frog when they are finished developing?

o Eggs

o Larva

o Pupa

o Adults

69. Incomplete metamorphosis describes which animal?

o Grasshopper o Butterfly o Chicken o Moth

70. How many stages of metamorphosis does a butterfly have?

o 3 o 4 o 5 o 6

71. Which of these animals lay eggs?

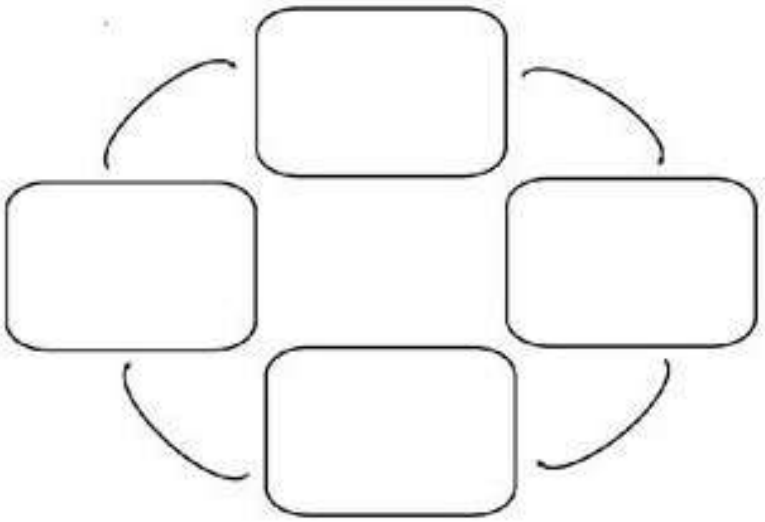
o Grasshopper, butterfly, frogs

o Chicken, human, elephant

o Giraffes, rabbits, lions

o Monkeys, cats, dogs

72. Draw and label the life cycle of a butterfly below:



1. **What are the main differences between sexual and asexual reproduction?**

_____

2. **State the different forms of asexual reproduction.**

_____

3. **Why does sexual reproduction cause variation in traits?**

_____

4. **Why do flowers have bright petals?**

_____

5. **What is the difference between self-pollination and cross pollination?**

_____

6. **How does a bee help flowers in reprpdiction?**

_____

7. **How is fertilization and pollination different?**

_____

8. **What conditions do plants need to germinate?**

_____

9. **What is the function of a seed coat?**

_____

10. **How are gymnosperms different from angiosperms?**

_____

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DEPARTMENT OF EDUCATION AND KNOWLEDGE

Chapter 2 Further Questions Answers

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o Alternation of generation o Life cycle o Germination o Pollination

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o the male part of the flower.

o the flower's female organ made of stigma, a style and an ovary

o the green part below petals and protects the flower's part when it just a bud

o the brightly colored outer parts of the flower

3. **Incomplete flower:**

o has both male and female structures but missing petals

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o the green part below petals and protects the flower's part when it just a bud

o the male part of the flower.

o the flower's female organ made of stigma, a style and an ovary

22. Perfect flower:

o is missing one or more of the flower parts of a complete flower.

o a flower lack either a stamen or a pistil

o has both male and female structures but missing petals

o has both stamens and a pistil

23. Filament:

o the long neck-like structure that leads down to the ovary

o the opining at the top of the pistil.

o the thin stalk portion of the stamen

o at the top of filament and produces pollen grains

24. Style:

o the thin stalk portion of the stamen

o at the top of filament and produces pollen grains

o the long neck-like structure that leads down to the ovary

o the opining at the top of the pistil.

25. The development of a seed into a new plant

o Pollination o Alternation of generation o Germination o Life cycle

26. Imperfect flower:

o has both stamens and a pistil

o has both male and female structures but missing petals

o is missing one or more of the flower parts of a complete flower.

o a flower lack either a stamen or a pistil

27. A sweet liquid produced by flowers to attract pollinators

o pollen o anther o nectar o seeds

28. The beginning of a new offspring

o Seeds o Embryo o Ovary o Anther

29. The cover surrounding the seed.

o Embryo o Anther o Coat o Style

30. Monocot:

o is a gymnosperm, a plant that has seeds but not flowers.

o a type of flower produces seeds with two cotyledons.

o a flower lack either male and female structures

o a type of flower that produces seeds with a single cotyledon.

31. Metamorphosis:

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

32. A life cycle stage of grasshopper similar to an adult form but it is smaller and lacks wings and reproductive structures

o larva o nymph o pupa o adult butterfly

33. Reptiles lay eggs in the ----------

o Land o Water o Inside the adult female o Water and land

34. Which of the following has the complete metamorphosis life cycle?

o Butterfly o Grasshopper o Termites o bedbugs.

35. Which of the following organism lay eggs without shells?

o Fish o Mammals o Reptiles o birds

36. Incomplete metamorphosis:

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

37. The immature stage that doesn't resemble the adult in butterfly life cycle

o pupa o larva o nymph o egg

38. Which of the following reproduce by internal fertilization?

o Amphibians o Fish o Mammals o Frogs

39. Bird's egg has ----------shell to protect it from the harsh environment

o soft o jellylike o tough or hard o No shell

40. Complete metamorphosis

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where the animal goes through three stages that occur gradually

o the growth type where animals go through four distinct stages

41. A non-feeding stage of butterfly life cycle during which a hard, case-like cocoon surrounds the organism.

o larva o nymph o pupa o adult butterfly

42. Internal fertilization:

o the joining of egg and sperm outside the female's body

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

o the joining of egg and sperm inside the female's body

43. Which of the following reproduce by external fertilization?

o birds o Fish o Mammals o Reptiles

44. Which of the following has the incomplete metamorphosis life cycle?

o Butterfly o Grasshopper o Moth o Flies

45. The mammals that ley eggs called

o Amphibians o Reptiles o Monotremes o Caterpillars

46. External fertilization:

o a series of distinct growth stages that are different from one another

o the growth type where animals go through four distinct

o the growth type where the animal goes through three stages that occur gradually

o the joining of egg and sperm outside the female's body

47. Amphibians lay eggs in the ----------

o Land o Water o Inside the adult female o Water and land

48. The organisms that keep their eggs inside the mother body are----------

o Birds o Fish o Mammals o Reptiles

49. Which of the following organism lay eggs with jellylike shells?

o Fish o Mammals o Reptiles o Birds

50.

Complete metamorphosis grasshoppers incomplete metamorphosis butterflies nymph internal fertilization monotremes metamorphosis caterpillar Pupa external fertilization

• The joining of egg and sperm inside the female's body known as **internal fertilization**

• **Complete metamorphosis** is the growth type where animals go through four distinct stages

• An animal that has complete metamorphosis **butterflies**

• The series of distinct growth stages that are different from one another is **metamorphosis**

• Larva also known as **caterpillar**

• The non-feeding stage during which a hard, case-like cocoon surrounds the organism is **Pupa**

• **incomplete metamorphosis** is the growth type where the animal goes through three stages that occur gradually

• The grasshopper growth stage that smaller and lacks wings and reproductive structures than the adult stage is **nymph**

• The joining of egg and sperm outside the female's body known as **external fertilization**

• **monotremes** are the mammals that lay eggs

• An animal that has incomplete metamorphosis **grasshoppers**

51. Moses and ferns reproduce using...

o Seeds o Spores o Roots o Cones

52. The flowers of some plants are bright and colourful to

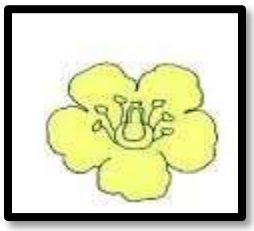
o Encourage people to cut them

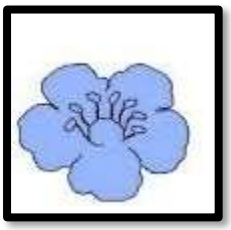
o Attract bees and butterflies

o Get sunlight

o Warn other animals of dangers

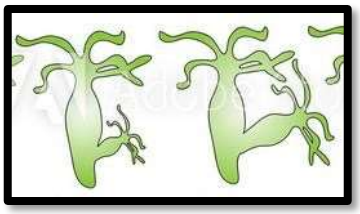
53. The diagrams below show a PERFECT flower and an IMPERFECT flower. Label them correctly.





PERFECT **IMPERFECT**

54. Match the pictures correctly: Budding Splitting Vegetative propagation



Splitting **Vegetative propagation** **Budding**

55. A male part of a flower is called….

o Pistil o Leaves o Stamen o Petals

56. A female part of a flower is called…

o Pistil o Leaves o Petals o Stamen

57. Pollen grows on the

o Ovary o Anther o Flower

o Sepal

58. • A monocot seed has _____ cotyledon (stored food)

o One o Two

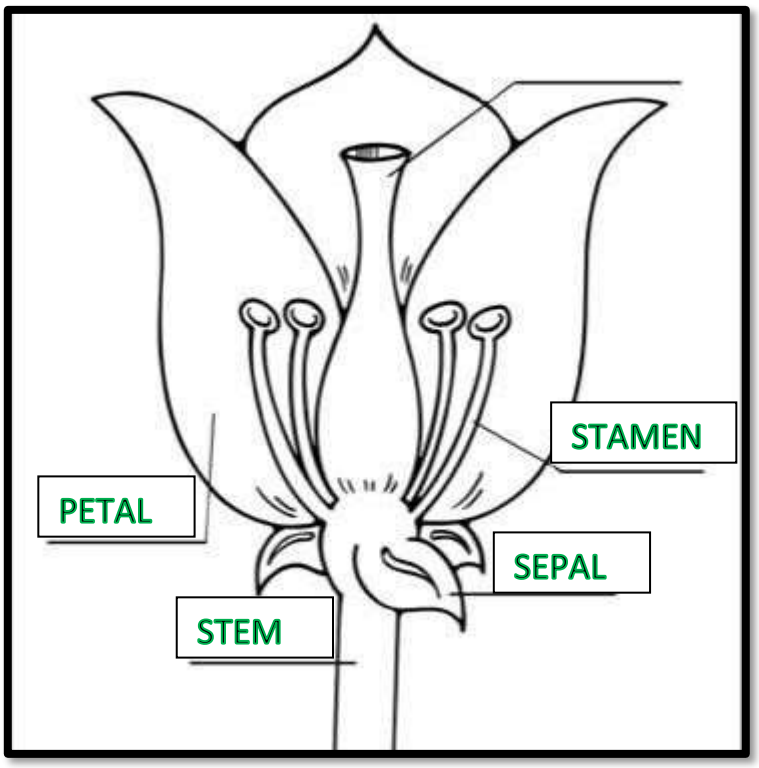
59. A seed with 2 cotyledons is called a

o Monocot o Dicot

60. Is the development of a seed into a new plant

o Pollination o Fertilization o Germination

61. Label the flower below using these words: Petal, Stamen, Sepal, Stem



62. The beginning of a new organism is called…

o Embryo o Petal o Flower o Plant

63. Flowers that are wind-pollinated are usually…

o Bright and colourful o Big o Dull and small o Colourful and small

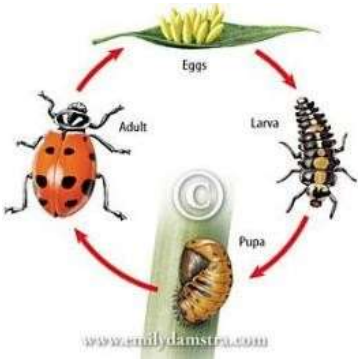
64. Select the 2 stages below that are parts of a butterfly's metamorphosis.

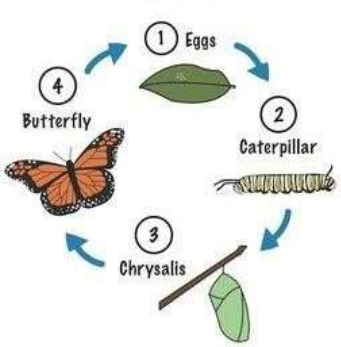
o Egg o Larva o Froglet o Toddler

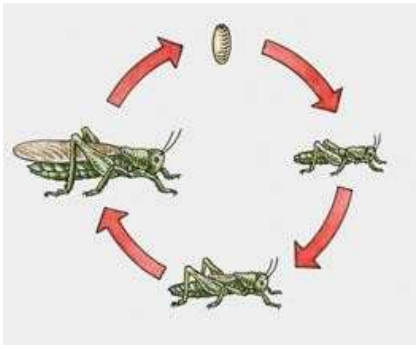
65. What do we call it when life repeats over and over again in the same order?

o Metamorphosis o Stages o Life cycle o Puberty

66. The diagrams below represent the life cycles of 3 different insects. Which of these insects goes through incomplete metamorphosis?







COMPLETE COMPLETE INCOMPLETE

67. What is the chrysalis stage of a butterfly called?

o Pupa o Middle Age o Egg o Tadpole

68. What do we call a butterfly and frog when they are finished developing?

o Eggs

o Larva

o Pupa

o Adults

69. Incomplete metamorphosis describes which animal?

o Grasshopper o Butterfly o Chicken o Moth

70. How many stages of metamorphosis does a butterfly have?

o 3 o 4 o 5 o 6

71. Which of these animals lay eggs?

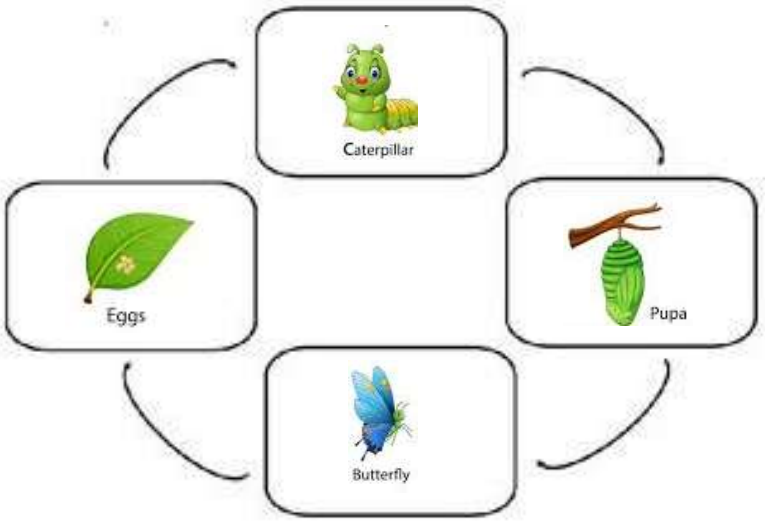
o Grasshopper, butterfly, frogs

o Chicken, human, elephant

o Giraffes, rabbits, lions

o Monkeys, cats, dogs

72. Draw and label the life cycle of a butterfly below:



1. **What are the main differences between sexual and asexual reproduction?**

Sexual reproduction: 2 parents, forms offspring's with variation, sperm and egg needed.

Asexual reproduction: 1 parent, forms offspring that are clones, no sperm and egg.

2. **State the different forms of asexual reproduction.**

Budding when the offspring grows on the parent and when formed, breaks off.

Splitting when the parent splits into 2 offspring.

Vegetative propagation when a plant reproduces a new plant for its leaves, roots or stems.

3. **Why does sexual reproduction cause variation in traits?**

The traits that are inherited by the offspring from both parents.

4. **Why do flowers have bright petals?**

To attract insects towards it so that pollen can attach itself onto the insect and the insect can take it to another flower. – Pollination.

5. **What is the difference between self-pollination and cross pollination?**

Self-pollination: A perfect flower pollinates itself.

Cross-pollination: Pollen from one flower pollinates a flower on a different plant.

6. **How does a bee help flowers in reproduction?**

They transfer pollen (sperm) from one flower to another for fertilization through a process called pollination.

7. **How is fertilization and pollination different?**

Fertilization is the joining of sperm and egg cells.

Pollination is the transfer of pollen (sperm) from one flower to another.

8. **What conditions do plants need to germinate?**

They need water, sunlight, nutrients and space to grow.

9. **What is the function of a seed coat?**

To protect the seed from damage.

10. How are gymnosperms different from angiosperms?

Angiosperms: Bright flowers, seeds in a fruit.

Gymnosperms: No flowers, have cones no fruit, "naked" seeds.

United Arab Emirates

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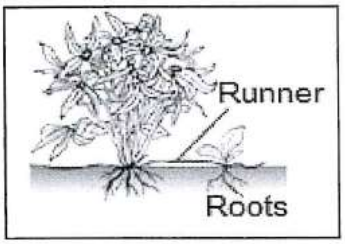
Past Exam Paper Questions

Look at Study this picture.



4. This plants is reproducing using:

a. seeds. b. budding.

c. cones. d. vegetative propagation.

5. The flowers of some plants are bright and colorful to:

a. entice people to cut them.

b. warn other organisms that they are dangerous.

c. capture light from the sun.

d. attract pollinators

6. How are nymphs different from adult insects?

a. They are larger. **c.** They have hard outer coverings.

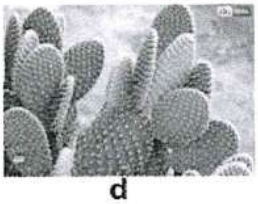
b. They reproduce asexually. **d.** They have no wings or sex organs.

7. Which plant that is a type of runner?


a


b


c


d

8. What is the yellow powder in plants that contains sperm cells called?

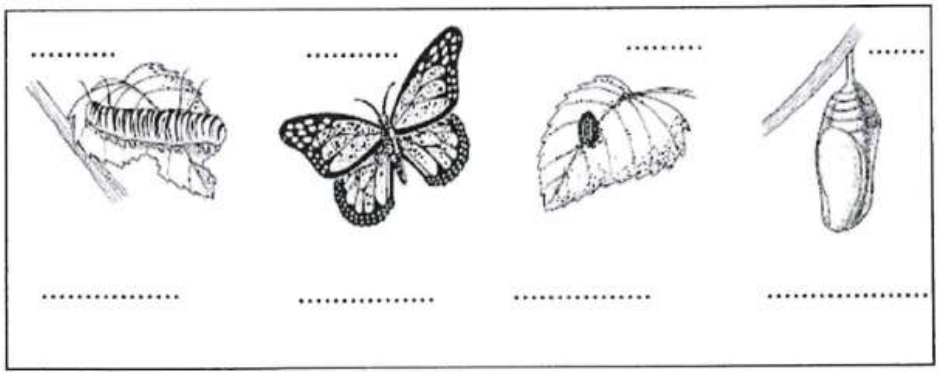
a. pollen **c.** seed coat

b. embryo **d.** conifer

9. Cells that can develop into new individuals without fertilization are called:

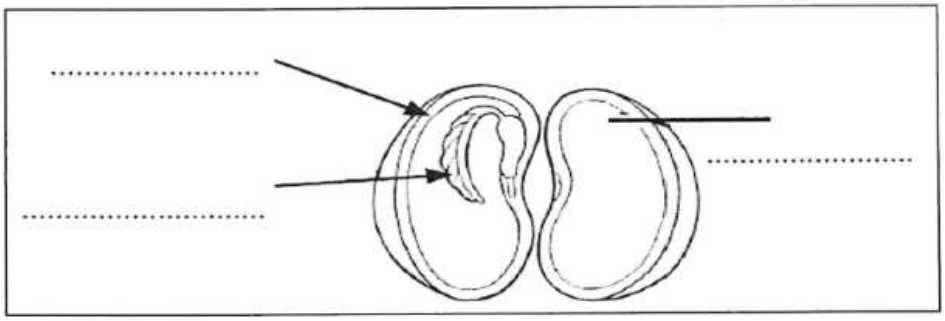
a. sex cells. **b.** sperm. **c.** spores. **d.** eggs.

22. Look at the pictures below. They show the stages of complete metamorphosis. Number the pictures so they are in the correct order, and label each stage.



BONUS

23. Write Label the main parts of a seed.



2nd. Answer the following questions

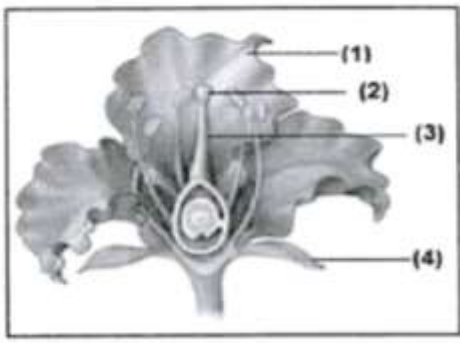
28. Label the parts of the flower suggest word box?

(1) .....

(2) .....

(3) .....

(4) .....



3rd. Answer the following questions

30. How is plant reproduction similar to animal reproduction?

.....
.....
.....
.....

31. Is a sea star created by sexual or asexual reproduction? Explain your answer.

.....
.....
.....
.....

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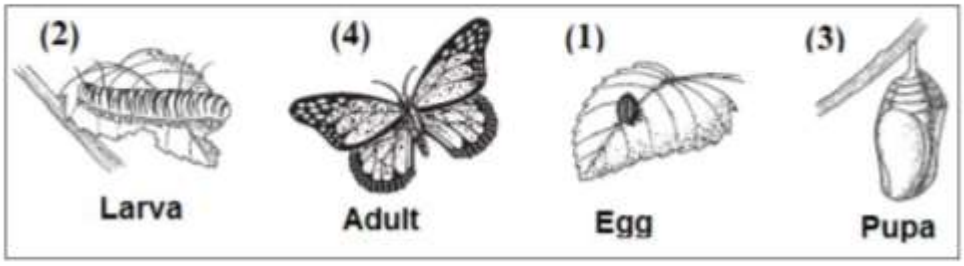
Past Exam Paper Questions Answers

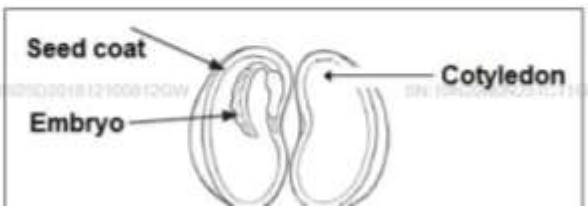
4	d. vegetative propagation
5	d. attract pollinators
6	d. They have no wings or sex organs.

7	b
8	a. pollen
9	c. spores.

22. (1×8=8 marks)



23. (1×3=3 marks)



28.(1) Petal

(2) Stigma

(3) Style

(4) Sepal

30. Most plants and animals need male and female cells to reproduce. Most plants and animals need a male cell to fertilize a female cell. The offspring of plants and animals are called embryos. In a plant, the embryo develops inside the seed. In an animal, the embryo develops inside an egg or inside the mother's body.

31. A sea star is a result of asexual reproduction. A jellyfish has

CHAPTER 3 - Interactions in Ecosystems

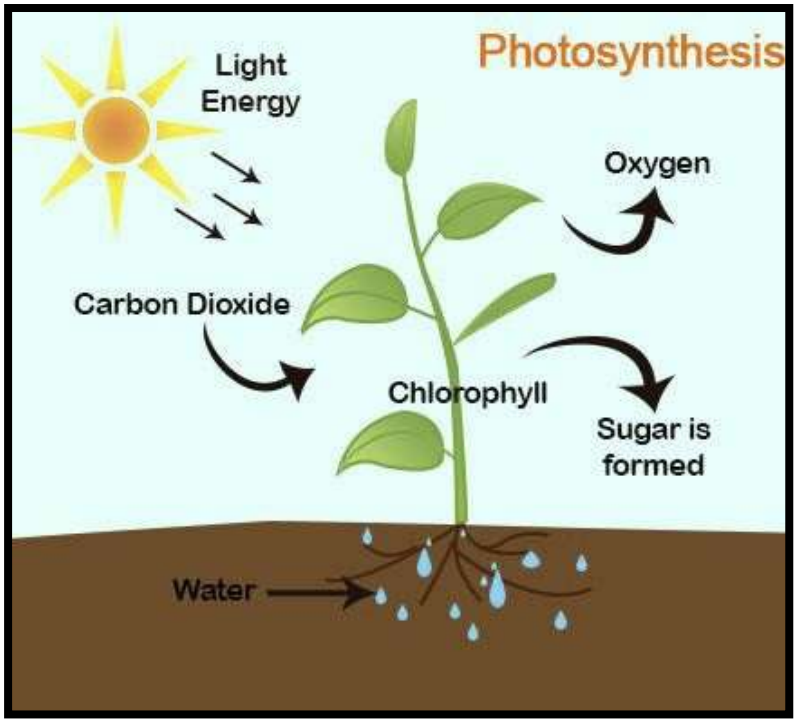
- **LESSON 1 - Photosynthesis**

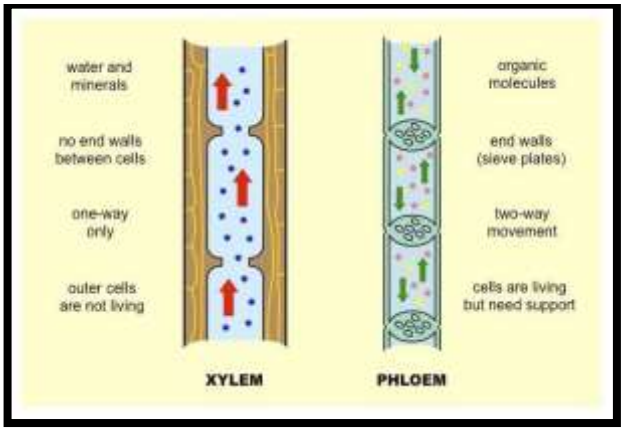
Vocabulary:

Photosynthesis	The process of making food using sunlight, water and carbon-dioxide
Chloroplasts	Plants make their own food in structures called chloroplasts
Chlorophyll	Chemical inside the chloroplast that captures sunlight
Stomata	Tiny pores in a leaf that let carbon-dioxide in and oxygen out
Epidermis	Outer layer of the leaf
Guard cells	Cells that open and close the stomata
Carbohydrate	Sugar that the plant makes as their food
Cellular respiration	The process of breaking sugar into a form that the cell can use as energy.
Transpiration	The loss of water from plant leaves

PHOTOSYNTHESIS - Photosynthesis is the process though which plants use water, light and carbon dioxide to create their food and release oxygen into the air.

- Plants need three basic things to live: **water, sunlight, and carbon dioxide**.
- Plants breathe carbon dioxide through the **stomata** which are small pores on the leaves. They open and close to give off and take in gases.
- Plants capture sunlight using a chemical called **chlorophyll** inside the **chloroplasts**. Chlorophyll is green, which is why so many plants appear green.
- Sunlight is captured by the chloroplasts as energy.
- This energy is used to create **sugar** which is food for the plants and **oxygen**.



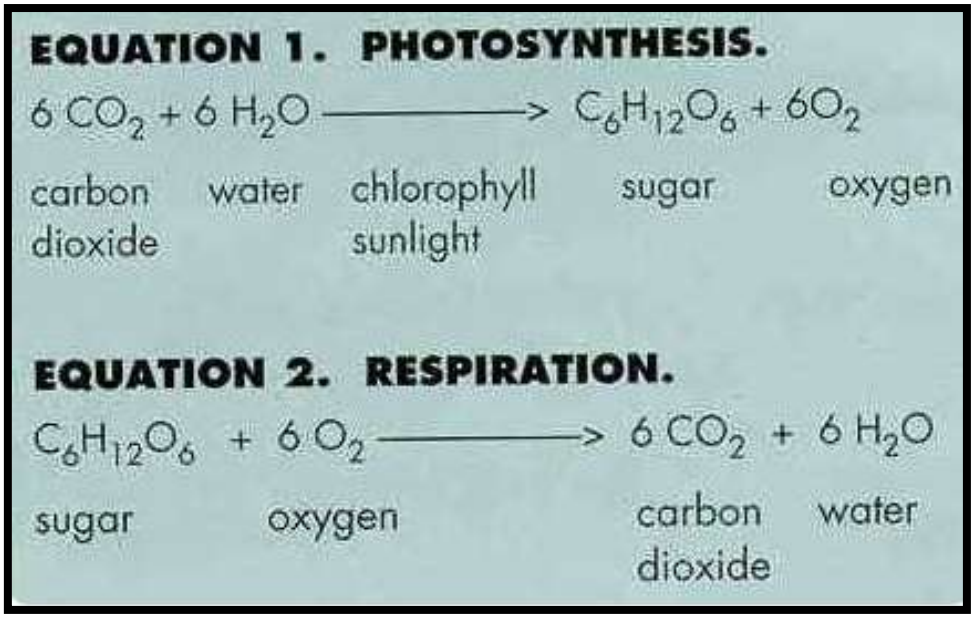


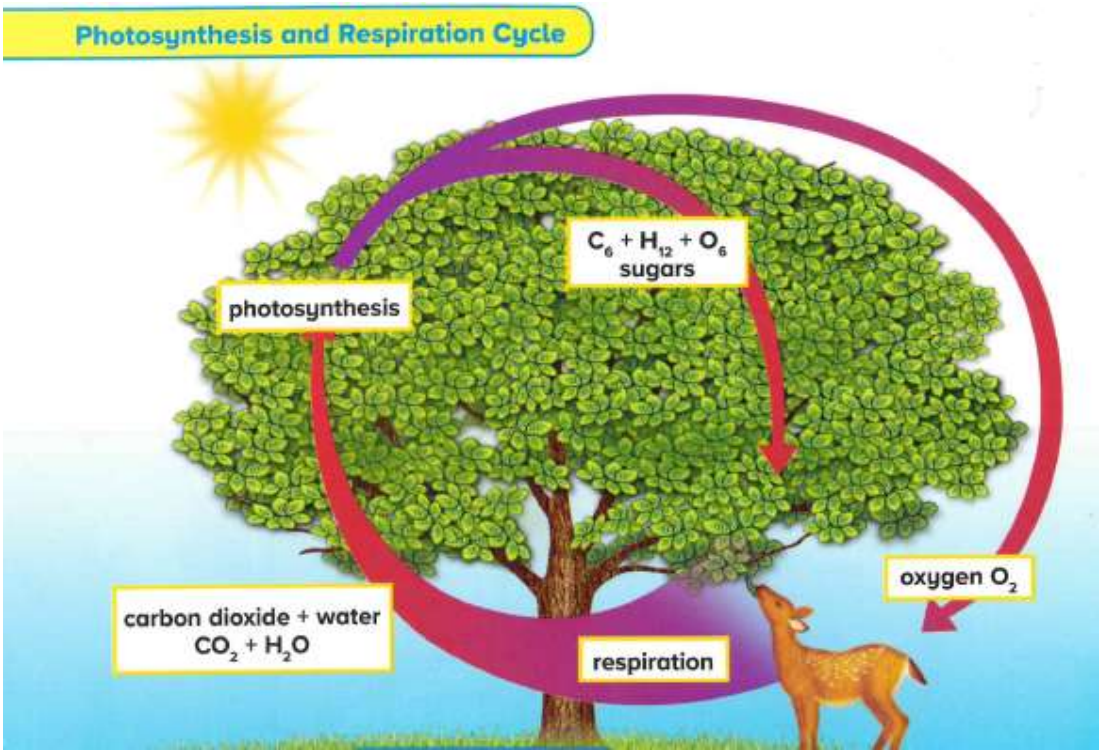
Plants have 2 vessels to transport things around the plant.

1. **Xylem** - takes water and minerals UP to all plant parts.
2. **Phloem** takes sugar and water from the leaves to other parts of the plant.

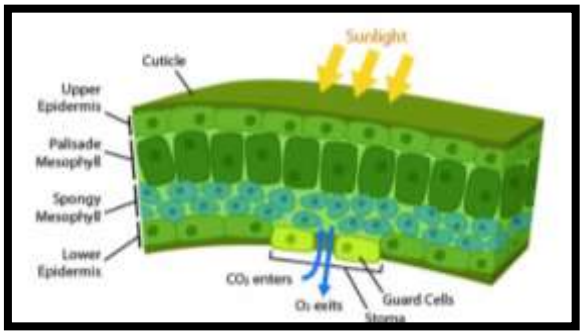
The sugar (Glucose) that's produced is a form of Carbohydrate.
Carbohydrates are usually stored as Starch or Cellulose in plants.

RESPIRATION
All organisms including plants need energy. This energy is produced through a process called respiration.

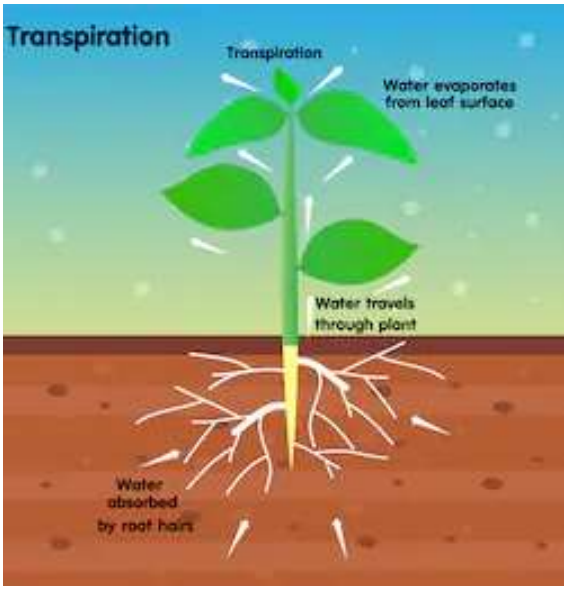




The **Stomata** allows gases and water to move through it. They open and close through the movement of the surrounding **Guard Cells**.



If a plant has too little water, the **Guard Cells** close. If a plant has plenty of the water the **Guard Cells** open and allow evaporating from the plant through the process of **Transpiration**.



CHAPTER 3 - Interactions in Ecosystems

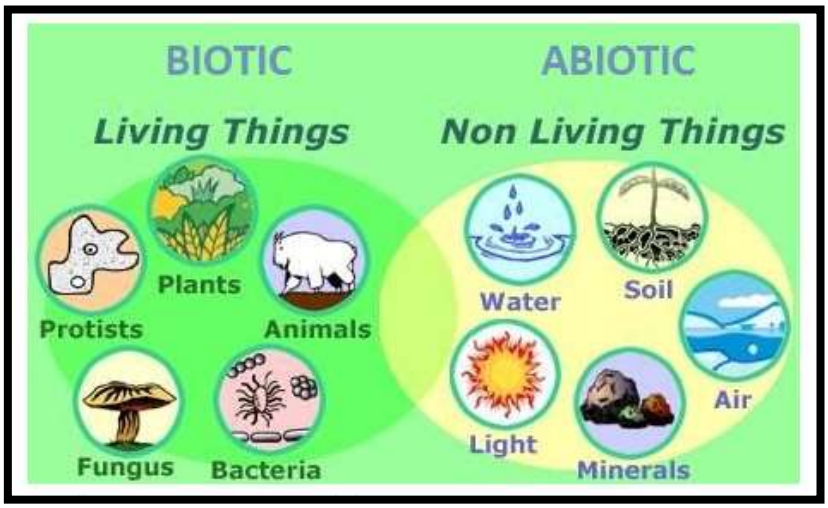
- **LESSON 2 - ENERGY FLOW IN ECOSYSTEMS**

Vocabulary:

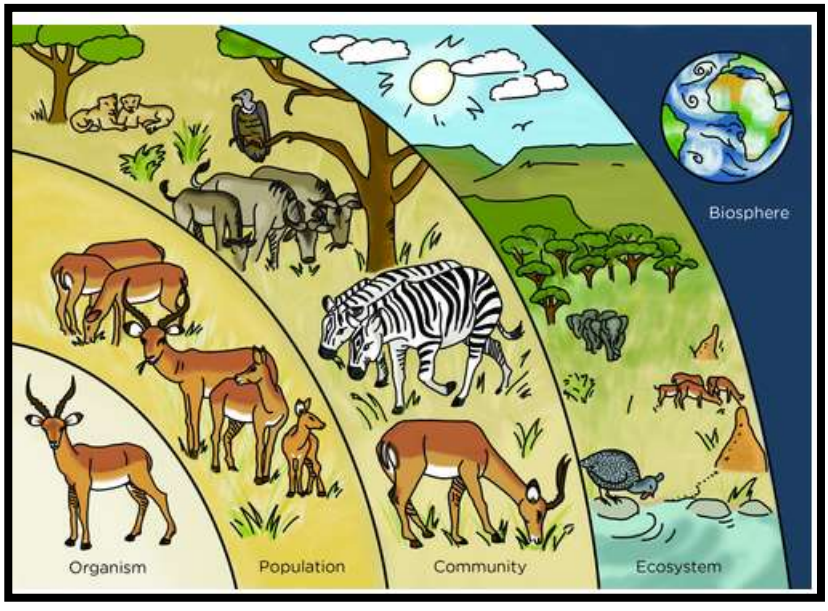
Ecosystem	A community of living and non-living things (sun, cloud,
Community	All the living things in an ecosystem (trees, plants, animals, insects)
Population	Members of one kind of organisms
Abiotic	Non-living things in an ecosystem
Biotic	Living things in an ecosystem
Herbivores	Animals that eat only plants
Carnivores	Animals that eat only meat
Omnivores	Animals that eat plants and meat
Food web	Network of food chains linked together
Predator	Animal that hunts and kills another animal for food
Prey	Animal that is hunted and killed
Producers	Plants that make their own food
Decomposers	Organisms that break down dead animals and plants
Consumers	Any animal which eats other animals or plants

ECOSYSTEMS

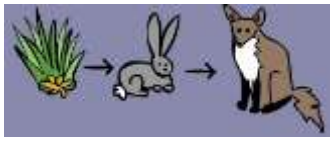
An **environment** refers to the surroundings or dwelling place of all living things while an **ecosystem** is likened to a community that functions as a single unit.

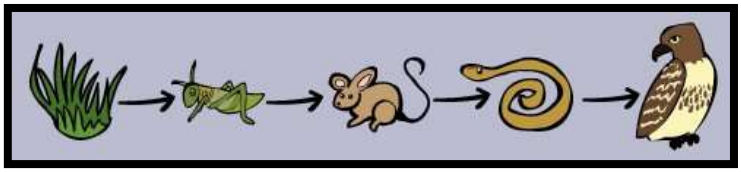


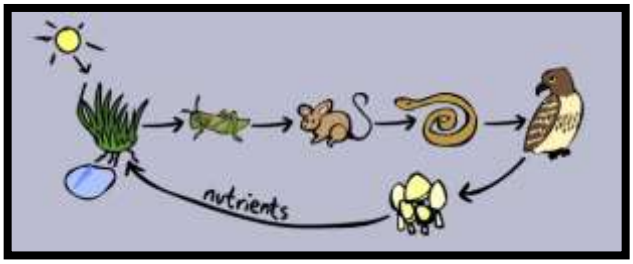
The main **difference between population** and **community** is that a **population** is a group of individuals of a particular species living **in a** particular ecosystem at a particular time whereas a **community** is a collection of **populations** living **in a** particular ecosystem at a particular time.



FOOD CHAINS - A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature. Food chains begin with plant-life, and end with animal-life. Some animals eat plants, some animals eat other animals. A simple food chain could start with grass, which is eaten by rabbits. Rabbits are eaten by fox.

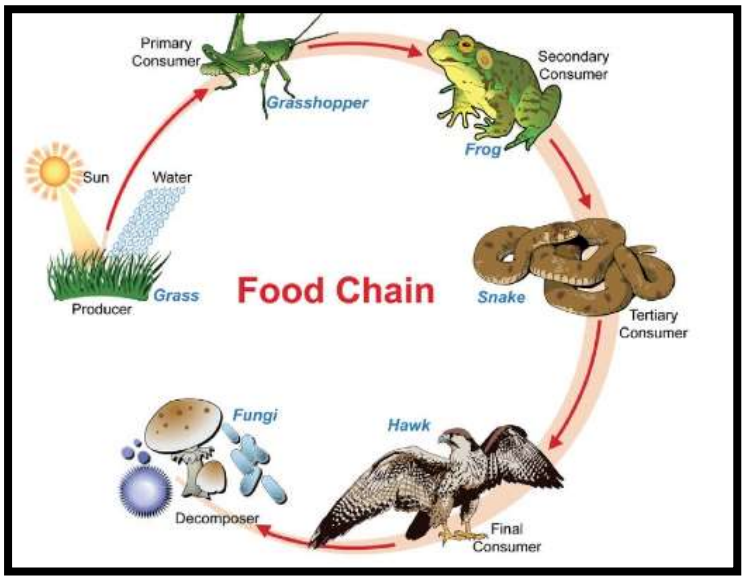




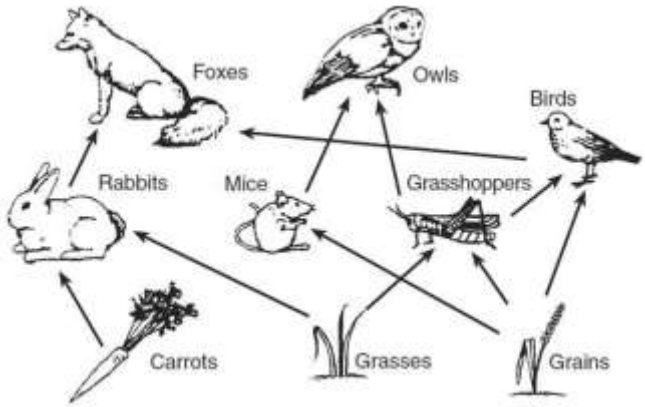


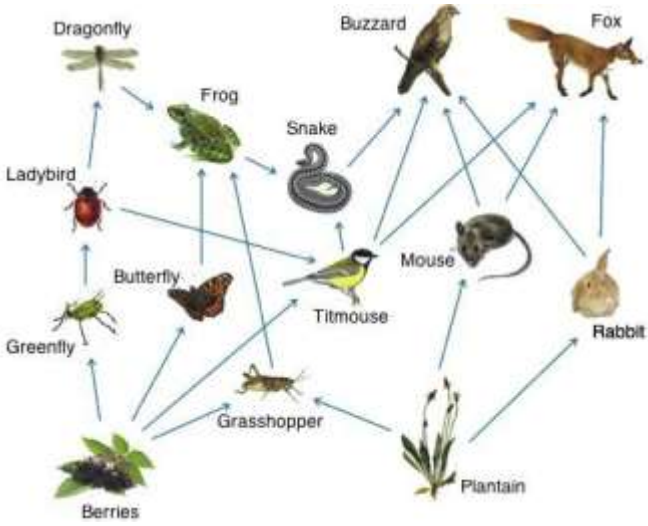
Acorns • Mice • Snakes • Hawks.

After a hawk dies, fungi (like mushrooms) and other decomposers break down the dead hawk, and turn the remains of the hawk into nutrients, which are released into the soil.



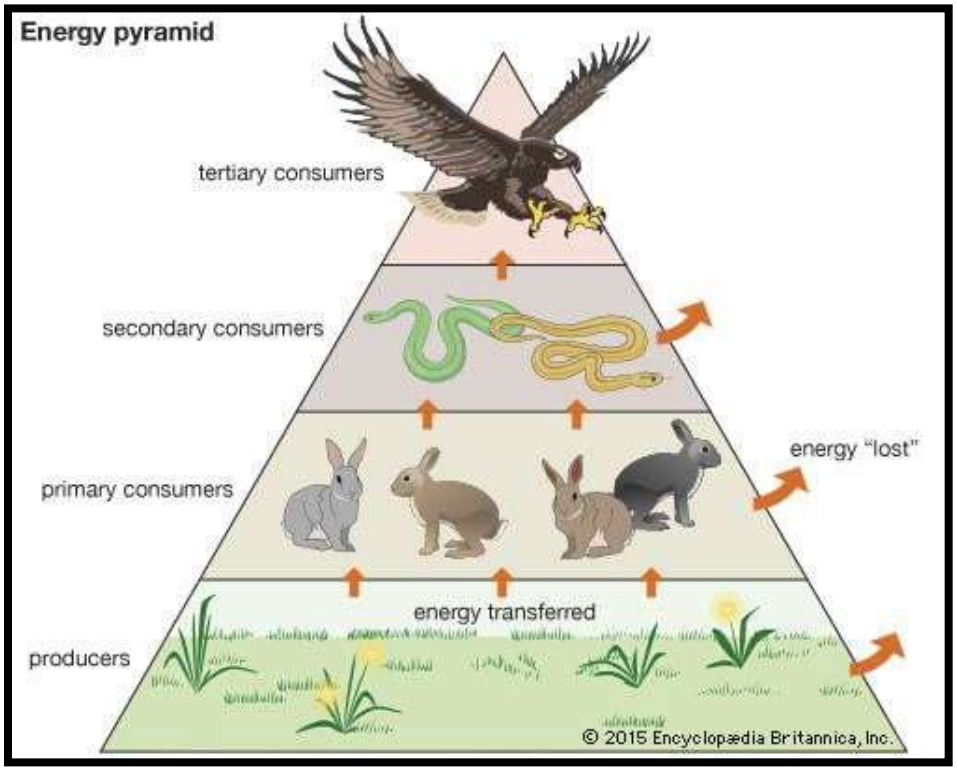
FOOD WEBS - This consists of more than one Food Chains linked together in some way.





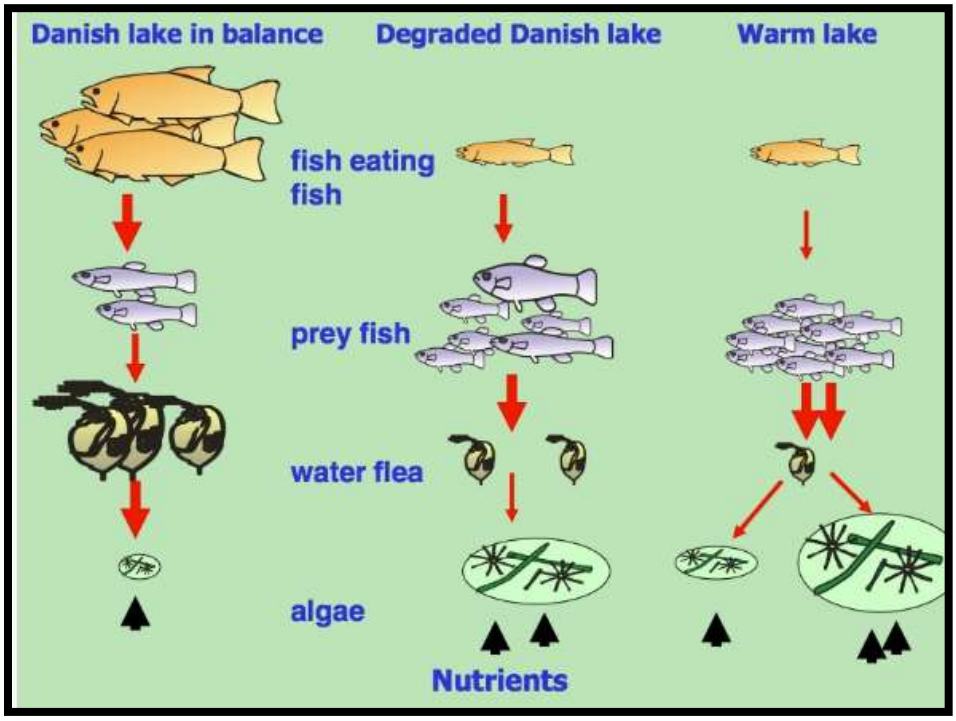
ENERGY PYRAMID – The Suns energy is captured by Plants and used in Photosynthesis to produce food.
Plants as all organisms use energy for their survival. Only 10% of this energy is passed onto the Primary Consumer. The same happens with the Primary Consumer which passes on 10% of its energy to the secondary consumer.

The energy available decreases going up the Energy Pyramid.



CHANGES IN FOOD CHAINS AND FOOD WEBS

An imbalance in an ecosystem can cause changes in Food Chains and Food Webs. It can cause certain organisms to increase in numbers or decrease in numbers.

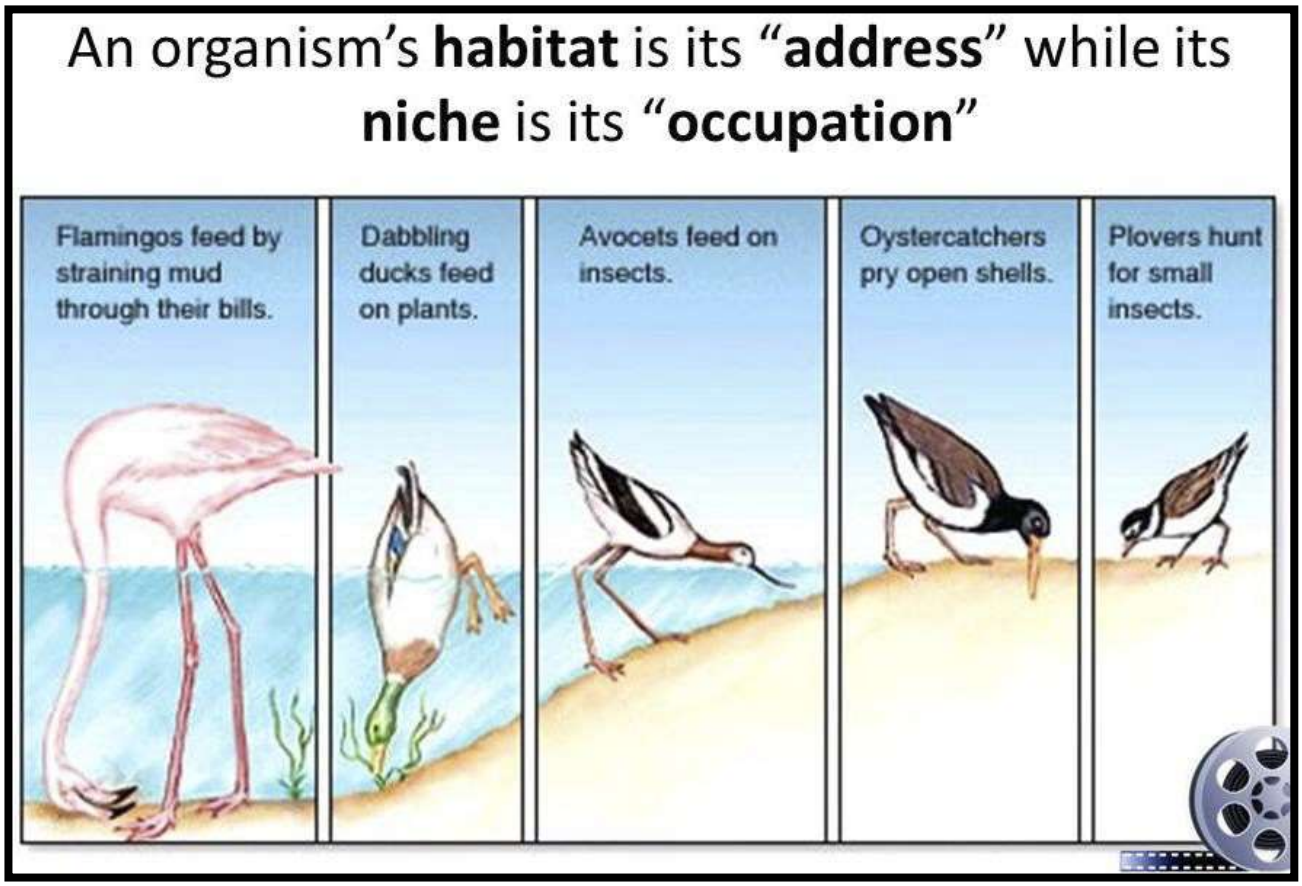


CHAPTER 3 - Interactions in Ecosystems

LESSSON 3 - RELATIONSHIPS IN ECOSYSTEMS

Vocabulary:

Habitat	Physical place where an organism lives
Niche	The role an organism plays in its habitat
Limiting factor	Any resource that keeps under control growth of populations
Carrying capacity	The largest number of 1 kind of population in an ecosystem
Symbiosis	Relationship between 2 or more kinds of organisms
Mutualism	Relationship where 2 organisms benefit
Commensalism	Relationship where 1 organism benefits but other is not harmed
Parasitism	Relationship where 1 organism benefits but other harmed



Habitat

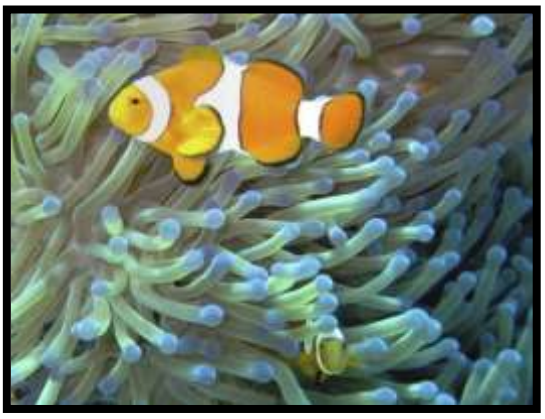
- The habitat is the place where an organism lives out its life.
  - It is <u>where</u> the organism finds food, shelter and mates.

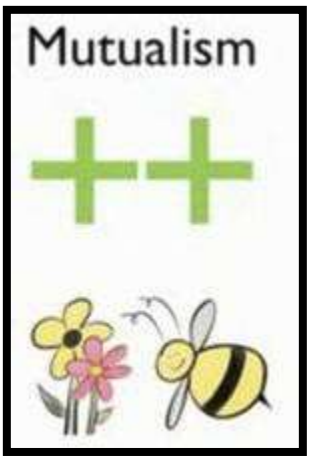
Niche

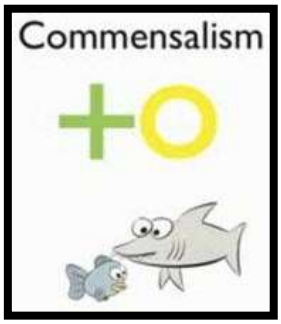
- A niche is its role in the community and how it interacts with the environment.
  - <u>How</u> it obtains food, mates and protection from predators.

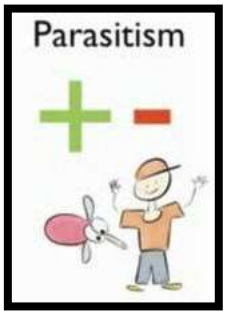
<u>SYMBIOSIS</u>

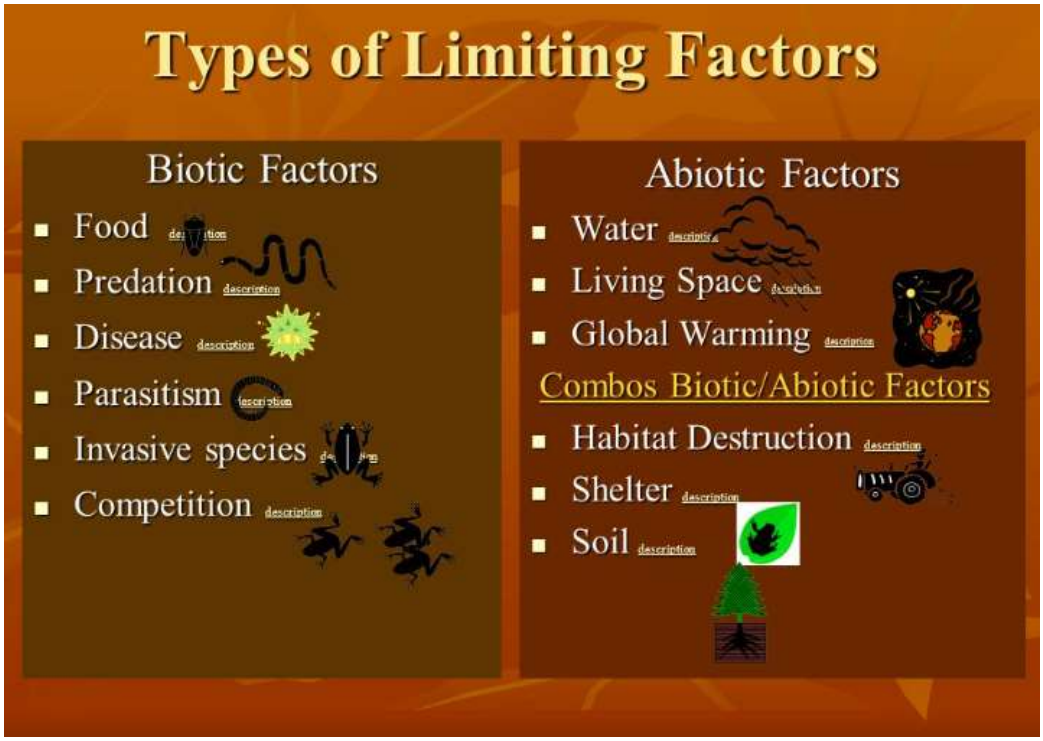
There are 3 types of Symbiosis.











CARRYING CAPACITY: No population can grow indefinitely. Due to limited resources there's always a limit as to how many individuals there are in any population.

CHAPTER 3 - Interactions in Ecosystems

LESSSON 4 - ADAPTATIONS AND SURVIVAL

Vocabulary

Adaptation	any characteristic that helps an organism survive."
Structural adaptation	Changes to body parts to survive in an environment
Behavioural adaptation	Changes to how you act to survive in an environment
Migration	Traveling to a warmer place
Hibernation	Doing no activity when the weather is cold (bears sleeping)
Mimicry	An animal which look like an unpleasant animal.
Camouflage	Ability for an organism to blend in with the environment.

STRUCTURAL ADAPTATIONS

long legs to run with;
protective coloration to hide from predators;
beaks that can extract nectar from certain flowers;
fur coats for protection from cold

BEHAVIOURAL ADAPTATIONS

wolves traveling in packs;
hunting at night;
migration;
hibernation when there is no food

Mimicry Helps Animals Hide

- Some animals use **mimicry** to avoid being seen by predators
- **Mimicry** is when an animal adapts to look like another animal in order to deceive a predator
  - The Viceroy butterfly mimics the characteristics of the Monarch butterfly to avoid its predators

Viceroy Butterfly

Monarch Butterfly

OWL BUTTERFLY MIMICRY: Eye spots on wings resemble owl eyes. When the butterfly spreads its wings, the eye spots may scare predators.

(Conant 1958)

Eastern Coral Snake
(venomous)

Scarlet King Snake
(non-venomous)

What is camouflage?

- Camouflage is a kind of colouring, body shape, and/or behaviour animals use to protect themselves.
- Camouflage helps animals hide by blending in with their environment.

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Chapter 3 Practice Questions

Please choose the correct answer.

• The process of making food in a plant is called ----------

o transpiration o photosynthesis o fertilization o respiration

• Which of these is not needed to make food in a plant?

o Sunlight o Carbon Dioxide o Chlorophyll o Flowers

• The tiny pores or openings in leaves that take in the carbon dioxide are called

o stomata o xylem o phloem o cuticle

• Phloem:

o the tissue that carried the water from the roots to the leaves

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• The tubes that bring water from the roots to the leaves are called

o xylem o phloem o stomata o cuticle

• The animals breathe out what that plants need for photosynthesis?

o oxygen o carbon dioxide o chlorophyll o water

• Which gas is needed for photosynthesis?

o Oxygen o Carbon dioxide o Hydrogen o Nitrogen

• What type of energy is needed for photosynthesis to happen?

o Light o Heat o Electrical

• The waste by-product of photosynthesis is:

o Oxygen o Carbon dioxide o Glucose o Nitrogen

• In addition to sunlight, what other raw material is required for photosynthesis to take place?

o sugar and water

o water and oxygen

o carbon dioxide and water

o oxygen and carbon dioxide

• Photosynthesis can be summarised by which word equation?

o carbon dioxide + oxygen → glucose + water

o oxygen + glucose → carbon dioxide + water

o carbon dioxide + water → glucose + oxygen

• Where does photosynthesis take place?

o xylem o phloem o stomata o chloroplast

• Cuticle:

o the tissue that carried the water from the roots to the leaves

o a layer that prevents water loss

o is tissue where the sugars transported to the plant's cells through it.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• What is the first step in photosynthesis?

o Producing sugar o Trapping sunlight o Producing water

• What are the products of photosynthesis?

o water and oxygen o sugar and water o sugar and oxygen o water and carbon dioxide

• The small openings in the underside of a leaf are called ----------

o Epidermis o Xylem o Stomata o Phloem

• The loss of water through plant leaves is ----------

o Transpiration o Photosynthesis o Chlorophyll o Respiration

• The outer layer of cells on a leaf is the----------

o Stomata. o Epidermis o Stem o Chloroplast

• The process by which plants make food is ----------

o Transpiration o Growing o Photosynthesis o Respiration

• Three things needed by plants for the production of food are:

o Water, oxygen, and sunlight.

o Water, carbon dioxide, and fertilizer

o Water, oxygen, and sugar

o Water, carbon dioxide, and sunlight

• The green pigment in chloroplasts that enable a plant to absorb light energy to make food is ----------

o Carbon dioxide o Chlorophyll o Chloroplast o Stem

• Plants take in ----------from the air.

o Carbon dioxide o Chlorophyll o Oxygen o Energy

• Xylem:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

• ---------- is released by plants as a by-product of photosynthesis.

o Energy o Carbon dioxide o Oxygen o Chlorophyll

• What three things do plants need for the process of photosynthesis?

o Sunlight, oxygen, and sugar

o Sunlight, carbon dioxide, and water

o Carbon dioxide, oxygen, and soil

o Sunlight, soil, and water

• If plants breathe in carbon dioxide, what do they breathe out?

o Nitrogen o Oxygen o Carbon monoxide o Hydrogen o Helium

• Epidermis:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• What is the compound that plants use to absorb the energy from light?

o Carbon Dioxide o Water o Nitrogen o Chlorophyll

• What colour is chlorophyll?

o Red o Blue o Yellow o Green

• All plants need the same amount of sun to make enough food to be healthy.

o TRUE o FALSE

• Where in plants does most photosynthesis occur?

o roots o flowers o leaves o All parts of a plant perform photosynthesis.

• Stomata:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• The tissue where the sugars transported to the plant's cells through it ----------

o xylem o phloem o stomata o cuticle

• A layer that prevent water loss----------

o phloem o stomata o xylem o cuticle

Match with the correct answer:

A. Chloroplast 1. The green pigment in leaves which collects Energy from the sun

B. Stomata 2. Invisible gas given off by plants is a by-product of photosynthesis

C. Oxygen 6. Form of sugar produced during photosynthesis

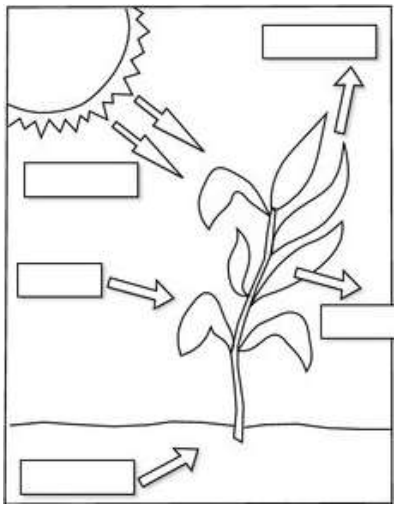
D. Glucose 4. The structure in which photosynthesis takes place

E. Chlorophyll 5. Small openings through which gas move in and out of the leaves

F. Carbon dioxide 6. Invisible gas taken in by plants for photosynthesis

Label the below diagram:

Light Water Oxygen Carbon Dioxide Glucose



Xylem Epidermis Phloem Chloroplast Chlorophyll Cuticle Sunlight Stomata Carbohydrate Transpiration

• ---------- is a structure inside the plant cell where the plant making their own food.

• The tissue that carried the water from the roots to the leaves ----------

• ----------is a form of energy that plants use to make their food

• ----------is a green chemical found in the chloroplast inside the leaf cells and it capture energy from the sun.

• ----------are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

• The outermost layer of a leaf which has the cells where the photosynthesis occurs is ---------

• ---------- a layer that prevent water loss

• ----------is tissue where the sugars transported to the plant's cells through it.

• A name given to a group of substance made from carbon, hydrogen and oxygen is ----------

• The loss of water from the plant leaves is known as ----------

• In a food chain, ----------is passed on from one organism to another

o Waste o Sunlight o Energy o Gas

• Which of the following descriptions about the organization of an ecosystem is correct?

o Communities make up species, which make up populations.

o Populations make up species, which make up communities.

o Species make up communities, which make up populations.

o Species make up populations, which make up communities.

• What is a consumer?

o An animal that does not make its own food

o an animal that eats other animals

o a living organism that uses sunlight to make its own food

o an animal that has no known predators

• Producers are ---------- because they get energy from the sun, make their own food, and make food for some animals.

o not an important part of the food chain

o animals such as deer and zebras

o the first part of the food chain

o break nutrients down into the soil

• What is a food chain?

o model the feeding relationships between organisms in an ecosystem

o An animal that eats other animals

o A living organism that is able to use sunlight to make its own food

o An animal that has no known predators

• What is a producer?

o An animal that eats other animals

o A living organism that uses sunlight to make its own food

o An animal that only eats plants

o An animal that has no known predators

• A carnivore is an animal that only eats meat.

o True o False

• Food chain is a series of relationships between members of an ecosystem so that ----- ----------can be transferred between them.

o food

o sunlight

o energy

o water

• An example of a food chain in a pond environment would be: algae: water bug: fish: otter. In this example the _____ is at the bottom of the food chain.

o algae

o water bug

o fish

o otter

• Which food chain correctly describes the flow of energy in an ecosystem?

o Grass - cow - human

o Caterpillar – leaf - human

o Cow – grass - human

o Leaf – bird – caterpillar

• Rabbits eat grass and other plants to survive, but they do not eat animals. What kind of animal are rabbits?

o Decomposers

o Carnivores

o Producers

o Herbivores

• How do decomposers help other organisms in an ecosystem?

o They break down dead organisms and add nutrients back to the soil that plants use.

o They use the sunlight to make their own food that other organisms eat for energy.

o They help disperse seeds for plant growth.

o Decomposers do not help other organisms in an ecosystem

• In what order do a falcon, grass, and rabbit form a food chain in a meadow?

o Falcon------>grass------>rabbit

o Grass------>falcon------->rabbit

o Rabbit----->grass------->falcon

o Grass------>rabbit------->falcon

• A predator is an animal that hunts for food

o True o False

• An animal that eats other animals is known as a----------

o herbivore

o food chain

o carnivore

o omnivore

• Which of the following lists only consumers?

o Hawks, lizards, chipmunks

o Acorns, squirrels, rabbits

o Grass, chipmunks, eagles

o Mice, squirrels, grass

• What is the difference between a food chain and a food web?

o A food chain is larger than a food web

o A food chain is the combination of all the food webs in an ecosystem

o A food web is smaller than a food chain

o A food web is the combination of all the food chains in an ecosystem

• What is the name of an animal that only eats meat?

o carnivore

o human

o omnivore

o herbivore

• ---------- break down dead plants and animals.

o decomposers

o producers

o consumers

o prey

• The living and non-living things that interact in an environment is called a ----------

o food chain

o consumer

o ecosystem

o food web

• An organism that makes its own food is a----------

o Producer

o Decomposer

o food web

o food chain

o consumer

• A ----------shows how energy passes from one organism to another in an ecosystem.

o Omnivore

o food web

o herbivore

o food chain

• An organism that eats other organisms is called a ----------

o Producer

o food chain

o ecosystem

o Consumer

• A----------shows how food chains are linked together.

o consumer

o food web

o producer

o food chain

• An animal that eats plants is called a----------

o herbivore

o carnivore

o food web

o omnivore

• An animal that eats both plants and animals is called a----------

o herbivore

o omnivore

o carnivore

o food chain

• Producers use energy from the sun.

o True o False

• The organisms hunted by predators are called----------

o predators

o consumers

o producers

o prey

• All members of a single species in an area at a given time is a----------

o ecosystem

o population

o community

o food chain

• Food chains begin with ---------- that make their own food.

o decomposers

o producers

o consumers

o energy

• Nutrients from dead organisms are recycled by _____.

o decomposers

o consumers

o producers

o scavengers

• An example of omnivores is ----------

o mice

o squirrels

o bobcats

o hawks

• Vultures, raccoons, jackals, crows are examples of ----------

o producers

o scavengers

o decomposers

o consumers

• The top of the energy pyramid represents the ----------

o Producer

o Consumer

o carnivores

o Decomposer

• All of the following are omnivores except ----------

o raccoons

o mice

o some crabs

o bacteria

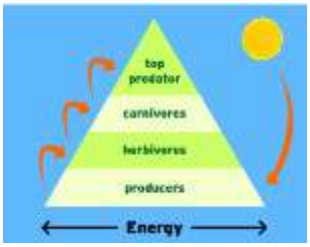
• The diagram shows ----------

o food chain

o energy pyramid

o ecosystem

o food web



• What is an animal that is eaten by a predator?

o Producer

o Prey

o Consumer

o Decomposer

• ----------is a living thing that can make its own food.

o Producer

o Consumer

o Predator

o Decomposer

• All food chains start with----------

o the plant

o the sun

o the predator

o the prey

• Lions, tigers and other big cats are ----------

o predators

o Prey

o Producers

o Herbivores

• Organisms that eat other organisms, they can be herbivores, carnivores, or omnivores are called ----------

o predator

o prey

o consumer

o producer

• The bottom of the energy pyramid represents the ----------

o Producer

o Consumer

o Carnivores

o Decomposer

• Community is ----------

o all living (biotic) and non-living (abiotic) things in an environment

o all members of a single species in an area at a given time

o made from many different populations including all the living things in an ecosystem

Fill in the blank with the right word

Abiotic Population Ecosystem Biotic Community

• ---------- are living things like plant and animals

• ----------are non-living things like soil, sunlight, air, and water

• All living (biotic) and non-living (abiotic) things in an environment are ----------

• All members of a single species in an area at a given time is a ----------

• ----------is made from many different populations including all the living things in an ecosystem

Choose the correct answers.

A. Omnivores animals that eat producers (plants)

B. Carnivores organisms that obtain energy by consuming wastes and dead organisms

C. Herbivores animals that eat other animals

D. Decomposers a consumer that eats the remains of dead animals that it didn't hunt or kill

E. Scavengers are animals that eat both plants and other animals

• Fill the blank with correct information

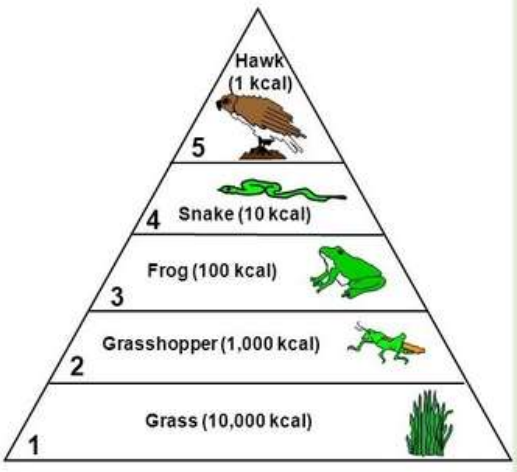
• Please look at the following diagram and answer the following questions

• The diagram represents ----------

• What represents the producer in the diagram? ----------

• What represents the herbivores in the diagram? ----------

• What represents the carnivores in the diagram? ----------



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Chapter 3 Practice Questions Answers

Please choose the correct answer.

• The process of making food in a plant is called ----------

o transpiration o photosynthesis o fertilization o respiration

• Which of these is not needed to make food in a plant?

o Sunlight o Carbon Dioxide o Chlorophyll o Flowers

• The tiny pores or openings in leaves that take in the carbon dioxide are called

o stomata o xylem o phloem o cuticle

• Phloem:

o the tissue that carried the water from the roots to the leaves

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• The tubes that bring water from the roots to the leaves are called

o xylem o phloem o stomata o cuticle

• The animals breathe out what that plants need for photosynthesis?

o oxygen o carbon dioxide o chlorophyll o water

• Which gas is needed for photosynthesis?

o Oxygen o Carbon dioxide o Hydrogen o Nitrogen

• What type of energy is needed for photosynthesis to happen?

o Light o Heat o Electrical

• The waste by-product of photosynthesis is:

o Oxygen o Carbon dioxide o Glucose o Nitrogen

• In addition to sunlight, what other raw material is required for photosynthesis to take place?

o sugar and water

o water and oxygen

o carbon dioxide and water

o oxygen and carbon dioxide

• Photosynthesis can be summarised by which word equation?

o carbon dioxide + oxygen → glucose + water

o oxygen + glucose → carbon dioxide + water

o carbon dioxide + water → glucose + oxygen

• Where does photosynthesis take place?

o xylem o phloem o stomata o chloroplast

• Cuticle:

o the tissue that carried the water from the roots to the leaves

o a layer that prevents water loss

o is tissue where the sugars transported to the plant's cells through it.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• What is the first step in photosynthesis?

o Producing sugar o Trapping sunlight o Producing water

• What are the products of photosynthesis?

o water and oxygen o sugar and water o sugar and oxygen o water and carbon dioxide

• The small openings in the underside of a leaf are called ----------

o Epidermis o Xylem o Stomata o Phloem

• The loss of water through plant leaves is ----------

o Transpiration o Photosynthesis o Chlorophyll o Respiration

• The outer layer of cells on a leaf is the----------

o Stomata. o Epidermis o Stem o Chloroplast

• The process by which plants make food is ----------

o Transpiration o Growing o Photosynthesis o Respiration

• Three things needed by plants for the production of food are:

o Water, oxygen, and sunlight.

o Water, carbon dioxide, and fertilizer

o Water, oxygen, and sugar

o Water, carbon dioxide, and sunlight

• The green pigment in chloroplasts that enable a plant to absorb light energy to make food is ----------

o Carbon dioxide o Chlorophyll o Chloroplast o Stem

• Plants take in ----------from the air.

o Carbon dioxide o Chlorophyll o Oxygen o Energy

• Xylem:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

• ---------- is released by plants as a by-product of photosynthesis.

o Energy o Carbon dioxide o Oxygen o Chlorophyll

• What three things do plants need for the process of photosynthesis?

o Sunlight, oxygen, and sugar

o Sunlight, carbon dioxide, and water

o Carbon dioxide, oxygen, and soil

o Sunlight, soil, and water

• If plants breathe in carbon dioxide, what do they breathe out?

o Nitrogen o Oxygen o Carbon monoxide o Hydrogen o Helium

• Epidermis:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• What is the compound that plants use to absorb the energy from light?

o Carbon Dioxide o Water o Nitrogen o Chlorophyll

• What colour is chlorophyll?

o Red o Blue o Yellow o Green

• All plants need the same amount of sun to make enough food to be healthy.

o TRUE o FALSE

• Where in plants does most photosynthesis occur?

o roots o flowers o leaves o All parts of a plant perform photosynthesis.

• Stomata:

o the tissue that carried the water from the roots to the leaves

o a layer that prevent water loose

o is tissue where the sugars transported to the plant's cells through it.

o are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

o the outermost layer of a leaf which has the cells where the photosynthesis occurs

• The tissue where the sugars transported to the plant's cells through it ----------

o xylem o phloem o stomata o cuticle

• A layer that prevent water loss----------

o phloem o stomata o xylem o cuticle

Match with the correct answer:

A. Chloroplast **1. The green pigment in leaves which collects Energy from the sun**

B. Stomata **2. Invisible gas given off by plants is a by-product of photosynthesis**

C. Oxygen **6. Form of sugar produced during photosynthesis**

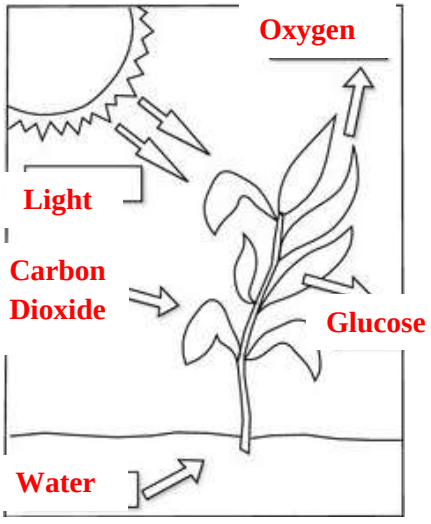
D. Glucose **4. The structure in which photosynthesis takes place**

E. Chlorophyll **5. Small openings through which gas move in and out of the leaves**

F. Carbon dioxide **6. Invisible gas taken in by plants for photosynthesis**

Label the below diagram:

Light **Water** **Oxygen** **Carbon Dioxide** **Glucose**



Xylem Epidermis Phloem Chloroplast Chlorophyll Cuticle Sunlight Stomata Carbohydrate Transpiration

• **Chloroplast** is a structure inside the plant cell where the plant making their own food.

• The tissue that carried the water from the roots to the leaves **Xylem**

• **Sunlight** is a form of energy that plants use to make their food

• **Chlorophyll** is a green chemical found in the chloroplast inside the leaf cells and it capture energy from the sun.

• **Stomata** are tiny pores in the plant leaves and also in some stems where the carbon dioxide need to carry out photosynthesis enters from the air to the plant.

• The outermost layer of a leaf which has the cells where the photosynthesis occurs is **Epidermis**

• **Cuticle** a layer that prevent water loss

• **Phloem** is tissue where the sugars transported to the plant's cells through it.

• A name given to a group of substance made from carbon, hydrogen and oxygen is **Carbohydrate**

• The loss of water from the plant leaves is known as **Transpiration**

• In a food chain, ----------is passed on from one organism to another

o Waste o Sunlight o Energy o Gas

• Which of the following descriptions about the organization of an ecosystem is correct?

o Communities make up species, which make up populations.

o Populations make up species, which make up communities.

o Species make up communities, which make up populations.

o Species make up populations, which make up communities.

• What is a consumer?

o An animal that does not make its own food

o an animal that eats other animals

o a living organism that uses sunlight to make its own food

o an animal that has no known predators

• Producers are ---------- because they get energy from the sun, make their own food, and make food for some animals.

o not an important part of the food chain

o animals such as deer and zebras

o the first part of the food chain

o break nutrients down into the soil

• What is a food chain?

o model the feeding relationships between organisms in an ecosystem

o An animal that eats other animals

o A living organism that is able to use sunlight to make its own food

o An animal that has no known predators

• What is a producer?

o An animal that eats other animals

o A living organism that uses sunlight to make its own food

o An animal that only eats plants

o An animal that has no known predators

• A carnivore is an animal that only eats meat.

o True o False

• Food chain is a series of relationships between members of an ecosystem so that ----- ----------can be transferred between them.

o food

o sunlight

o energy

o water

• An example of a food chain in a pond environment would be: algae: water bug: fish: otter. In this example the _____ is at the bottom of the food chain.

o algae

o water bug

o fish

o otter

• Which food chain correctly describes the flow of energy in an ecosystem?

o Grass - cow - human

o Caterpillar – leaf - human

o Cow – grass - human

o Leaf – bird – caterpillar

• Rabbits eat grass and other plants to survive, but they do not eat animals. What kind of animal are rabbits?

o Decomposers

o Carnivores

o Producers

o Herbivores

• How do decomposers help other organisms in an ecosystem?

o They break down dead organisms and add nutrients back to the soil that plants use.

o They use the sunlight to make their own food that other organisms eat for energy.

o They help disperse seeds for plant growth.

o Decomposers do not help other organisms in an ecosystem

• In what order do a falcon, grass, and rabbit form a food chain in a meadow?

o Falcon------>grass------>rabbit

o Grass------>falcon------->rabbit

o Rabbit----->grass------->falcon

o Grass------>rabbit------->falcon

• A predator is an animal that hunts for food

o True o False

• An animal that eats other animals is known as a----------

o herbivore

o food chain

o carnivore

o omnivore

• Which of the following lists only consumers?

o Hawks, lizards, chipmunks

o Acorns, squirrels, rabbits

o Grass, chipmunks, eagles

o Mice, squirrels, grass

• What is the difference between a food chain and a food web?

o A food chain is larger than a food web

o A food chain is the combination of all the food webs in an ecosystem

o A food web is smaller than a food chain

o A food web is the combination of all the food chains in an ecosystem

• What is the name of an animal that only eats meat?

o carnivore

o human

o omnivore

o herbivore

• ---------- break down dead plants and animals.

o decomposers

o producers

o consumers

o prey

• The living and non-living things that interact in an environment is called a ----------

o food chain

o consumer

o ecosystem

o food web

• An organism that makes its own food is a----------

o Producer

o Decomposer

o food web

o food chain

o consumer

• A ----------shows how energy passes from one organism to another in an ecosystem.

o Omnivore

o food web

o herbivore

o food chain

• An organism that eats other organisms is called a ----------

o Producer

o food chain

o ecosystem

o Consumer

• A----------shows how food chains are linked together.

o consumer

o food web

o producer

o food chain

• An animal that eats plants is called a----------

o herbivore

o carnivore

o food web

o omnivore

• An animal that eats both plants and animals is called a----------

o herbivore

o omnivore

o carnivore

o food chain

• Producers use energy from the sun.

o True o False

• The organisms hunted by predators are called----------

o predators

o consumers

o producers

o prey

• All members of a single species in an area at a given time is a----------

o ecosystem

o population

o community

o food chain

• Food chains begin with ---------- that make their own food.

o decomposers

o producers

o consumers

o energy

• Nutrients from dead organisms are recycled by _____.

o decomposers

o consumers

o producers

o scavengers

• An example of omnivores is ----------

o mice

o squirrels

o Bobcats

o hawks

• Vultures, raccoons, jackals, crows are example of ----------

o producers

o scavengers

o decomposers

o consumers

• The top of the energy pyramid represents the ----------

o Producer

o Consumer

o Carnivores

o Decomposer

• All of the following are omnivores except ----------

o raccoons

o mice

o some crabs

o bacteria

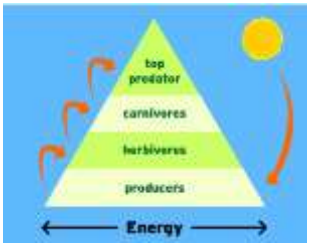
• The diagram shows ----------

o food chain

o energy pyramid

o ecosystem

o food web



• What is an animal that is eaten by a predator?

o Producer

o Prey

o Consumer

o Decomposer

• ----------is a living thing that can make its own food.

o Producer

o Consumer

o Predator

o Decomposer

• All food chains start with----------

o the plant

o the sun

o the predator

o the prey

• Lions, tigers and other big cats are ----------

o Predators

o Prey

o Producers

o Herbivores

• Organisms that eat other organisms, they can be herbivores, carnivores, or omnivores are called ----------

o predator

o prey

o consumer

o producer

• The bottom of the energy pyramid represents the ----------

o Producer

o Consumer

o carnivores

o Decomposer

• Community is ----------

o all living (biotic) and non-living (abiotic) things in an environment

o all members of a single species in an area at a given time

o made from many different populations including all the living things in an ecosystem

Fill in the blank with the right word

Abiotic Population Ecosystem Biotic Community

• **Biotic** are living things like plant and animals

• **Abiotic** are non-living things like soil, sunlight, air, and water

• All living (biotic) and non-living (abiotic) things in an environment are **Ecosystem**

• All members of a single species in an area at a given time is a **Population**

• **Community** is made from many different populations including all the living things in an ecosystem

Choose the correct answers.

A. Omnivores are animals that eat producers only (plants)

B. Carnivores are organisms that obtain energy by consuming wastes and dead organisms

C. Herbivores are animals that eat other animals

D. Decomposers a consumer that eats the remains of dead animals that it didn't hunt or kill

E. Scavengers are animals that eat both plants and other animals

• Fill the blank with correct information

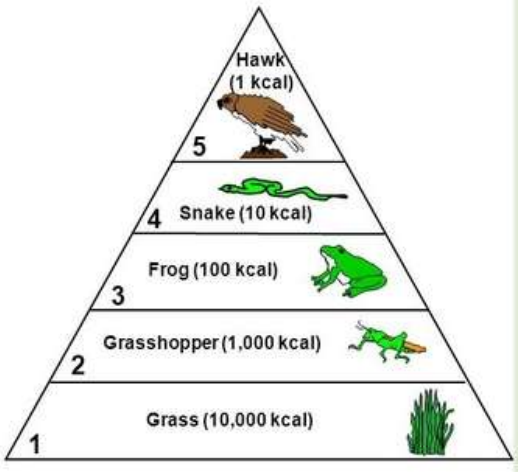
• Please look at the following diagram and answer the following questions

• The diagram represents - Energy Pyramid

• What represents the producer in the diagram? - Grass

• What represents the herbivores in the diagram? - Grasshopper

• What represents the carnivores in the diagram? - Frog, Snake and Hawk



United Arab Emirates

Ministry of Education

Grade: 5

دائرة التعليم والمعرفة
DEPARTMENT OF EDUCATION AND KNOWLEDGE

Chapter 3 Further Questions

- **Why do plants do photosynthesis?**
  - •To get energy B. To get CO2 C. To have green leaves D. To get minerals

- **Why all plants in ecosystem are called "producers"?**
  - A. Because they produce soil
  - B. Because they get energy from sun light
  - C. Because they produce flowers
  - D. Because they produce fruits

- **What gas do plants produce during photosynthesis?**
  - A. Oxygen/ O2
  - B. Carbon dioxide CO2

- **What do plants consume during photosynthesis?**
  - A. Oxygen/ O2
  - B. Carbon dioxide CO2

The process by which plants obtain energy using light is called _____

- **Plants do photosynthesis using their**
  - A. Leaves B. Roots C. Stems D. Flowers

- **Challenge question: Photosynthesis happens inside part of a plant cell, called _____, and the colour of this cell part is _____.**

- **We, people, breathe through our nose. What do plants breathe through?**

A. Nose B. Stomata on their leaves C. Gills D. Petals

- **Stomata are located**
  - A. At the bottom of the leave C. At the top of the flower
  - B. At the top of the leave D. At the bottom of the flower

- **What do you call the process opposite to photosynthesis**
  - A. Cellular respiration C. Food Chain
  - B. Plant oxidation D. Energy pyramid

- **Challenge question: Write down the equation of photosynthesis**

_____ + 6 H2O__ + _____ → sugar + 6_____

• Ecosystems include

A. Living things B. Both living and non-living things C. Non-living things

• Population includes

A. Members of a single species living in the same ecosystem
B. All organisms living in the same ecosystem

• Community includes

A. Members of a single species living in the same ecosystem
B. All organisms living in the same ecosystem

• The path that nutrients and energy flow in an ecosystem is called a _____

• Plants can 'eat' sun light and 'produce' energy for all the other members of the ecosystem. That's why all plats in an ecosystems are called _____

• The organisms that eat plants or other animals are called

A. Consumers C. Decomposers
B. Producers

• Animals/ consumers that eat plants are called

A. Carnivores C. Omnivores
B. Herbivores

• Animals/ consumers that eat other animals are called

A. Carnivores C. Omnivores
B. Herbivores

A. Animals/ consumers that can eat either plants or other animals are called

A. Carnivores C. Omnivores
B. Herbivores

• One organism benefit and the other harmed Example

A. Pollinator (insect or bird) and a flowering plant
B. Ants and acacia trees
C. Lichens (the fungus and alga)
D. Remoras are fish attach themselves to the bodies of rays and shark to get food, transportation and protection.
E. Orchids growing on trees in a rain forest.
F. Ticks and parasites on animals
G. Tapeworm in human
H. Amoeba cause a disease called dysentery.

• A lichen is a combination of fungus and algae that lives on the sides of trees, rocks, and other materials. The fungus provides the algae with water and minerals and the algae uses the water and minerals to make food for both organisms. What type of relationship does the lichen represent?

o Parasitism o Commensalism o Mutualism

• When a symbiotic relationship benefits both organisms, it is an example of:

o Commensalism o Mutualism o Parasitism o Carnivores

• When a symbiotic relationship helps one organism and hurts the other it is an example of:

o Commensalism o Mutualism o Parasitism

• Which of the following symbiotic relationships is considered parasitic?

o ticks feeding on a dog

o bees transporting pollen from flowers

o pilot fish swimming under sharks

o birds eating the insects from the back of a hippopotamus

• Ants and acacia trees have a mutualistic relationship because

o they benefit each other.

o hey are part of the same ecosystem.

o they are both adapted to a humid climate.

o the ants eat part of the acacia tree.

• Which of the following is a symbiotic relationship where one partner benefits and the other does not benefit or lose from the relationship?

o commensalism o mutualism o parasitism o decomposition

• Which of the following is a symbiotic relationship where both partners benefit?

o commensalism o mutualism o parasitism o decomposition

• Which of the following is a symbiotic relationship where one partner benefits and the other is harmed?

o commensalism o mutualism o symbolism o parasitism

• Which of the following symbiotic relationships is considered parasitic?

o Tapeworm in an intestinal tract

o Bees transporting pollen from flowers

o Pilot fish swimming under sharks

o Birds eating the insects from the back of a hippopotamus

• Ants and acacia trees have a mutualistic relationship because.

o They both benefit from living with each other.

o They are part of the same ecosystem.

o They are both adapted to a humid climate.

o The ants eat part of the acacia tree

• This occurs when organisms try to get the same resources.

o Symbiosis o Competition o Predation o Parasitism

• A relationship in which one animal hunts, kills and eats another.

o Parasitism o Symbiosis o Predation o Mutualism

• The animal that is hunted and killed for food.

o Predator o Scavenger o Decomposer o Prey

• A close relationship between two different species of organisms living together.

o Food Web o Food Chain o Symbiosis o Competition

• A symbiotic relationship in which both species benefit.

o Competition o Commensalism o Parasitism o Mutualism

• A symbiotic relationship in which one species benefits without benefiting or harming the other organism.

o Competition o Parasitism o Commensalism o Mutualism

• A symbiotic relationship in which one species benefits by harming another.

o Mutualism o Competition o Commensalism o Parasitism

• A dog and a tick are examples of which symbiotic relationship?

o Predator/Prey o Parasitism o Commensalism o Mutualism

• A clownfish lives in a sea anemone. The anemone is not hurt, but the clownfish can live in its safety. This is an example of what symbiotic relationship?

o Mutualism o Parasitism o Predator/Prey o Commensalism

Please choose the correct answer

• The main purpose of an adaptation is to ----------

o Help an animal survive

o Get food

o Provide a habitat

o Change the animal's appearance

• An example of protective coloration is an arctic fox with a white coat that blends with the snow in winter.

o True o False

• An adaptation is a behaviour or body part that helps organisms survive in an ecosystem.

o True o False

• That helps an animal look like another animal to protect it from predators?

o niche o migration o camouflage o mimicry

• A Viceroy butterfly looks like the Monarch butterfly. The Monarch tastes terrible to birds, so birds won't take the chance and eat the Viceroy. What is this kind of adaptation?

o Mimicry o Camouflage o Hibernation o Migration

• What is a characteristic of an organism that increases its chances of survival in its environment?

o species o camouflage o behavior o adaptation

• The behavior or part of a living thing that helps it survive in a certain environment is ----------

o a producer o an ecosystem o an adaptation o a consumer

• A chameleon changing colors to blend in with its surroundings is an example of - ----------

o hibernation o migration o extinction o camouflage

• Which of the following is an example of a behavior?

o having white fur

o living in an ocean

o producing enough food for yourself

o traveling to a new place to find food

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal.

o Behavioral adaptation

o Protective coloration

o Mimicry

o Camouflage

• Are adjustment to internal or external physical structures. Ex: Fur colour, long limbs, strong jaws, and the ability to run fast.

o Protective resemblance o Structural adaptation o Behavioral adaptation

• Matching the color, shape and texture of an environment

o Structural adaptation

o Behavioral adaptation

o Protective coloration

o Protective resemblance

• A type of camouflage in which the color of an animal helps it blend in with its background

o Protective resemblance

o Protective coloration

o Behavioral adaptation

o Structural adaptation

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal.

o Camouflage o Mimicry o Behavioral adaptation o Protective coloration

• The movement of animals to find food. Reproduce in better condition or find a less sever climate.

o Hibernation o Mimicry o Migration o Adaptation

• Any characteristic that helps an organism survive in its environment.

o Protective coloration o Camouflage o Nocturnal o Adaptation

• A type of camouflage in which the color of an animal helps it blend in with its background.

o Protective resemblance

o Structural adaptation

o Behavioral adaptation

o Protective coloration

• Nocturnal animals ----------

o Seek food during the day

o Sleep during the night

o Sleep during the day

o Do not sleep

• One reason an animal may be nocturnal is the temperature in his habitat during the day is cold.

o True o False

• Which is NOT an example of an animal's Behavioral adaptation?

o Taking flight o Mimicry o Playing dead o Claws

• Hibernation is a resting state that helps animals survive in the summer heat.

o True o False

• During hibernation, what does NOT occur?

o The animal eats a lot of food in the autumn months to store up fat.

o Animals burrow in the ground or hide in dens to stay safe and warm.

o Animals awaken in the spring.

o The animal's breathing speeds up.

• Migration is:

o The movement of animals over the same route at different times of the year.

o A form of locomotion.

o The movement of animals over the same route in the same season each year.

o A resting state that helps animals survive in the winter months.

• Migration allows animals to take advantage of resources like food or water in one location when they run low in another location.

o True o False

• Tiger's strips make it difficult to see in the grass, this is an example of ----------

o Camouflage o Mimicry o Behavioral adaptation o Protective coloration

• Oak tree, a plant lives in forest prevent water loss through ----------

o Losing their leaves in winter

o Completing their life cycle in a shortened growing season

o Having stomata on the top surface of the leave instead of the bottom

• Desert animal----------

o have thick fur and extra body fat that keep them worm

o are nocturnal or active at night to search for food

o can run fast

o can Swim quickly

• Wolves traveling in packs is example of ----------

• Protective coloration

• Behavioral adaptation

• Protective resemblance

• Mimicry

Fill in the blank with the correct word.

Mimicry Structural adaptation Migration Viceroy butterfly Protective coloration Behavioral adaptation Protective resemblance

• ---------- a type of camouflage in which the color of an animal helps it blend in with its background.

• Matching the color, shape and texture of an environment known as ----------

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal----------

• ----------look like poisons monarch butterfly

• Fur colour, long limbs, strong jaws, and the ability to run fast are example of ----------

• Birds, fish and Butterflies migration are example of ----------

• ---------- is the movement of animals to find food. Reproduce in better condition or find a less sever climate.

• What happens when light strikes a green leaf?

_____

• Why is it important for people to eat food from every major food group?

_____

• Why aren't the roots of a plant green like the stem and leaves?

_____

• What happens during transpiration?

_____

• What are biotic (non-living) things would you see in the forest ecosystem?

_____

• What are some of the biotic (living) things you would see in the forest ecosystem?

_____

• How are producers and consumers different?

_____

• How are herbivores, carnivores, and omnivores similar and different?

_____

_____

• How are herbivores, carnivores, and omnivores similar and different?

_____

_____

• In the aquatic ecosystem, which organisms are consumers?

_____

• In the land ecosystem, which organisms are the producers?

_____

• What would happen to the mouse population if the bobcats and raccoons were removed from the ecosystem?

_____

• Why is it important to have predators in an ecosystem?

_____

• What do you think organisms might compete for in an environment?

_____

• What is the carrying capacity of the environment?

_____

• What are three limiting factors in an environment?

_____

• How do you think one organism in the relationship benefits?

_____

• How do you think the other organism is harmed in this relationship?

_____

• Why are adaptations important to organisms?

_____

• How do organisms get adaptations?

_____

United Arab Emirates

Ministry of Education

Grade: 5

دائرة التعليم والمعرفة
DEPARTMENT OF EDUCATION AND KNOWLEDGE

Chapter 3 Further Questions Answers

• Why do plants do photosynthesis?

A. To get energy B. To get CO2 C. To have green leaves D. To get minerals

• Why all plants in ecosystem are called "producers"?

A. Because they produce soil
B. Because they get energy from sun light
C. Because they produce flowers
D. Because they produce fruits

• What gas do plants produce during photosynthesis?

A. Oxygen/ O2
B. Carbon dioxide CO2

• What do plants consume during photosynthesis?

A. Oxygen/ O2
B. Carbon dioxide CO2

The process by which plants obtain energy using light is called Photosynthesis

• Plants do photosynthesis using their

A. Leaves B. Roots C. Stems D. Flowers

• Challenge question: Photosynthesis happens inside part of a plant cell, called Chloroplast, and the colour of this cell part is Green.

• We, people, breathe through our nose. What do plants breathe through?

A. Nose B. Stomata on their leaves C. Gills D. Petals

• Stomata are located

A. At the bottom of the leave C. At the top of the flower
B. At the top of the leave D. At the bottom of the flower

• What do you call the process opposite to photosynthesis

A. Cellular respiration C. Food Chain
B. Plant oxidation D. Energy pyramid

• Challenge question: Write down the equation of photosynthesis

$6CO_2 + 6 H_2O +$ Light Energy $\rightarrow$ Sugar $+ 6O_2$

• Ecosystems include

A. Living things B. Both living and non-living things C. Non-living things

• Population includes

A. Members of a single species living in the same ecosystem
B. All organisms living in the same ecosystem

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• The path that nutrients and energy flow in an ecosystem is called a Food Chain

• Plants can 'eat' sun light and 'produce' energy for all the other members of the ecosystem. That's why all plats in an ecosystems are called Producers.

• The organisms that eat plants or other animals are called

A. Consumers C. Decomposers
B. Producers

• Animals/ consumers that eat plants are called

A. Carnivores C. Omnivores
B. Herbivores

• Animals/ consumers that eat other animals are called

A. Carnivores C. Omnivores
B. Herbivores

B. Animals/ consumers that can eat either plants or other animals are called

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B. Herbivores

• One organism benefit and the other harmed Example

A. Pollinator (insect or bird) and a flowering plant
B. Ants and acacia trees
C. Lichens (the fungus and alga)
D. Remoras are fish attach themselves to the bodies of rays and shark to get food, transportation and protection.
E. Orchids growing on trees in a rain forest.
F. Ticks and parasites on animals
G. Tapeworm in human
H. Amoeba cause a disease called dysentery.

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o Parasitism o Commensalism o Mutualism

• When a symbiotic relationship benefits both organisms, it is an example of:

o Commensalism o Mutualism o Parasitism o Carnivores

• When a symbiotic relationship helps one organism and hurts the other it is an example of:

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• Which of the following symbiotic relationships is considered parasitic?

o ticks feeding on a dog

o bees transporting pollen from flowers

o pilot fish swimming under sharks

o birds eating the insects from the back of a hippopotamus

• Ants and acacia trees have a mutualistic relationship because

o they benefit each other.

o hey are part of the same ecosystem.

o they are both adapted to a humid climate.

o the ants eat part of the acacia tree.

• Which of the following is a symbiotic relationship where one partner benefits and the other does not benefit or lose from the relationship?

o commensalism o mutualism o parasitism o decomposition

• Which of the following is a symbiotic relationship where both partners benefit?

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• Which of the following is a symbiotic relationship where one partner benefits and the other is harmed?

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• This occurs when organisms try to get the same resources.

o Symbiosis o Competition o Predation o Parasitism

• A relationship in which one animal hunts, kills and eats another.

o Parasitism o Symbiosis o Predation o Mutualism

• The animal that is hunted and killed for food.

o Predator o Scavenger o Decomposer o Prey

• A close relationship between two different species of organisms living together.

o Food Web o Food Chain o Symbiosis o Competition

• A symbiotic relationship in which both species benefit.

o Competition o Commensalism o Parasitism o Mutualism

• A symbiotic relationship in which one species benefits without benefiting or harming the other organism.

o Competition o Parasitism o Commensalism o Mutualism

• A symbiotic relationship in which one species benefits by harming another.

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• A dog and a tick are examples of which symbiotic relationship?

o Predator/Prey o Parasitism o Commensalism o Mutualism

• A clownfish lives in a sea anemone. The anemone is not hurt, but the clownfish can live in its safety. This is an example of what symbiotic relationship?

o Mutualism o Parasitism o Predator/Prey o Commensalism

Please choose the correct answer

• The main purpose of an adaptation is to ----------

o Help an animal survive

o Get food

o Provide a habitat

o Change the animal's appearance

• An example of protective coloration is an arctic fox with a white coat that blends with the snow in winter.

o True o False

• An adaptation is a behaviour or body part that helps organisms survive in an ecosystem.

o True o False

• That helps an animal look like another animal to protect it from predators?

o niche o migration o camouflage o mimicry

• A Viceroy butterfly looks like the Monarch butterfly. The Monarch tastes terrible to birds, so birds won't take the chance and eat the Viceroy. What is this kind of adaptation?

o Mimicry o Camouflage o Hibernation o Migration

• What is a characteristic of an organism that increases its chances of survival in its environment?

o species o camouflage o behavior o adaptation

• The behavior or part of a living thing that helps it survive in a certain environment is ----------

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• A chameleon changing colors to blend in with its surroundings is an example of - ----------

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• Which of the following is an example of a behavior?

o having white fur

o living in an ocean

o producing enough food for yourself

o traveling to a new place to find food

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal.

o Behavioral adaptation

o Protective coloration

o Mimicry

o Camouflage

• Are adjustment to internal or external physical structures. Ex: Fur colour, long limbs, strong jaws, and the ability to run fast.

o Protective resemblance o Structural adaptation o Behavioral adaptation

• Matching the color, shape and texture of an environment

o Structural adaptation

o Behavioral adaptation

o Protective coloration

o Protective resemblance

• A type of camouflage in which the color of an animal helps it blend in with its background

o Protective resemblance

o Protective coloration

o Behavioral adaptation

o Structural adaptation

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal.

o Camouflage o Mimicry o Behavioral adaptation o Protective coloration

• The movement of animals to find food. Reproduce in better condition or find a less sever climate.

o Hibernation o Mimicry o Migration o Adaptation

• Any characteristic that helps an organism survive in its environment.

o Protective coloration o Camouflage o Nocturnal o Adaptation

• A type of camouflage in which the color of an animal helps it blend in with its background.

o Protective resemblance

o Structural adaptation

o Behavioral adaptation

o Protective coloration

• Nocturnal animals ----------

o Seek food during the day

o Sleep during the night

o Sleep during the day

o Do not sleep

• One reason an animal may be nocturnal is the temperature in his habitat during the day is cold.

o True o False

• Which is NOT an example of an animal's Behavioral adaptation?

o Taking flight o Mimicry o Playing dead o Claws

• Hibernation is a resting state that helps animals survive in the summer heat.

o True o False

• During hibernation, what does NOT occur?

o The animal eats a lot of food in the autumn months to store up fat.

o Animals burrow in the ground or hide in dens to stay safe and warm.

o Animals awaken in the spring.

o The animal's breathing speeds up.

• Migration is:

o The movement of animals over the same route at different times of the year.

o A form of locomotion.

o The movement of animals over the same route in the same season each year.

o A resting state that helps animals survive in the winter months.

• Migration allows animals to take advantage of resources like food or water in one location when they run low in another location.

o True o False

• Tiger's strips make it difficult to see in the grass, this is an example of ----------

o Camouflage o Mimicry o Behavioral adaptation o Protective coloration

• Oak tree, a plant lives in forest prevent water loss through ----------

o Losing their leaves in winter

o Completing their life cycle in a shortened growing season

o Having stomata on the top surface of the leave instead of the bottom

• Desert animal----------

o have thick fur and extra body fat that keep them worm

o are nocturnal or active at night to search for food

o can run fast

o can Swim quickly

• Wolves traveling in packs is example of ----------

• Protective coloration

• Behavioral adaptation

• Protective resemblance

• Mimicry

Fill in the blank with the correct word.

Mimicry Structural adaptation Migration Viceroy butterfly Protective coloration Behavioral adaptation Protective resemblance

• **Protective coloration** a type of camouflage in which the color of an animal helps it blend in with its background.

• Matching the color, shape and texture of an environment known as **Protective resemblance**

• An adaptation in which an animal is protected against predators by its resemblance to an unpleasant animal **Mimicry**

• **Viceroy butterfly** look like poisons monarch butterfly

• Fur colour, long limbs, strong jaws, and the ability to run fast are example of **Structural adaptation**

• Birds, fish and Butterflies migration are example of **Behavioral adaptation**

• **Migration** is the movement of animals to find food. Reproduce in better condition or find a less sever climate.

• What happens when light strikes a green leaf?

Plant cells make food.

• Why is it important for people to eat food from every major food group?

To get the materials they need for growth and health

• Why aren't the roots of a plant green like the stem and leaves?

The roots are underground and not exposed to sunlight. Roots are responsible for absorbing water and minerals, not making food for the plant.

• What happens during transpiration?

Water from the leaf evaporates and moves out of the leaf through the stomata.

• What are biotic (non-living) things would you see in the forest ecosystem?

Dirt, gravel, rocks, water

• What are some of the biotic (living) things you would see in the forest ecosystem?

Birds, trees, wildflowers, insects, rabbits, grasses

• How are producers and consumers different?

Producers are organisms that make their own food using the Sun's energy. Consumers are animals that eat plants or other animals to get energy.

• How are herbivores, carnivores, and omnivores similar and different?

Similar: All are consumers, and they cannot make their own food.

Different: Herbivores eat producers/plants directly; carnivores are animals that eat other animals; and omnivores eat both plants and other animals.

• How are herbivores, carnivores, and omnivores similar and different?
Similar: All are consumers, and they cannot make their own food.

Different: Herbivores eat producers/plants directly; carnivores are animals that eat other animals; and omnivores eat both plants and other animals.

• In the aquatic ecosystem, which organisms are consumers?
Grasshopper, frog, bacteria

• In the land ecosystem, which organisms are the producers?
Tree with berries, grass

• What would happen to the mouse population if the bobcats and raccoons were removed from the ecosystem?
The mouse population would increase because there would be no predators to eat them.

• Why is it important to have predators in an ecosystem?
Predators help to control the size of the prey populations.

• What do you think organisms might compete for in an environment?
Food, space, water, sunlight, places to live

• What is the carrying capacity of the environment?
The maximum population that an area can support

• What are three limiting factors in an environment?
Water, sunlight, space, temperature, shelter

• How do you think one organism in the relationship benefits?
It gets food and shelter from the other organism.

• How do you think the other organism is harmed in this relationship?
The other organism might become weak or sick because of the first organism.

• Why are adaptations important to organisms?
Successful adaptations help organisms survive in their environments

• How do organisms get adaptations?
They inherit adaptations from their parent or parents when they reproduce.

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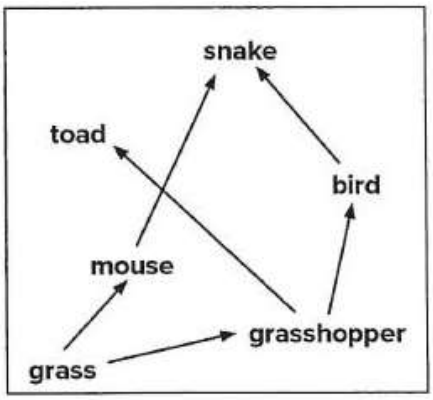
Past Exam Paper Questions

Use the food web below to answer questions (10–11):



10. Based on the information in the food web which two animals are in competition?

a. mouse and snake
c. snake and bird
b. toad and grasshopper
d. bird and toad

11. Which is an herbivore?

a. snake
c. grasshopper
b. toad
d. grass

12. A pride of lions and a herd of elephants on a grassland in Africa are:

a. part of a population
c. part of a community
b. an example of commensalism
d. groups of producers.

13. Any resource needed for a population to survive the survival in an ecosystem may become a(n):

a. abiotic factor.
b. biotic factor.
c. limiting factor.
d. niche.

14. A relationship between two organisms that benefits both organisms is called:

a. symbiosis.
b. mutualism.
c. commensalism.
d. parasitism.

15. The greatest number of individuals that an ecosystem can support within a population is the:

a. limiting factor.
c. carrying capacity.
b. habitat.
d. community.

16. Which of the following is a behavioral adaptation?

a. An arctic hare has a white coat in winter.

b. A fawn hides to avoid being seen.

c. A male cardinal has very bright red feathers.

d. A hummingbird has a long, thin bill.

17. Forest butterflies are often brown. This helps them to:

a. find nectar.

b. avoid predators

c. keep warm.

d. avoid the need to hibernate

18. A cheetah's spotted coat is an example of:

a. camouflage. **b.** a limiting factor. **c.** symbiosis. **d.** a niche.

19. In a water ecosystem, why are many producers found near the surface?

a. They require sunlight

b. There are more organisms there for them to eat

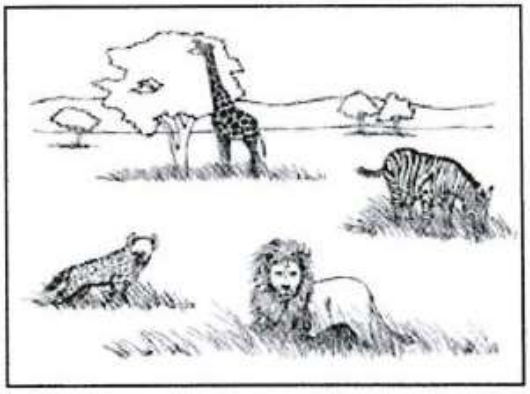
c. They need cooler and darker water.

d. There is no threat from consumers.

21. Draw a line to match each box on the left with a category on the right.

frog	
rock	abiotic factors
lake	
flower	biotic factors
bird	

29. Look at the scene to the right. Use arrows to connect the predators to their prey.



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DEPARTMENT OF EDUCATION AND KNOWLEDGE

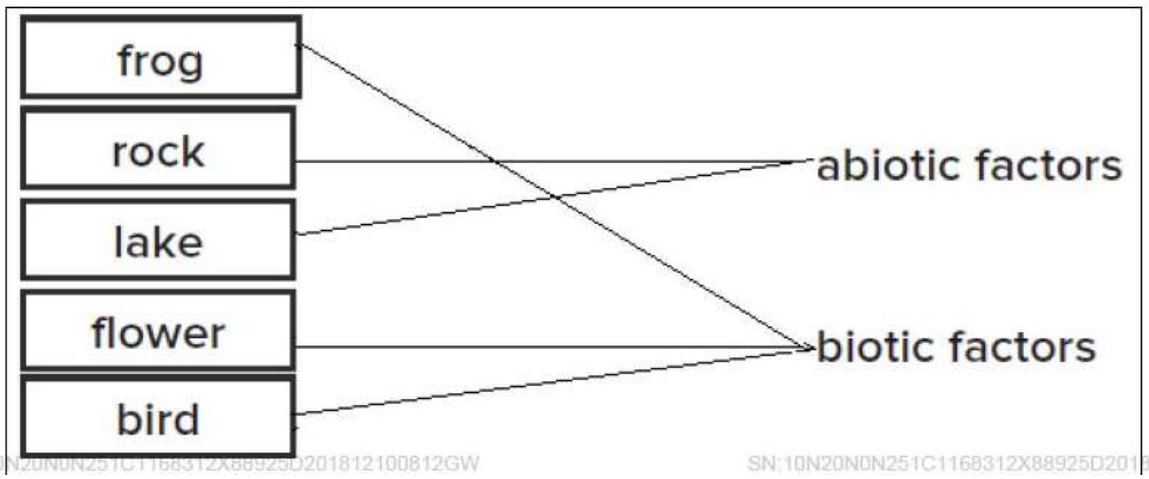
Past Exam Paper Questions Answers

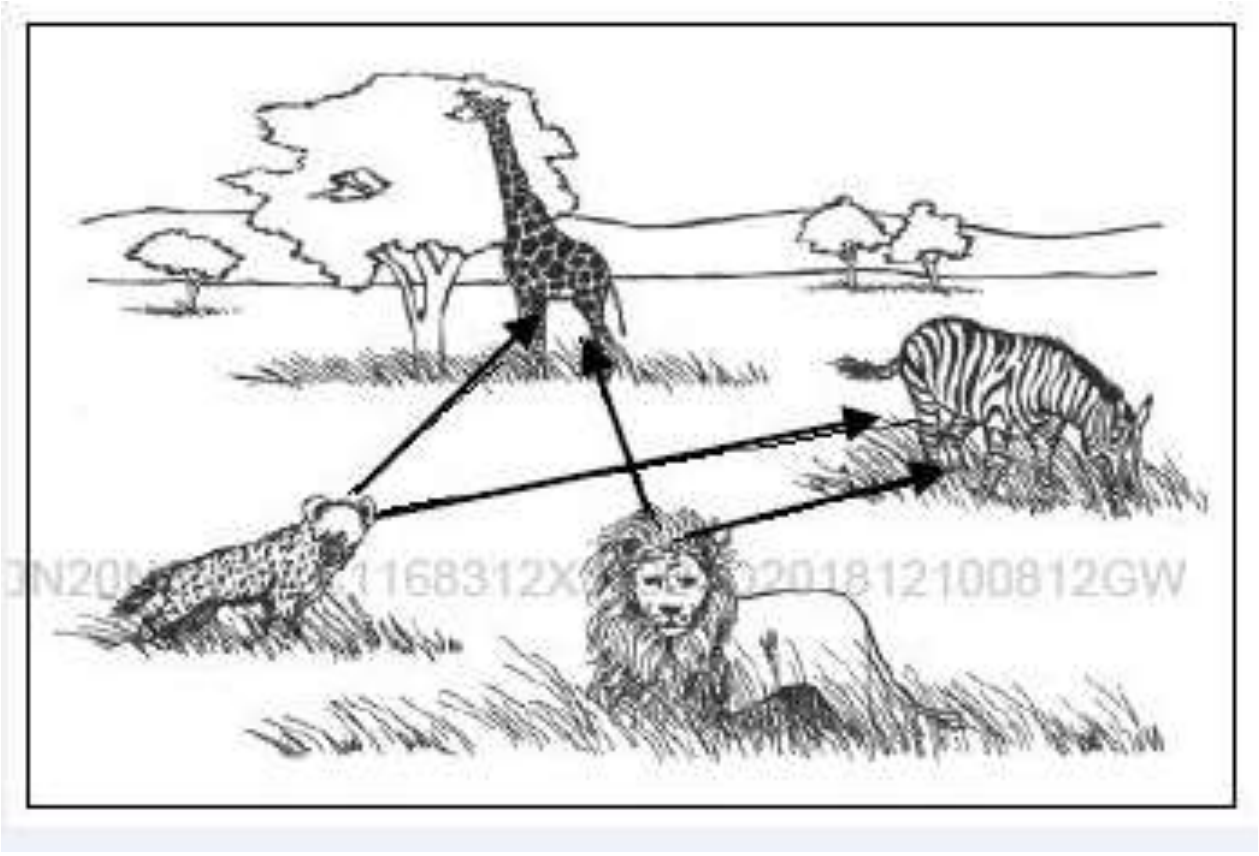
10	d. bird and toad
11	c. grasshopper
12	b. part of a community.
13	c. limiting factor.
14	b. mutualism.
15	c. carrying capacity.

16	b. A fawn remains to avoid being seen
17	b. avoid predators
18	a. camouflage.

19	a. They require sunlight

21.





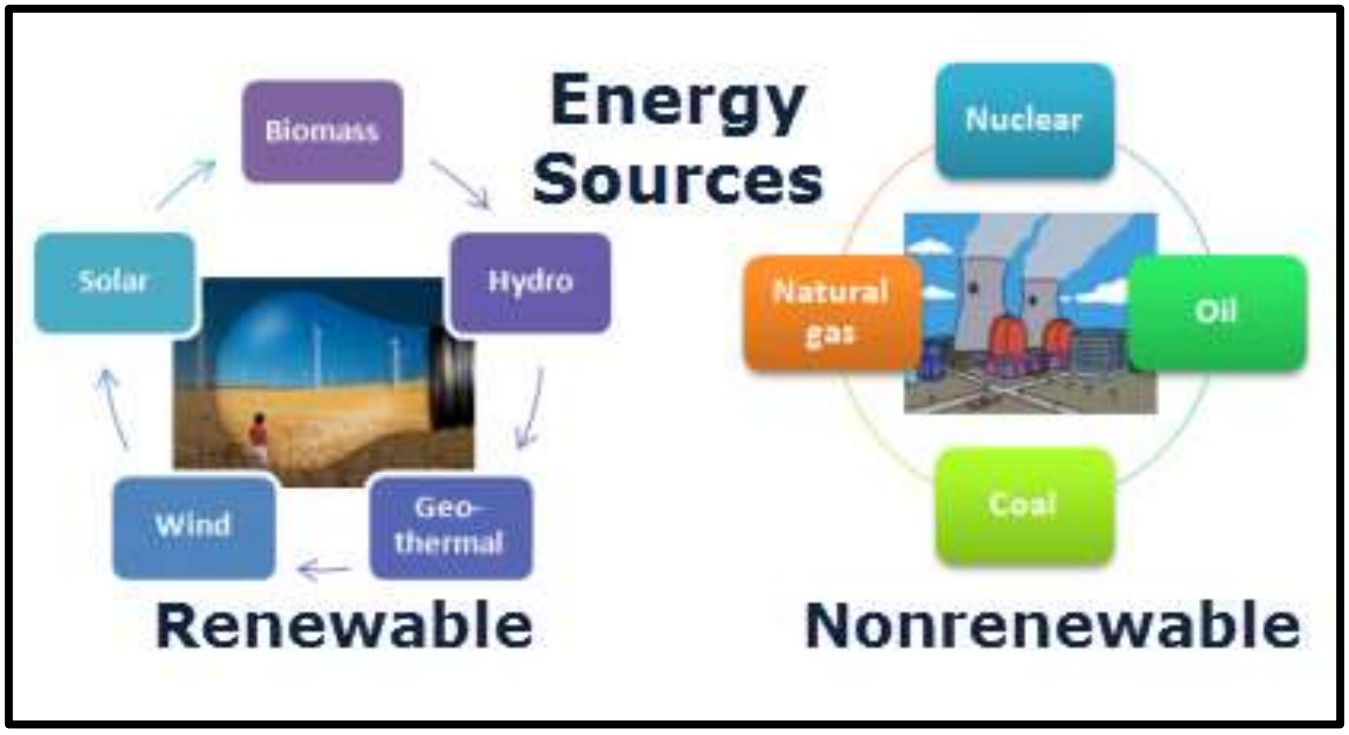
CHAPTER 4 – USING EARTHS RESOURCES

- **LESSON 1 – NATURAL RESOURCES**

Vocabulary:

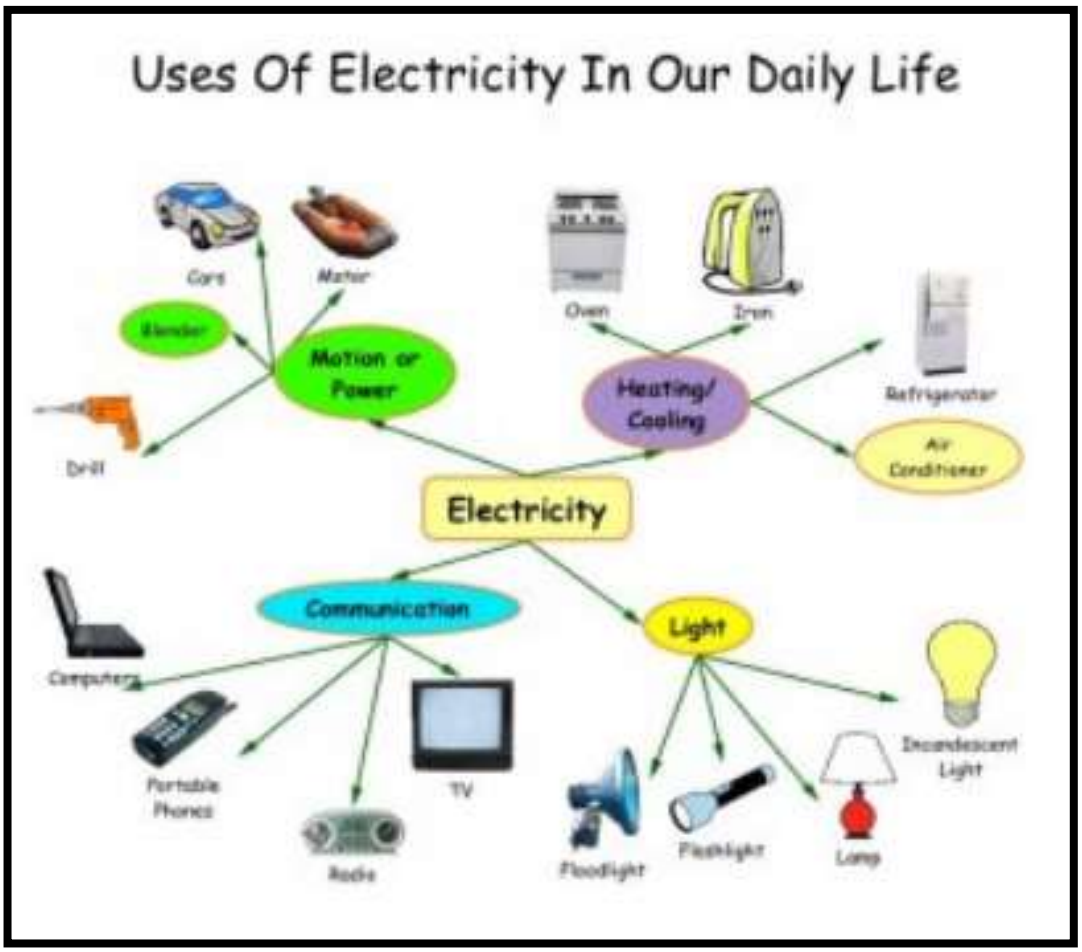
Natural resources	Materials people take from the Earth
Nonrenewable resources	Resources used up more quickly that they can be replaced
Renewable resources	Can be replaced by nature sometimes at the same rate of being used up
Fossil Fuel	Material formed from the decay of ancient organisms used as an energy source.
Alternative energy source	A source of energy other than fossil fuels
Hydroelectric power	Energy generated by falling or running water
Solar Energy	Energy from sunlight
Sustainability	Fulfilling present needs without endangering future generations to fulfill their needs

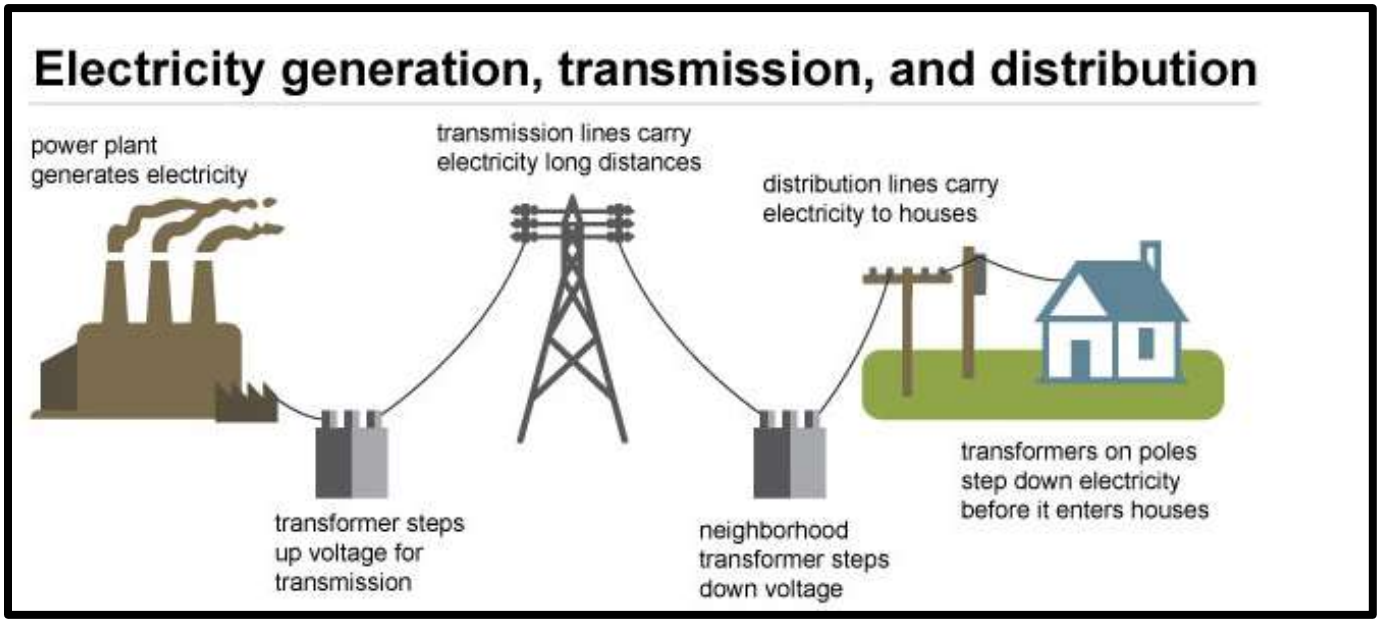
NATURAL RESOURCES: Almost everything people use comes directly or indirectly from a natural resource.

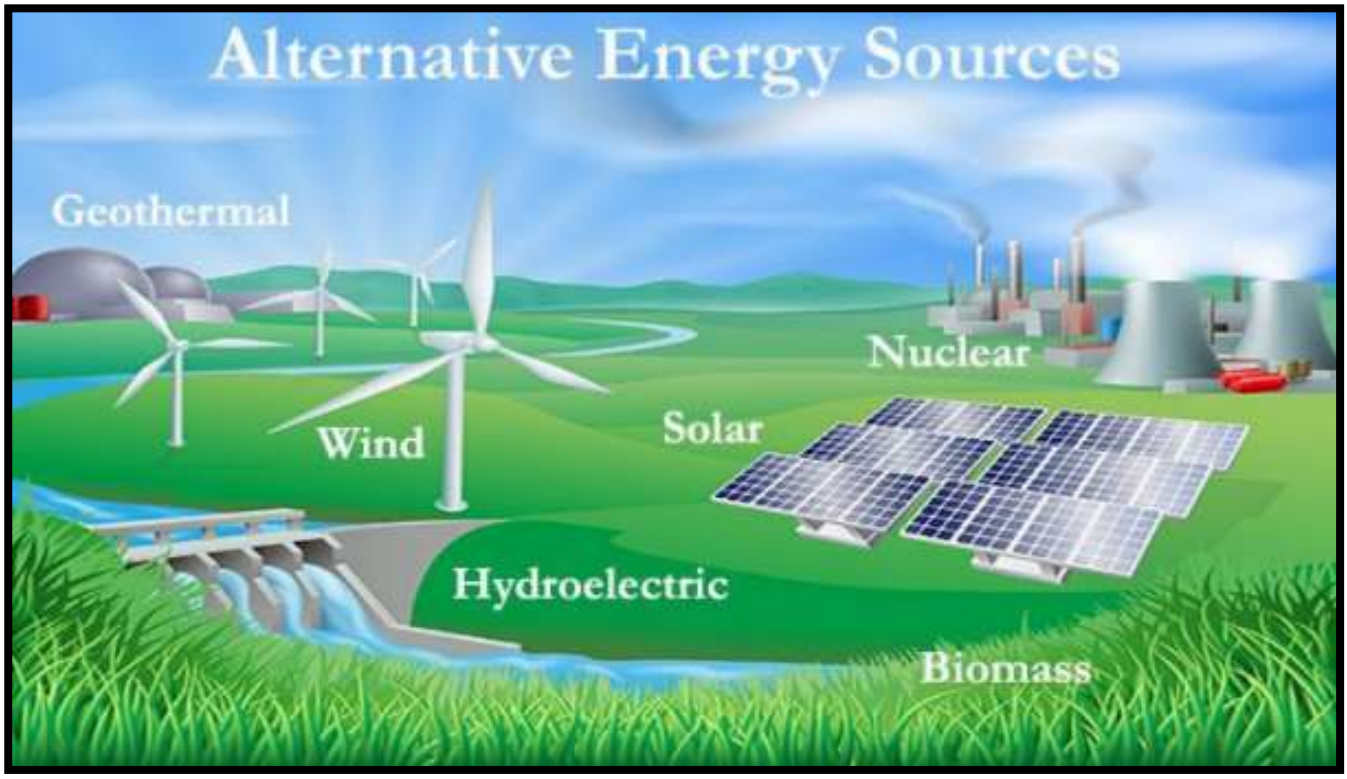


FOSSIL FUELS: Oil, natural gas and coal. These are used for producing electricity, fuel in vehicles, fuel to keep buildings and people warm and for cooking food amongst other things.

ELECTRICITY: Is produced in coal, gas or oil powered power stations or using renewable resources.

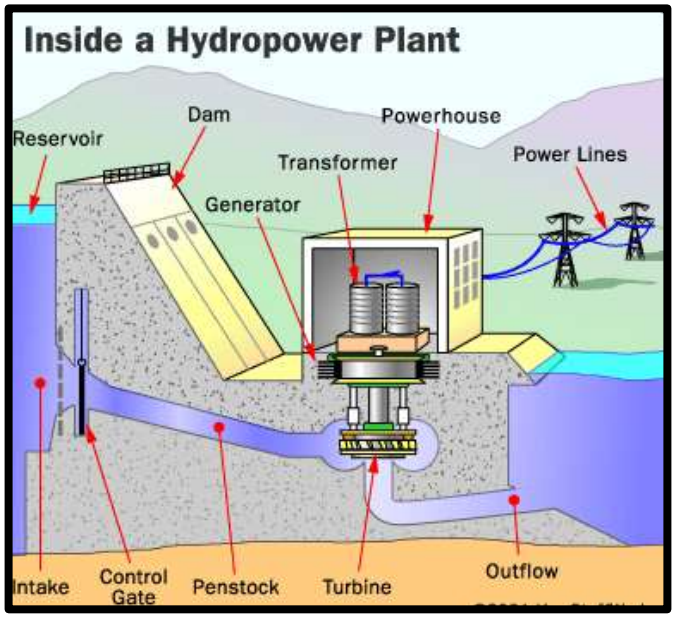




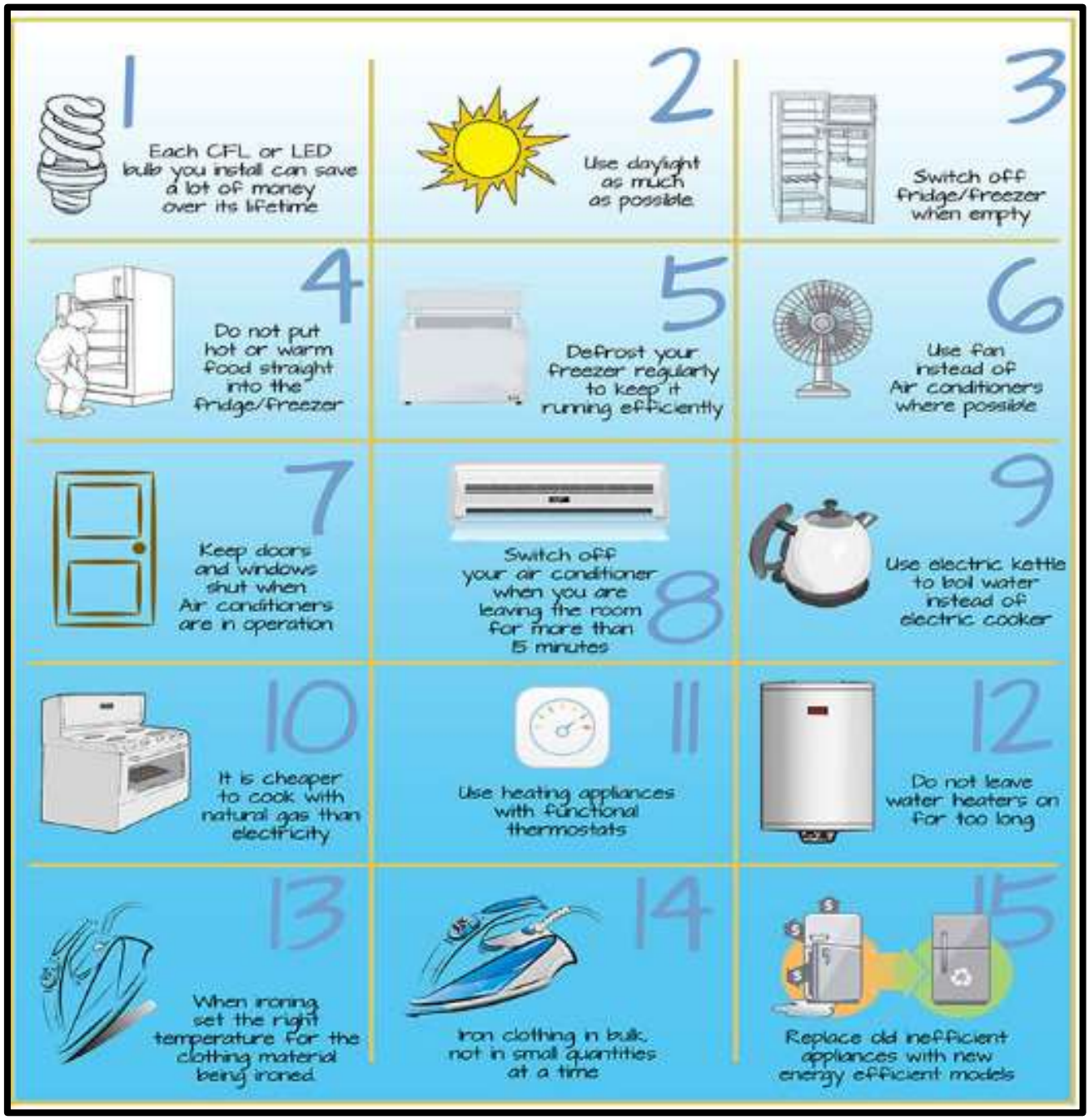


HYDROELECTRIC POWER: Is dependent on the suns energy. As the sun warms water, the water vapors rise into the atmosphere and later cool and condense. During precipitation (rain) the water is added to rivers, lakes and oceans.

ADVANTAGES	DISADVANTAGES
• Renewable	• Can only be used in mountainous areas
• Can produce as much energy as a thermal power station	• A large amount of land needs to be flooded
• No greenhouse gases	• Expensive to build
• No acid rain	
• No radioactive waste	
• Short start up time	



CONSERVING ENERGY:



CHAPTER 4 – USING ESARTHS RESOURCES

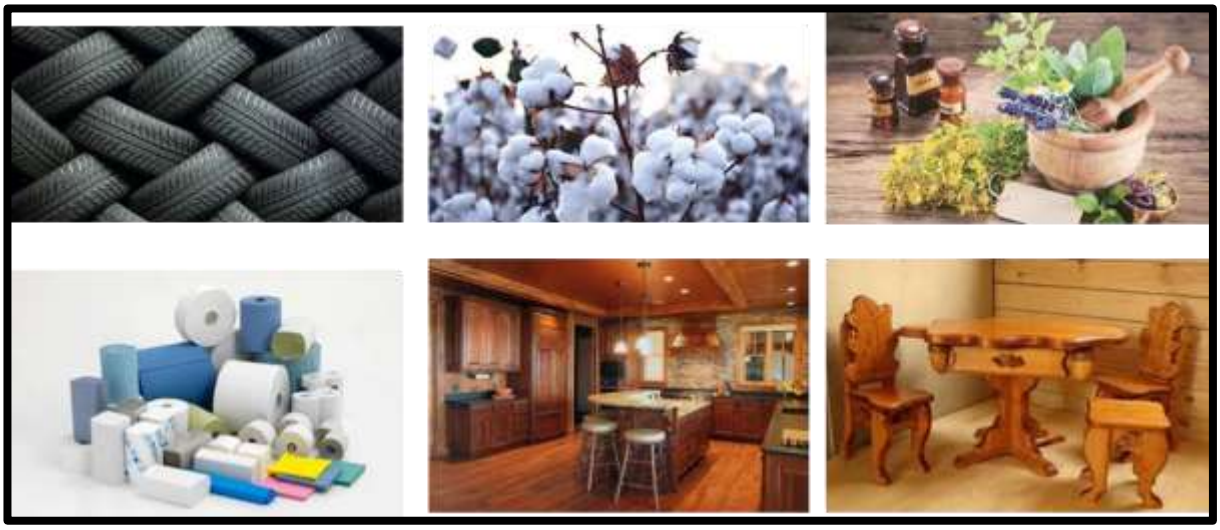
- **LESSON 2 – USES OF RESOURCES**

Vocabulary:

Raw materials	The building blocks of products
Bauxite	A rock containing Aluminium
Smelting	A process which turns Alumina into Aluminium
Gypsum	A type of rock used in making house walls
Synthetic	Man – made
Plastic	A man - made material made from petroleum
Textile	Any type of fabric
Concrete	A mixture of sand ,gravel and pebbles, used in making house foundations
Polyethylene	A man made material made from gas or oil
Shingles	Overlapping roof material
Asphalt	A man - made material made from petroleum, used in Shingle

RAW MATERIALS: These can be sued in their original state like wool and wood or processed and converted into a usable form. Bauxite is processed to form alumina which is then smelted into Aluminium. Aluminium can then be shaped into objects.

PLANT PRODUCTS:



ROCKS AND MINERALS PRODUCTS:

METALS PRODUCTS:

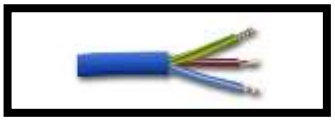
PLASTIC: Can be melted, are flexible, cheap to make, can be hard, are durable.

PLASTIC PRODUCTS:

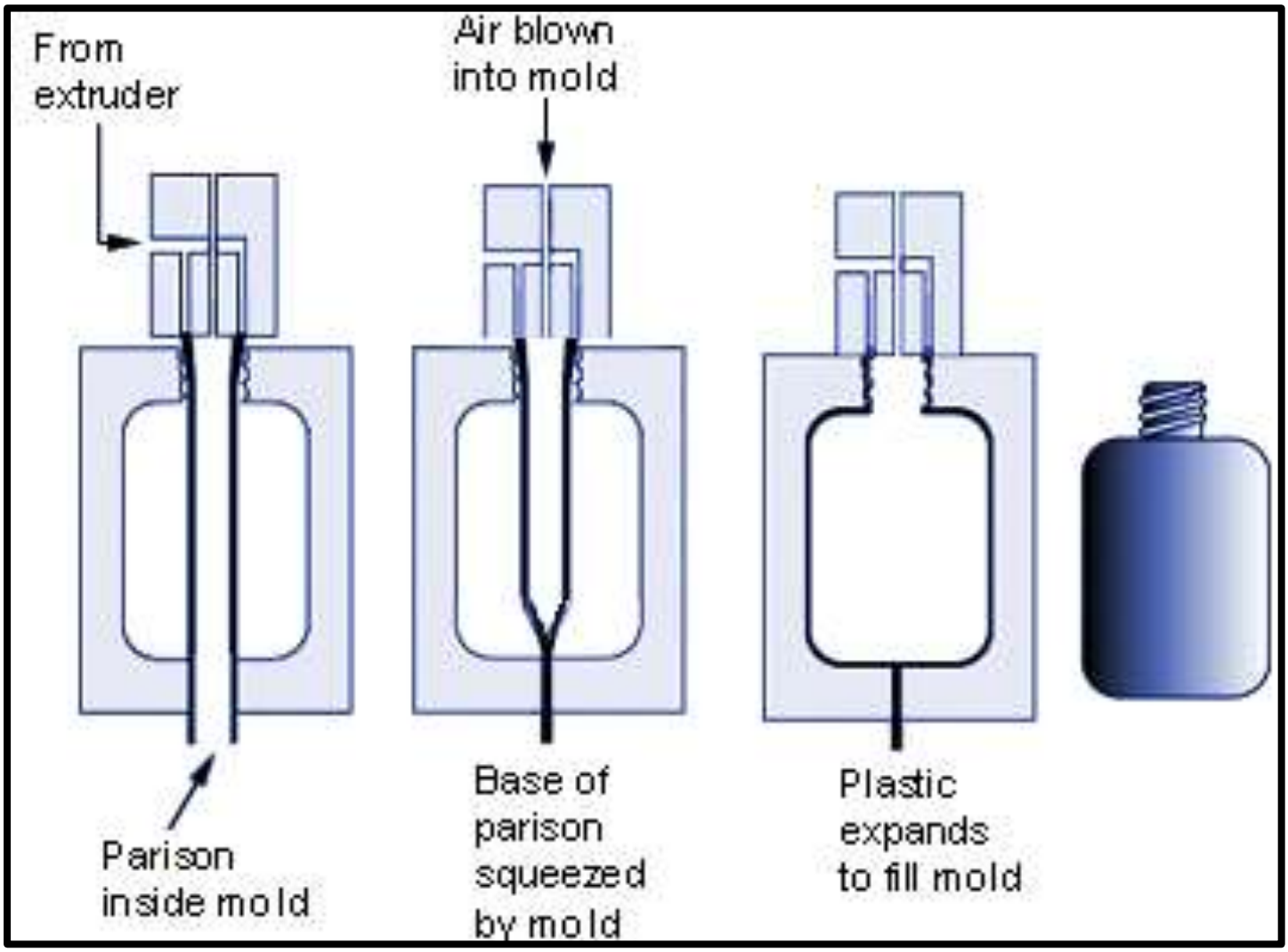



PLASTIC AS INSULATORS:



EXTRUSION BLOW-MOLDING PROCESS



TEXTILES ARE MADE FROM:

SYNTHETIC TEXTILES ARE MADE FROM:

TYPES OF NATURAL HOUSES

BUILDING A HOUSE

1. A foundation has to be set – Made from Stone or concrete.

2. Frame of the house – Made from wood or steel.

3. Roof of the house – Shingles are made from Asphalt.

4. Windows of the house – Using glass, glass is made from sand.

5. Doors of the house – Made from glass, steel and wood.

6. Siding of the house – The rest of the house is covered with wood, stone or bricks.

7. Electric wires installed inside the house for electricity using cooper wiring insulated using plastic.

8. Strong pipes made using plastic to carry water.

9. The walls are covered with drywall which is made from gypsum.

10. The walls are painted - Paint is made from petroleum products.

SOD HOUSES: Made from grass and soil

STONE HOUSES: Made from stone

ADOBE HOUSES: Made from mud bricks

FUEL RESOURCES USED TRANSPORTATION

Oil is used to power cars, busses and trains.

Burning fossil fuels releases bad smoke and gases which harms the environment.

Alternative fuels are being developed which are clean and safe for the environment.

Hybrid vehicles use gasoline and electricity. These emit less pollution.

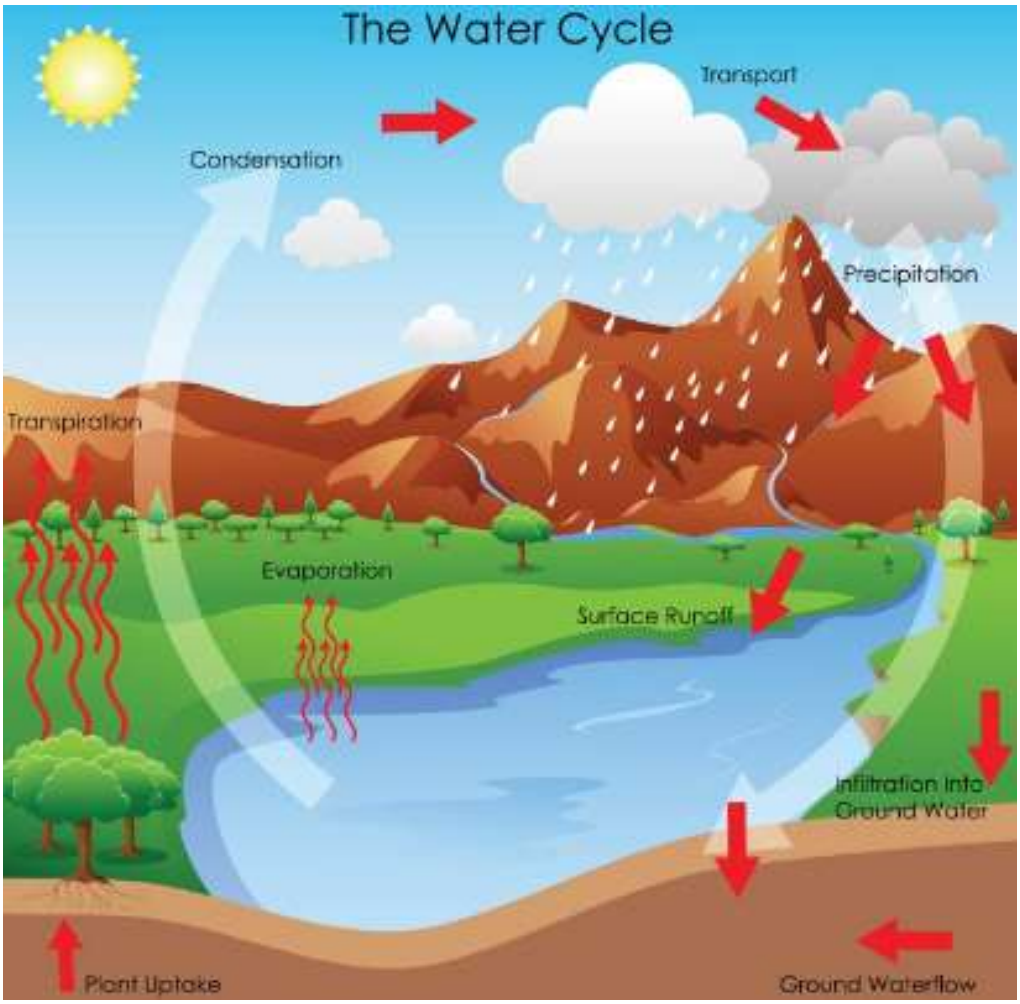
CHAPTER 4 – USING ESARTHS RESOURCES

LESSON 3 – CYCLES IN ECOSYSTEM

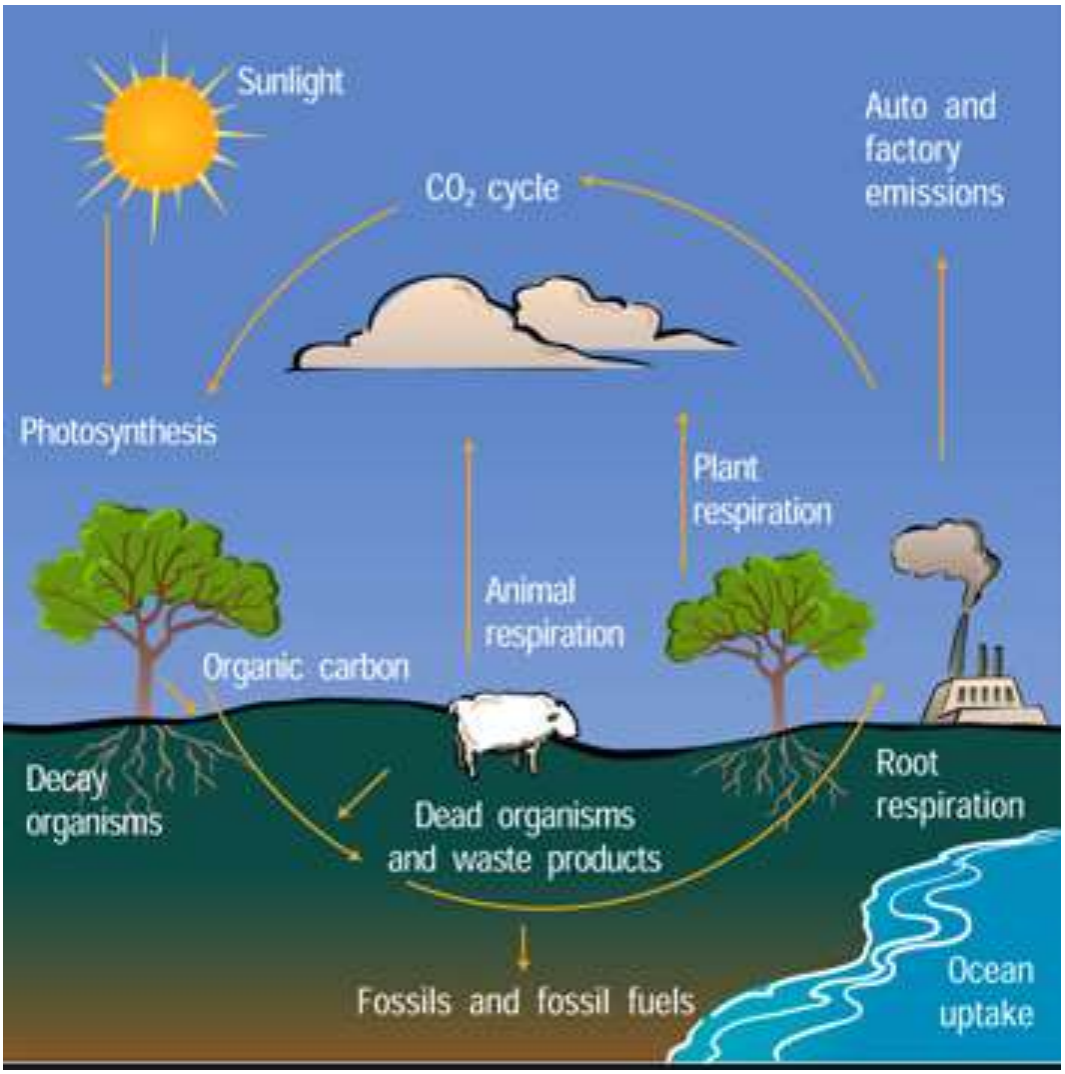
Vocabulary:

Water Cycle	The continuous movement of water between the Earth and atmosphere
Evaporation	Changing of liquid to gas
Condensation	Changing of gas to liquid
Precipitation	When water falls from the atmosphere to the ground. – Rain, sleet, snow, hail
Watershed	An area from which water is drained
Runoff	When water is not absorbed by the ground, but travels in rivers and streams
Groundwater	When water settles underground
Carbon cycle	The continuous exchange of carbon among living things
Decomposition	Break down of living matter
Absorption	When something takes in another substance
Nitrogen Cycle	The continual trapping of nitrogen gas in the soil and its return to the air
Nitrogen – fixing bacteria	Bacteria that run nitrogen gas into ammonia
Denitrifying bacteria	Bacteria that run nitrates back into nitrogen gas
Denitrification	The process of turning nitrates into nitrogen gas
Compost	A mixture of dead organic material that's used as fertilizer.

THE WATER CYCLE

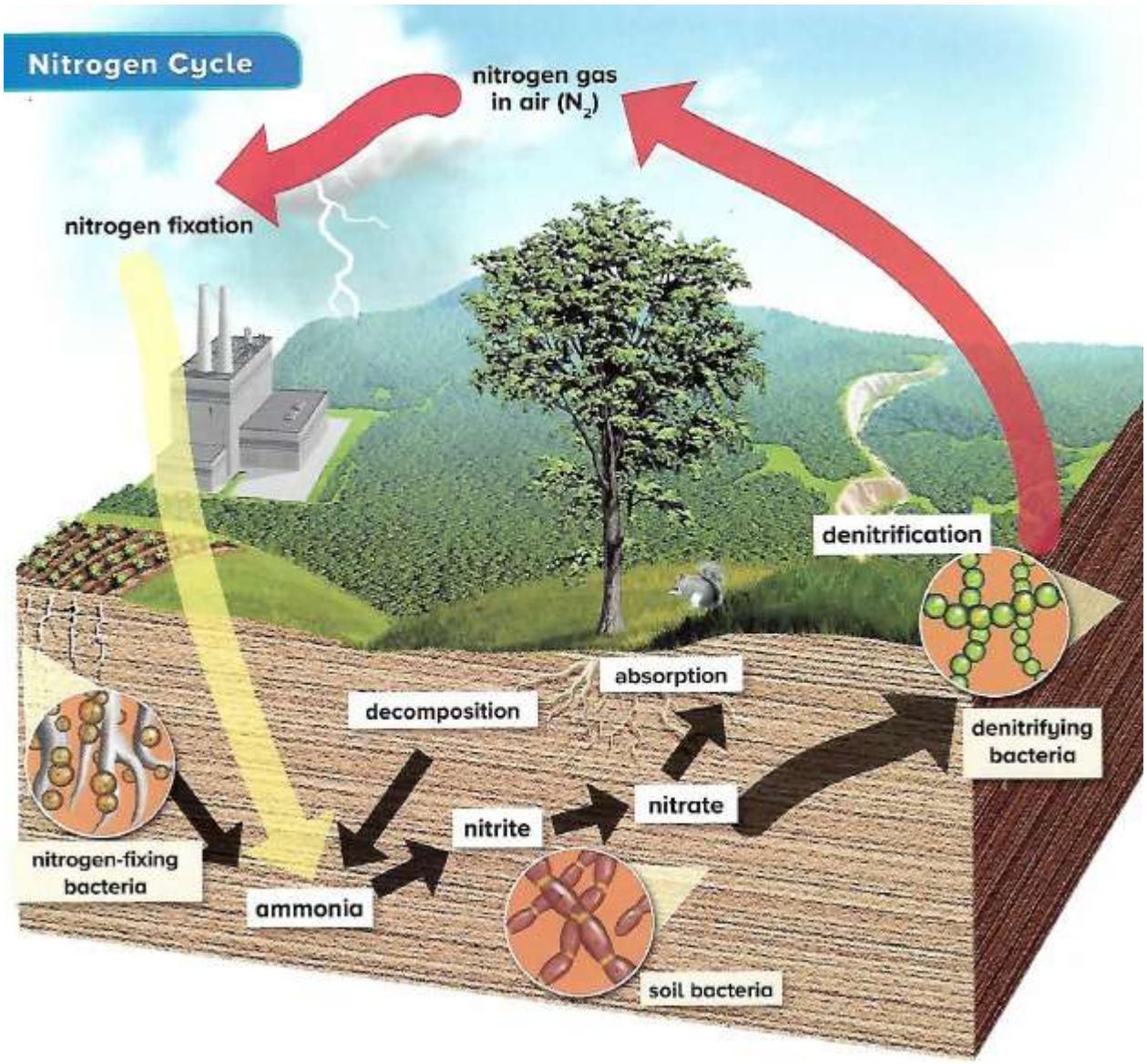


THE CARBON CYCLE



Carbon From Atmosphere	Carbon To Atmosphere
Photosynthesis (Plants)	Combustion by humans through Fossil Fuels
Dissolved in water	Respiration (Humans, Animals, Plants and Bacteria)

THE NITROGEN CYCLE



Nitrogen From Atmosphere	Nitrogen To Atmosphere
Nitrogen – Fixing Bacteria	Denitrifying Bacteria
Lightening	

Nitrogen gas → Ammonia → Nitrite → Nitrate

- Nitrate are used by plants to make Proteins.
- Plants are eaten by animals, so the nitrogen enters the animals.
- Animals produce waste with nitrogen in it and after animals die the nitrogen in them returns to the soil.
- Bacteria turn this backing ammonia.

RECYCLING

- Trees are replanted to conserve the number of trees in the world.
- This consumes nitrogen for the spoil
- Farmers add more nitrogen to the soil through fertilizers.

- Compost is a natural fertilizer which contains fertilizer and reduces the amount of trash that is made.
- Decomposers breakdown materials in compost producing ammonia.
- Ammonia then is used to make eventually make nitrates.

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Chapter 4 Practice Questions

1. **Choose all the renewable sources from the list**
   A. Oil D. Gold
   B. Wind E. Trees
   C. Copper F. solar energy

2. **Choose all the non-renewable sources from the list**
   A. Oil D. Gold
   B. Wind E. Trees
   C. Copper F. solar energy

3. **Where do fossil fuels come from?**
   A. From meteorites
   B. From the remains of ancient animals and plants
   C. From cooling down of lava

4. **Choose the fossil fuels from the list below**
   A. Wood
   B. Coal
   C. Oil
   D. Natural Gas

5. **Alternative energy sources include**
   A. Fossil fuels
   B. All the sources, except the fossil fuels
   C. All the energy sources, including the fossil fuels

6. **What is the difference between renewable and non-renewable resources?**

   _____

   _____

7. **Where do natural resources come from**
   A. From Earth
   B. Made on factories
   C. Synthesized in laboratories

8. **Sustainability is fulfillment of present needs without**
   A. Using science
   B. Using technology
   C. Endangering the ability of future generations to fulfill their needs
   D. Solar energy

9. **Minerals, such as copper and gold ores are**
   A. Renewable resources
   B. Non-renewable resources

10. **Oil and coal are**
    A. Renewable resources
    B. Non-renewable resources

11. **Topsoil, the top layer of the soil that plants need to grow on can be produced**
A. Very quickly
B. Slowly

12. **Most electricity nowadays is produced using**
    A. Renewable sources B. Non-renewable sources

13. **The picture shows which of the following?**

    A. Renewable source C. Land resource
    B. Non-renewable source D. Fossil fuel

14. **Why trees are a renewable source?**
    A. Because they depend on fossil fuels C. Because trees take millions of years to form
    B. Because they can recover D. Because it is not a natural resource

15. **What do hydroelectric and solar energy have in common**
    A. They depend on fossil fuels C. They recycle dirty water
    B. They use energy from the Sun D. They are non-renewable sources

16. **Use of which resources is better for the future generations?**
    A. Renewable B. Non-renewable

17. What from the items listed below is an advantage of non-renewable energy?

A. They can disrupt the environment
B. They can reduce pollution
C. They can be used in any location
D. They can finish

18. Is plastic a synthetic material?

A. Yes B. No

19. Are plastics good heat insulators?

A. Yes B. No

20. Are metals good heat insulators?

A. Yes B. No

21. What is textile?

A. a metal B. a plastic
C. a type of wood D. a fabric or cloth

22. Silk and cotton are used

A.to make clothes B. to make fuel
C. for food D. to make cars

23. Concrete is used to

A. build houses B. build cars

C. cook food D. make computers

24. What is more fuel-efficient

A. Using public transport B. Using your own car C. Walking

25. Evaporation is when water

A. Turns from liquid into gas B. Turns from gas into liquid

C. Turns from solid into gas D. Turns from solid into liquid

26. **Condensation is when water**

A. Turns from liquid into gas B. Turns from gas into liquid
C. Turns from solid into gas D. Turns from solid into liquid

27. **Precipitation is when water**

A. Turns from liquid into gas B. Turns from gas into liquid

C. Falls from atmosphere D. Turns from solid into liquid

28. Who takes carbon from the atmosphere

A. plants B. animals

C. birds D. fish

29. Nitrogen can be fixed from atmosphere by the following – more than one correct answer is possible

A. some bacteria B. lightening

C. volcanic activity D. animals

30. Compost is _____

31. How does compost enrich the soil?

_____

_____

_____

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6. **What is the difference between renewable and non-renewable resources?**
   Renewable resources can be replaced as they are use up. Non-renewable resources are limited and will finish.

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A. some bacteria B. lightening

C. volcanic activity D. animals

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31. How does compost enrich the soil?

Decomposers break down decaying plant and animal materials in the compost.

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Past Exam Paper Question

20. Fossil fuels are used to make:

a. plastic. b. paper. c. cotton. d. bricks.

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Past Exam Paper Question Answer

20	a. plastic.