

**Grade 7 Chapter 6 Test Solutions****Section A: Multiple choice**

Circle the correct option.

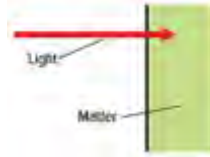
1. In which type of wave does the medium travel in a circular motion?
  - a) electromagnetic
  - b) longitudinal
  - c) transverse
  - d) water
  
2. Which eye part responds to coloured light?
  - a) cones
  - b) cornea
  - c) iris
  - d) lens
  
3. Which property of a sound wave describes the amount of energy that passes through a square meter each second?
  - a) amplitude
  - b) frequency
  - c) intensity
  - d) wavelength
  
4. As a water wave passes, the particles that make up the water move?
  - a) back and forth parallel to the wave
  - b) in circles around the same point
  - c) up and down at right angles to the wave
  - d) whichever direction the wave moves
  
5. The refraction of a wave is caused by a change in?
  - a) amplitude
  - b) frequency
  - c) speed
  - d) wavelength
  
6. Which is always a transverse wave?
  - a) microwave
  - b) seismic wave
  - c) sound wave
  - d) water wave

7. Wave frequency is measured in...

- a) decibels
- b) hertz
- c) meters
- d) seconds

8. The arrow in the diagram below shows a point on a light wave that stops as it interacts with matter. Which type of interaction does the arrow represent?

- a) absorption
- b) reflection
- c) refraction
- d) transmission



9. The distance between one point on a wave and the nearest point just like it is...

- a) amplitude
- b) frequency
- c) pitch
- d) wavelength

10. Which interactions of light with matter are taking place in the picture below?

- a) diffraction, reflection and absorption
- b) reflection, refraction and transmission
- c) reflection, scattering and diffraction
- d) translucent, transparent and opaque



11. Which of the following colours of light has the longest wavelength?

- a) red
- b) green
- c) violet
- d) yellow

make it loud

12. You turn up the volume on the car radio. Which of the following properties of the sound changes?

- a) amplitude
- b) frequency
- c) speed
- d) wavelength

high amplitude

low frequency

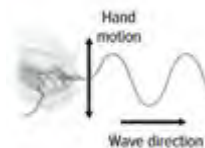
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13. If a sound is loud and low-pitched, the sound wave also has which of the following properties?

- a) low frequency and high amplitude
- b) low frequency and low amplitude
- c) high frequency and high amplitude
- d) high frequency and low amplitude

14. The figure below shows waves generated on a rope. Which type of waves are shown in the figure?

- a) combination
- b) electromagnetic
- c) longitudinal
- d) mechanical



mechanical (it travels through matter)

transverse (shape)

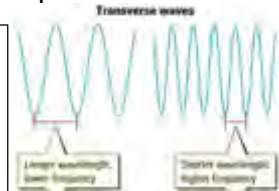
15. Which statement best describes the correct relationship for the wave shown in the figure above?

- a) The disturbance is parallel to the direction the wave travels.
- b) The disturbance is perpendicular to the direction in which the wave travels.
- c) The disturbance carries matter and energy in the same direction along the wave.
- d) The disturbance has both back and forth and up and down motion.

16. Which describes how the wave (in question 14) would change if the person's hand moved at a faster rate?

- a) The amplitude would decrease
- b) The amplitude would increase
- c) The frequency would decrease
- d) The frequency would increase

more waves would pass a point each second so we would have a higher frequency



17. If two waves are travelling at the same speed, which description is most accurate?

- a) The wave with the longer wavelength has the higher frequency
- b) The wave with the shorter wavelength has the higher frequency
- c) Both waves must have equal wavelengths
- d) Both waves must have equal frequencies

18. Wood is opaque. Which describes how light waves can interact with wood?

- a) absorption and reflection
- b) diffraction and transmission
- c) reflection and refraction
- d) transmission and refraction

travels through empty space and matter

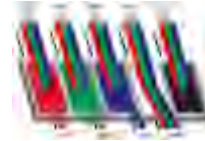
19. Which property is unique to electromagnetic waves

- a) the ability to interact with matter
- b) the ability to travel through matter
- c) the ability to have different intensities
- d) the ability to travel through empty space

20. The table shows the interaction of different colours of light with different colours of filters. Which is the correct colour to complete the table?

- a) green
- b) none
- c) red
- d) white

Incoming Light	Color of Filter	Outgoing Light
white	red	red
red	blue	none
white	blue	blue
green	green	?



the filter will absorb all other wavelengths and only allow the light that is the colour of the filter to pass through (be transmitted)  
\*translucent and transparent objects are the colour of the light they transmit

21. Which must be true of the cornea for the eye to work properly in sending a message to the brain?

- a) It must absorb light
- b) It must block out light
- c) It must reflect light
- d) It must transmit light



if light could not pass through (transmit) the cornea, no message would be sent to the brain

22. Based on the data in the table, which of the following statements is most likely true?

- a) Sound travels fastest through gases because they are less dense
- b) Sound travels fastest through liquids because they are most fluid
- c) Sound travels fastest through solids because they are most dense
- d) Sound travels fastest through materials that have higher temperatures

Material	Speed of Sound (m/s)
Air (0°C)	331
Air (20°C)	343
Water (0°C)	1,500
Water (20°C)	1,481
Ice (0°C)	3,500
Iron	5,130




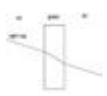


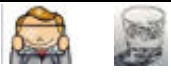



increasing density

increasing speed

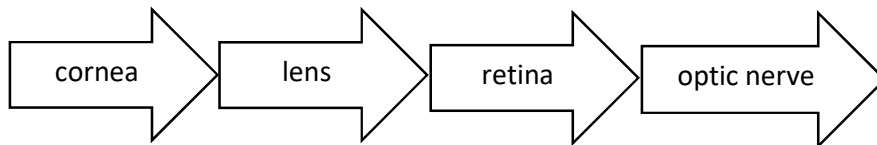
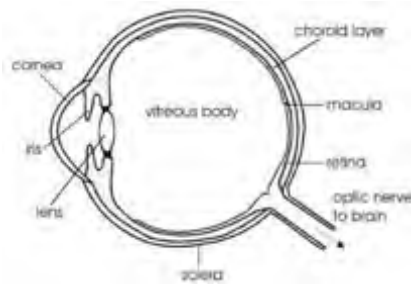
23. Which colour of light could you shine on a green object to make it appear black?

- a) green
- b) red
- c) white
- d) yellow

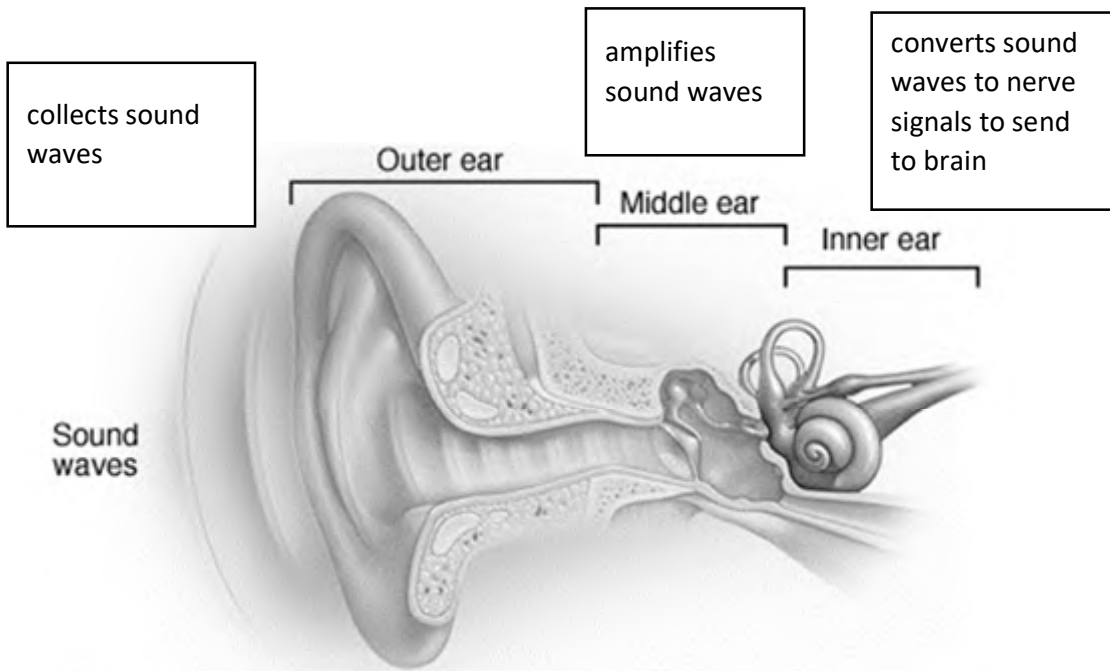
green, white, and yellow light all contain green light that would reflect off the object, making it appear green

Term	Meaning
Wave	a <b>disturbance</b> that <b>transfers energy without transferring matter</b>
Electromagnetic waves	Waves that <b>travel</b> through <b>matter and empty space</b>
Mechanical waves	Waves that <b>travel</b> through <b>matter only</b>
Transverse waves 	A wave where the <b>disturbance is perpendicular</b> to the direction the wave travels in. <b>Light waves</b> are an example of transverse waves
Longitudinal waves 	A wave where the <b>disturbance is parallel</b> to the direction the wave travels in. <b>Sound wave</b> is an example of a longitudinal wave.
Combination waves	Combination of transverse and longitudinal waves that <b>have a circular motion</b> . Example <b>water waves</b> and seismic waves
wavelength	The <b>distance of one complete cycle of a wave</b> . Example from crest to crest or trough to trough
frequency	The <b>number of wavelengths passing a point each second</b> is called
amplitude	the <b>maximum distance a wave varies from its rest position</b>
reflection 	<b>waves bend back toward you</b>
refraction 	The <b>change in direction of a wave as its speed changes</b> moving from one medium to another
diffraction 	The <b>bending of a wave as it passes the edge of an object or through an opening</b>
absorb	When <b>energy</b> from a wave <b>stays in the medium it enters</b>
transmit 	The <b>wave travels through the medium</b> to the other side
Transparent 	<b>Transmits most light</b> passing through it. Example clear glass
Translucent 	<b>Transmits some light</b> and absorbs or reflect the rest making <b>things look blurry</b> through it
Opaque 	<b>Reflects the colour light of the object and absorbs all other colours of light</b>
Scatter 	<b>light wave bounce</b> in all directions <b>off a bumpy surface</b>
Pitch	Perception of <b>how high or low a sound</b> seems

How light travels through the eye



Function of the different parts of the ear



Types of waves:

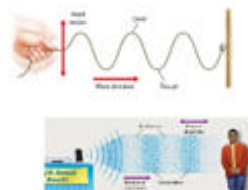
Electromagnetic

move through empty space and matter

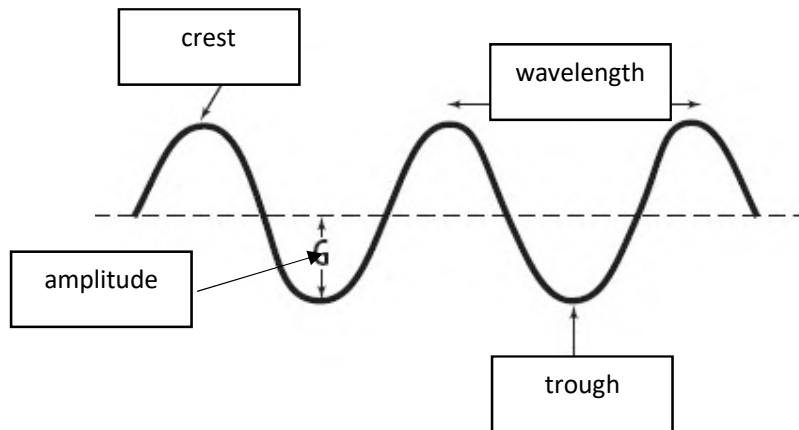


Mechanical

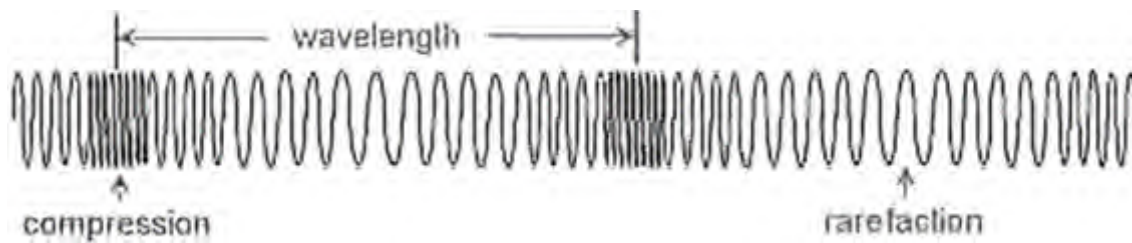
move only through matter



## Transverse wave



## Longitudinal wave

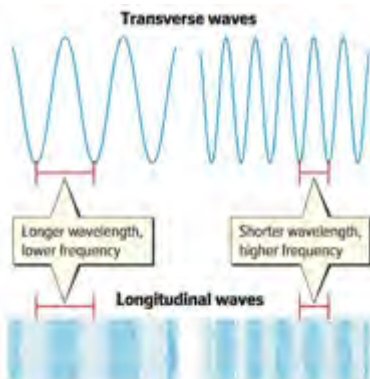


high frequency = high energy

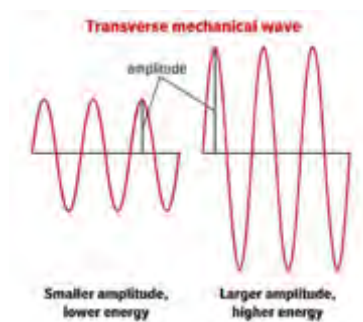
\*in sound waves high amplitude= high pitch

high amplitude = high energy

\*in sound waves high amplitude= loud (higher intensity of sound)



**Figure 7** You can describe the wavelength and the frequency of both transverse and longitudinal waves.





## Grade 7 Chapter 7 Test Questions

### Section A: Multiple choice

Circle the correct option.

1. Which is a characteristic common to all animals?

- a) asymmetry
- b) exoskeleton
- c) collagen
- d) endothermy

**All animals:**

are multicellular

have collagen to support cells

have muscle and nerve cells

CANNOT make own food

2. Which is NOT a type of body plan in animals?

- a) asymmetry
- b) ectothermy
- c) bilateral symmetry
- d) radial symmetry



3. Which best describes an adaptation?

- a) A trait that has no effect on the survival of an individual
- b) A trait that makes it difficult for an individual to survive
- c) A trait that makes a population a better match for its environment and helps it survive
- d) A trait that shows up in an individual but is not passed on to its offspring

4. Examine the branching tree diagram below. Which group of animals is most closely related to segmented worms?

a) arthropods

- b) flatworms
- c) mollusks
- d) roundworms



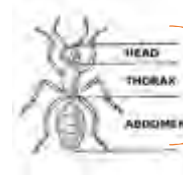
5. Which is true of invertebrates?

- a) They have no backbones
- b) They have no muscle tissue
- c) They have no nervous tissue
- d) They have no skeletons



6. In which group would you place the animal pictured below?

- a) arthropod
- b) echinoderm
- c) flatworm
- d) sponges



all arthropods  
have

7. Which is NOT a typical chordate characteristic?

- a) nerve chord
- b) notochord
- c) scales
- d) tail

all chordates have or had:

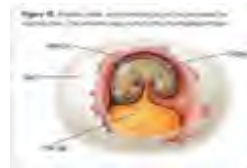
- \*nerve chord
- \*notochord
- \*pharangeal pouches
- \*tail

8. Which chordate might be confused with an invertebrate?

- a) marsupial
- b) sea horse
- c) snake
- d) tunicate

9. Which structural adaptation made it possible for vertebrates to reproduce on land?

- a) exoskeleton
- b) spiracles
- c) amniotic egg
- d) pharyngeal pouches



10. Which is a similarity between plants and animals?

- a) both have cells with cell walls
- b) both have cells with nuclei
- c) both have nerve cells
- d) both use light to make energy

11. Which is the main difference between vertebrates and invertebrates?

- a) invertebrates have backbones and vertebrates do not
- b) invertebrates only live in water, and vertebrates live in many environments
- c) there are many more vertebrate species than invertebrates
- d) vertebrates have backbones and invertebrates do not

12. The human brain and spinal cord develop from which structure?

- a) **nerve chord**
- b) notochord
- c) pharangeal pouch
- d) tail

13. What taxon level is porifera?

- a) genus
- b) kingdom
- c) **phylum**
- d) species



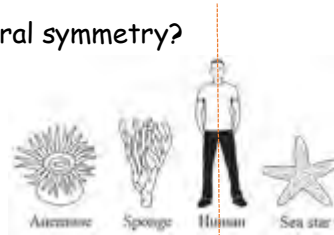
14. Which characteristic is found only in mammals?

- a) mammals are endotherms and generate body heat
- b) mammals have lungs for respiration on land
- c) **mammals produce milk for their young**
- d) mammals use amniotic eggs for reproduction

mammals have  
mammary glands  
make milk

15. Which animal is an example of bilateral symmetry?

- a) anemone
- b) human
- c) sea star
- d) sponge



16. Which is NOT a characteristic of arthropods?

- a) Arthropods have hard exoskeletons
- b) **Arthropods have blood vessels**
- c) Arthropods are a very large group of species
- d) Arthropods have a head, a thorax and an abdomen

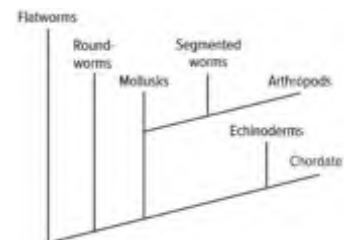
17. Which is an example of a behavioural adaptation?

- a) a hydrostatic skeleton
- b) an open circulatory system
- c) external fertilization in water
- d) **waving wings to attract a mate**

actions of an animal

18. Which invertebrate phylum is most closely related to chordates?

- a) arthropods
- b) **echinoderms**
- c) mollusks
- d) sponges



19. Why is a lancelet classified as an invertebrate chordate?

- a) it can swim
- b) it does not have a backbone**
- c) it lives near the ocean
- d) it lives under the ground

20. Which is NOT a characteristic common to all animals?

- a) all animals are multicellular
- b) all animals have collagen in their bodies
- c) all animals have an endoskeleton**
- d) all animals take in food

21. Which characteristic is common to all invertebrates?

- a) backbone
- b) mantle
- c) cell walls
- d) no backbone**

22. Which is a characteristic all chordates have in common?

- a) amnion
- b) notochord**
- c) mammary glands
- d) paired fins

## Quick Vocabulary

### Lesson 1

**adaptation** inherited trait that increases an organism's chances of surviving and reproducing in its environment.

**asymmetry** body plan which cannot be divided into any two parts that are nearly mirror images of each other.

**bilateral symmetry** body plan which an organism can be divided into two parts that are nearly mirror images of each other.

**endoskeleton** internal rigid framework that supports humans and other animals.

**exoskeleton** thick, hard outer covering that protects crabs and other animals.

**hydrostatic skeleton** fluid-filled internal cavity surrounded by muscle tissue.

**radial symmetry** body plan which can be divided into two parts that are nearly mirror images of each other anywhere through its central axis.

**species** group of organisms that have similar traits and are able to produce fertile offspring.

### Lesson 2

**attach** to fasten.

**mantle** thin layer of tissue that covers a mollusk's internal organs.

**metamorphosis** process in which the body form of an animal changes as it grows from an egg to an adult.

**molting** process of shedding and replacing an outer covering.

**parasite** animal that survives by living inside or on another organism, gets food from the organism, and does not help in the organism's survival.



### Lesson 3

**amnion** protective membrane that surrounds the embryo.

**ectotherm** animal that heats its body with heat from the environment.

**endotherm** animal that generates body heat from the inside.

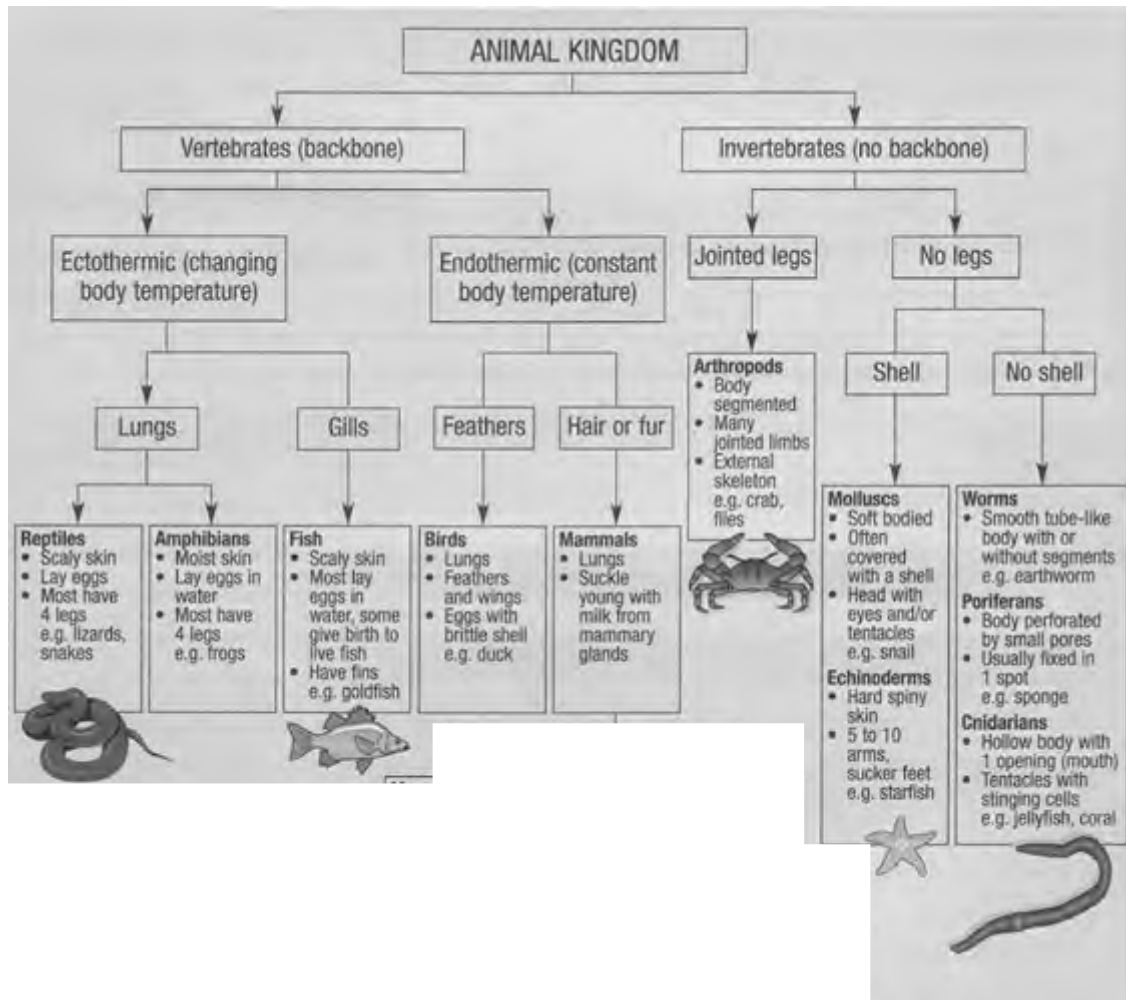
**gill** organ that exchanges carbon dioxide for oxygen in water.

**mammary gland** special tissue that produces milk for young mammals.

**notochord** flexible rod-shaped structure that supports the body of a developing chordate.

**pharyngeal pouch** groove along the side of a developing chordate that will develop into other body structures.

**scale** small, flat, rigid external body covering.



## Grade 7 Chapter 8 Test Solutions

### Section A: Multiple choice

Circle the correct option.

1. Which is a reflex?
  - a) a bird building a nest
  - b) pulling a string to get food
  - c) pupils getting smaller in dim light
  - d) tying your shoelaces

a reflex is an **innate behaviour**.  
it is an automatic response to a  
**stimulus** (change)

2. Which animal does NOT hibernate?
  - a) bat
  - b) chipmunk
  - c) snake
  - d) squirrel

warm blooded animals hibernate during  
cold weather to slow down body processes

cold blooded animals estivate during hot  
weather to slow down their body  
processes

3. Which type of animal behaviour is shown in the figure below?
  - a) conditioning
  - b) imprinting
  - c) instinct
  - d) reflex

a reflex: automatic response  
(like how you jump if someone  
scares you)



4. Which is a learned response that uses reasoning from past experiences?
  - a) conditioning
  - b) imprinting
  - c) cognitive behaviour
  - d) trial and error
5. Body language is an example of?
  - a) communication
  - b) conditioning
  - c) migration
  - d) societies

6. Which type of behaviour is shown in the figure below?
  - a) aggression
  - b) courtship
  - c) migration
  - d) submission



7. How would you describe the organ system shown below?

- a) asexual
- b) embryo
- c) female
- d) male



8. What is the length of time between fertilization and birth called?

- a) external development
- b) gestation period
- c) metamorphosis
- d) zygote

9. What are the reproductive cells that form in male animals?

- a) egg
- b) ovaries
- c) sperm
- d) testes

10. Which is NOT one of the ways that animals communicate?

- a) they make chemicals
- b) they migrate long distances
- c) they use light
- d) they use sound

11. Which term describes the behaviour shown in the figure?

- a) conditioning
- b) imprinting
- c) instinct
- d) reflex



12. Which are produced in the structure shown in the figure?

- a) embryos
- b) zygotes
- c) egg cells
- d) sperm cells



13. Which is true of external fertilization?
- a) it happens outside the female body
  - b) it involves a small number of eggs
  - c) it occurs only in the spring months
  - d) it requires extended parental care
14. When a baby kangaroo is born it crawls into its mother's pouch. Which type of behaviour is this?
- a) cognitive behaviour
  - b) imprinting
  - c) innate behaviour
  - d) trial and error
15. A turtle perches on a log in the Sun. How does this behaviour help the turtle maintain homeostasis?
- a) it attracts suitable mates
  - b) it frightens potential predators
  - c) it maintains body temperature
  - d) it protects newborn offspring
16. Which stage of development is marked A in the figure?
- a) adult
  - b) larva
  - c) pupa
  - d) zygote
17. Which process occurs at the stage marked A in the figure?
- a) fertilization
  - b) imprinting
  - c) hibernation
  - d) metamorphosis
18. Which is the result of fertilization?
- a) egg
  - b) embryo
  - c) sperm
  - d) zygote
19. Which is a learned behaviour?
- a) conditioning
  - b) instinct
  - c) migration
  - d) reflexes





20. Which form of communication includes pheromones?

- a) chemicals
- b) light
- c) body language
- d) facial expressions

21. Which are the reproductive cells that form in female animals?

- a) egg
- b) ovaries
- c) sperm
- d) testes

## Quick Vocabulary

### Lesson 1

**behavior** way an organism reacts to other organisms or to its environment

**conditioning** modifying an organism's learned behavior so that a response to one stimulus becomes associated with a different stimulus

**hibernation** response in which an animal's body temperature, activity, heart rate, and breathing rate decrease during periods of cold weather

**homeostasis** organism's ability to maintain steady internal conditions when outside conditions change

**imprinting** learned behavior that occurs when an animal forms an attachment to an organism or place within a specific time period after birth or hatching

**innate behavior** behavior that is inherited rather than learned

**instinct** complex pattern of innate behaviors

**migration** instinctive, seasonal movement of animals

**stimulus** something in the environment that causes an organism to react

### Lesson 2

**aggression** forceful behavior used to dominate or control another animal

**bioluminescence** chemical reaction that occurs within living things and gives off light

**pheromone** chemical that is produced by one animal to influence the behavior of another animal of the same species

**society** group of animals of the same species living and working together in an organized way

**submission** condition of being humble or compliant

**territory** area of land that an animal defends and uses for feeding, mating, and raising young

### Lesson 3

**cycle** series of events that regularly recur and lead back to the starting point

**fertilization** fusion of an egg cell with a sperm cell

**metamorphosis** developmental process in which the form of the body changes as an animal grows from an egg to an adult

**ovary** female reproductive organ that produces egg cells

**sexual reproduction** process in which genetic material from a sperm cell and an egg cell combine, producing an offspring

**testis** male reproductive organ that produces sperm

**zygote** new cell that forms from the fusion of an egg cell and a sperm cell

animals respond to change in their environment called **stimulus**

**stress:** animals respond to stress in fight or flight response

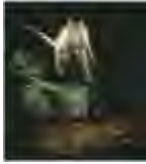


## Animal behaviour

**innate:** animals are born able to respond this way

**learned:** animals learn how to respond this way

**reflex:** response without thinking



**instinct:** some animals just know how to do something, like a spider making a web

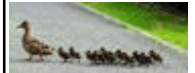


**migration:** animals just know what pattern to follow during migration



**hibernation:** animals body processes automatically slow down

**imprinting:** animals become attached to mothers after they are born

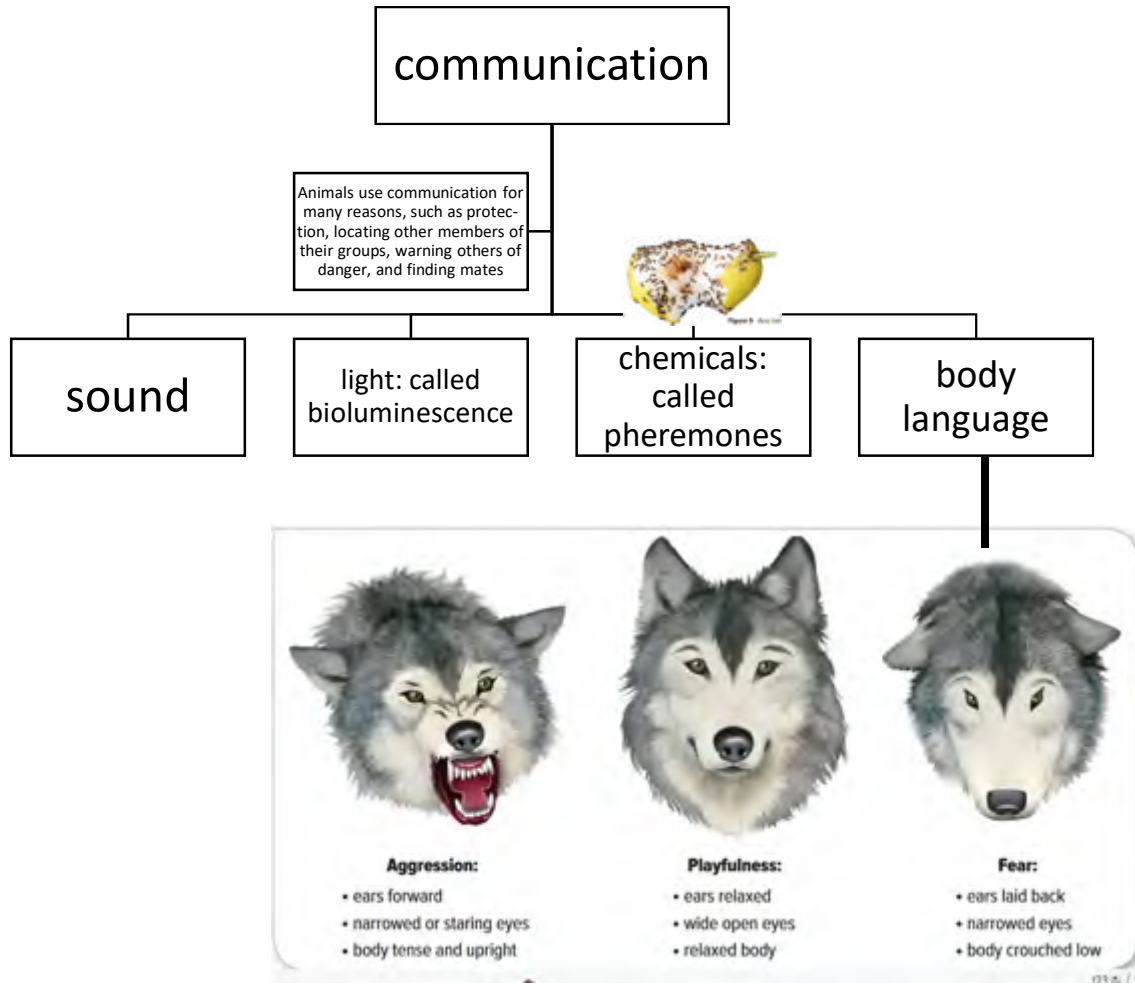


**trial and error:** when you learn after doing something the wrong way

**conditioning:** when you are trained to behave a certain way



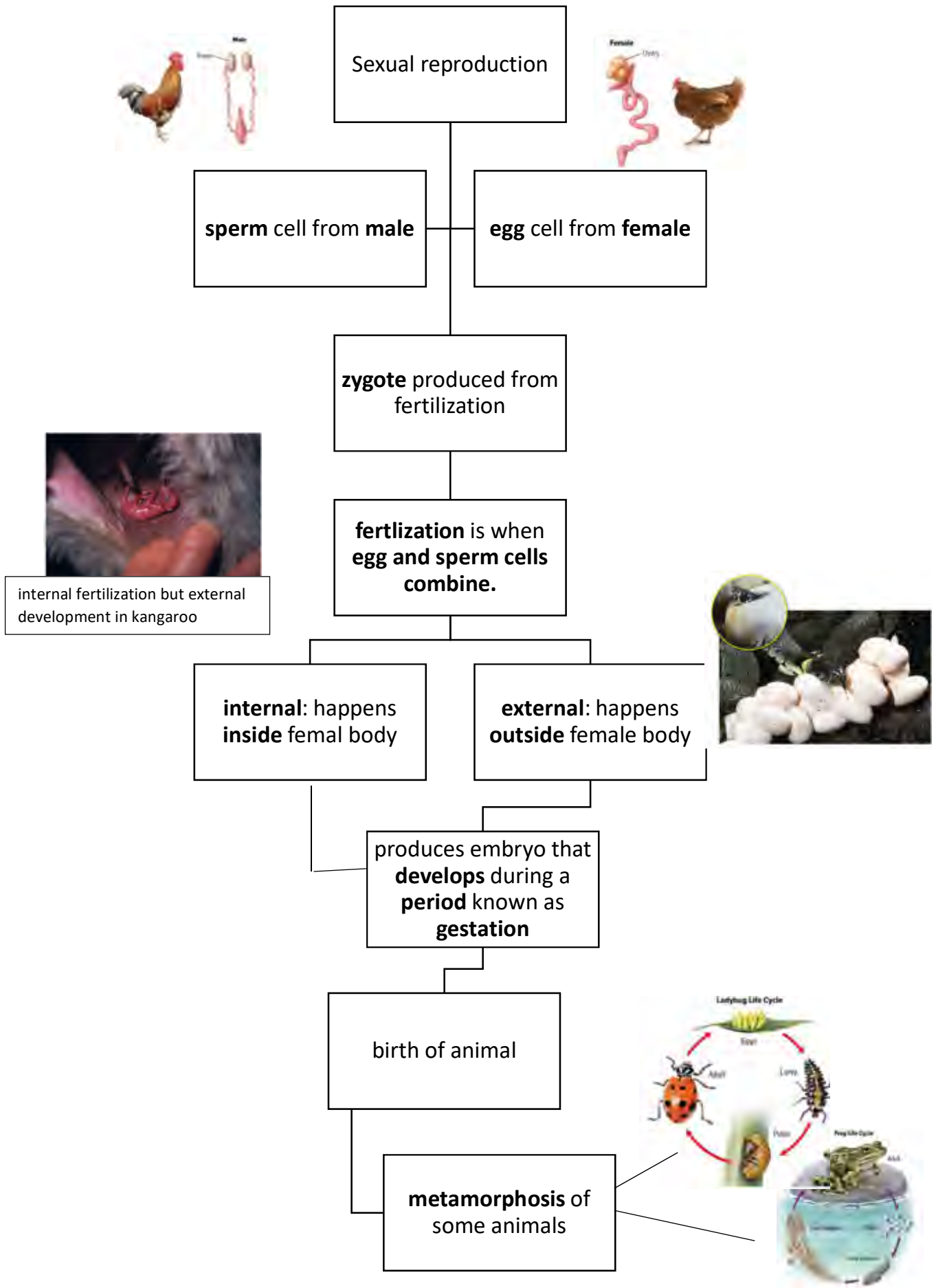
**cognitive:** when you think or reason



some animals live in societies where the leader is dominant and the followers are submissive.

Animals show aggression when defending their territories (place they live and hunt for food)

Courtship: when animals are attracting a mate they may sing, bring gifts or release pheromones



**Grade 7 Chapter 9 Test Solutions****Section A: Multiple choice**

Circle the correct option.

1. During which process are carbon dioxide, water, and ATP produced?

a) **cellular respiration**

b) photosynthesis

c) thigmotropism

d) transpiration

2. Which is the cause of the green color in plant leaves?

a) **chlorophyll**

b) flowers

c) glucose

d) oxygen

3. What do angiosperms produce?

a) cones

b) **flowers**

c) needles

d) rhizoids

4. In which flower part is an egg produced?

a) **A**

b) B

c) C

d) D



5. Which flower part in the picture above is often brightly coloured and helps attract insects?

a) A

b) **B**

c) C

d) D

6. The stomata on a leaf...

a) **allow gases to enter and leave the leaf**

b) allow water and energy into the leaf

c) perform cellular respiration

d) produce sugar and water vapour

7. What is the plant shown below?

- a) fern
- b) horsetail
- c) moss
- d) pine tree



8. Which do ferns produce in order to reproduce?

- a) cones
- b) flowers
- c) seeds
- d) spores

9. All plants have a life cycle that includes a ...

- a) A cone and gametophyte
- b) cone and seed
- c) seed and sporophyte
- d) sporophyte and gametophyte

10. Which is an organelle in plant cells but not in animal cells?

- a) chlorophyll
- b) chloroplast
- c) mitochondria
- d) nucleus

11. What is the major site of photosynthesis in plants?

- a) flowers
- b) leaves
- c) stems
- d) roots

12. Which structures enable a plant to exchange water vapor and gases such as carbon dioxide and oxygen with its environment?

- a) rhizoids
- b) roots
- c) seeds
- d) stomata

13. Which is true of photosynthesis and cellular respiration?

- a) They both occur in plants
- b) They both occur in animals
- c) They both produce sugars
- d) They both require sunlight

14. For the life cycle shown, which structures are part of the sporophyte stage?

- a) A and B
- b) A and C
- c) B and C
- d) B and D



15. Which is NOT a product of cellular respiration?

- a) energy
- b) glucose
- c) carbon dioxide
- d) water

16. Which two divisions are used to classify vascular seed plants?

- a) conifers and nonconifers
- b) flowering and nonflowering
- c) mosses and liverworts
- d) sporophytes and gametophytes

17. What term describes the plant response shown above?

- a) gravitropism
- b) hydrotropism
- c) phototropism
- d) thigmotropism



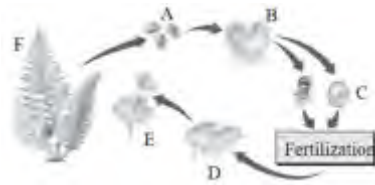
18. Which processes do nonvascular plants use to transport water and nutrients through their tissues?

- a) absorption and photosynthesis
- b) cellular respiration and pollination
- c) diffusion and osmosis
- d) transpiration and reproduction



19. Which structures in the diagram are haploid?

- a) A, B and F
- b) C, D and E
- c) A, B and C
- d) D, E and F



20. Which structures in the diagram are diploid?

- a) A, B and F
- b) C, D and E
- c) A, B and C
- d) D, E and F



21. Which are NOT vascular plants

- a) angiosperms
- b) ferns
- c) gymnosperms
- d) mosses

22. Which has a cone for its reproductive structure

- a) angiosperms
- b) gymnosperms
- c) hornwort
- d) horsetail

23. A plant that is growing toward a window, most likely is exhibiting...

- a) gravitropism
- b) hydrotropism
- c) phototropism
- d) thigmotropism

24. Which structures anchor nonvascular plants to surfaces?

- a) rhizoids
- b) roots
- c) stems
- d) xylems

## Quick Vocabulary

### Lesson 1

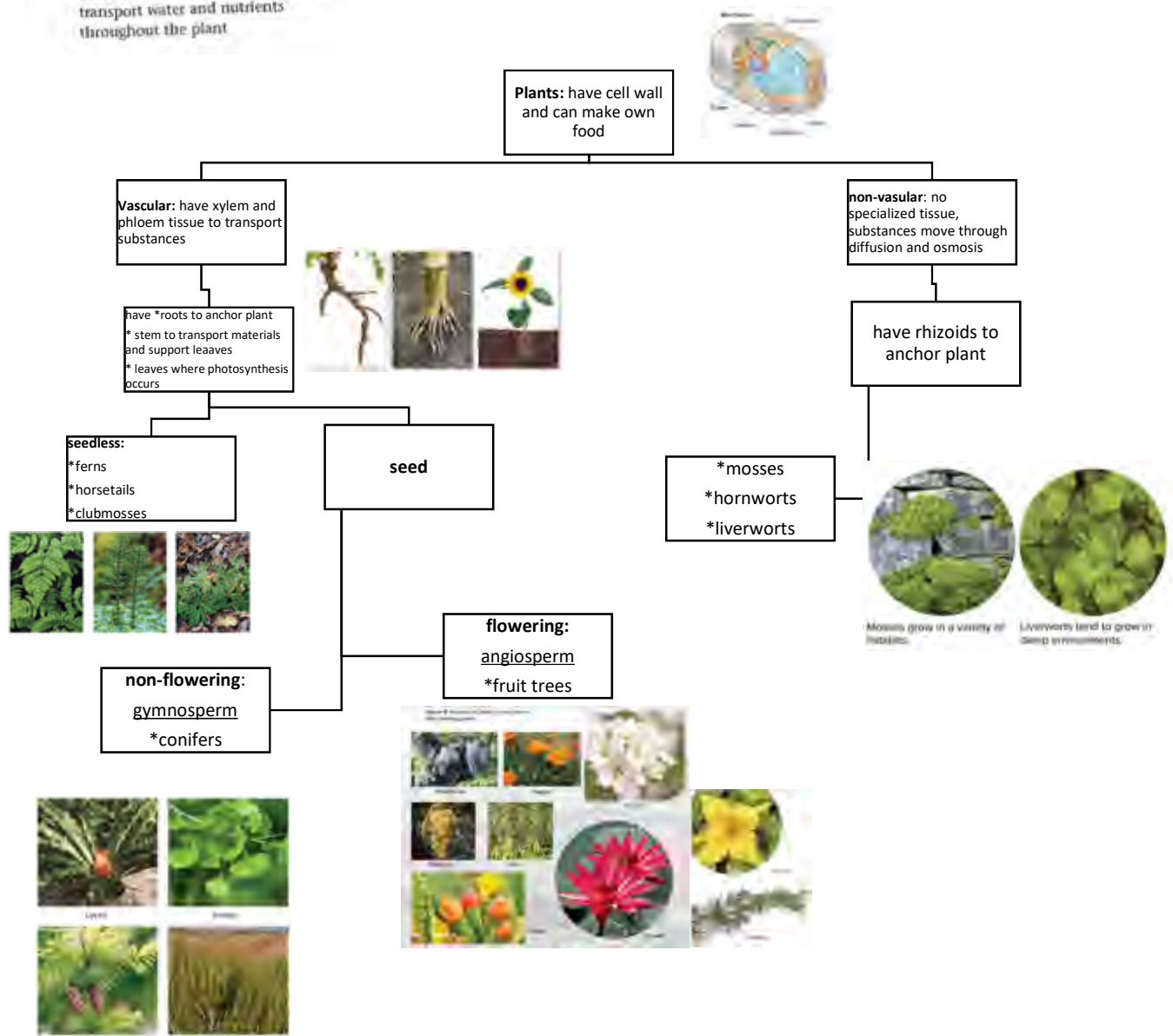
- angiosperm** plant that produces flowers and develops fruits
- cone** structure in most conifers or cycads that contains reproductive structures
- gymnosperm** plant that produces seeds that are not part of a fruit
- major** greater in number, quantity, or extent
- nonvascular plant** lacks specialized tissues for transporting water and nutrients
- rhizoids** structures that anchor a plant without transport tissue to a surface
- stomata** small openings in the surface of most plant leaves
- vascular plant** has specialized tissues, called vascular tissues, that transport water and nutrients throughout the plant

### Lesson 2

- dormancy** period of no growth
- pistil** female reproductive organ of a flower
- pollination** process of transferring pollen grains to a female plant structure of the same species
- stamen** male reproductive organ of a flower
- trait** distinguishing characteristic of an organism

### Lesson 3

- diffusion** movement of substances from an area of higher concentration to an area of lower concentration.
- organelle** a structure in a eukaryotic cell that performs a specific function for the cell
- osmosis** diffusion of water molecules through a membrane
- stimulus** any change in an organism's environment that causes a response
- transpiration** release of water vapor from stomata in leaves
- tropism** plant growth toward or away from an external stimulus



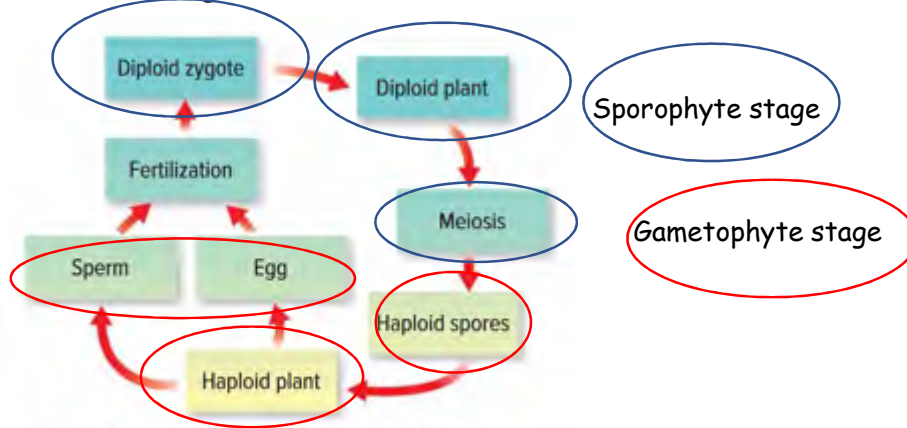
## Plant reproduction

**Asexual:** one parent plant reproduces  
new plant is genetically identical

**Sexual:** male and female sex cells are  
involved to produce a new plant with  
different genetic material

## Plant Life cycles:

### Alternation of generations



**Figure 10** All plants have a life cycle that includes

## Seedless Plants:

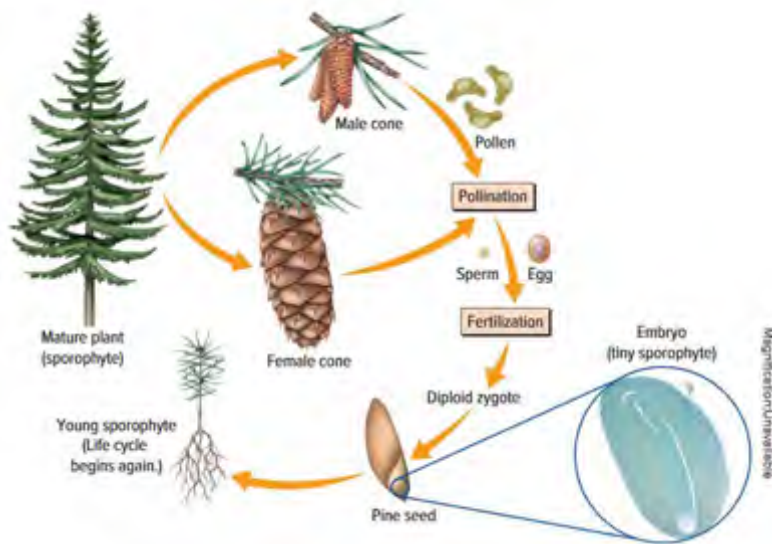
reproduce: \* asexually or \* producing spores



## Seed Plants:

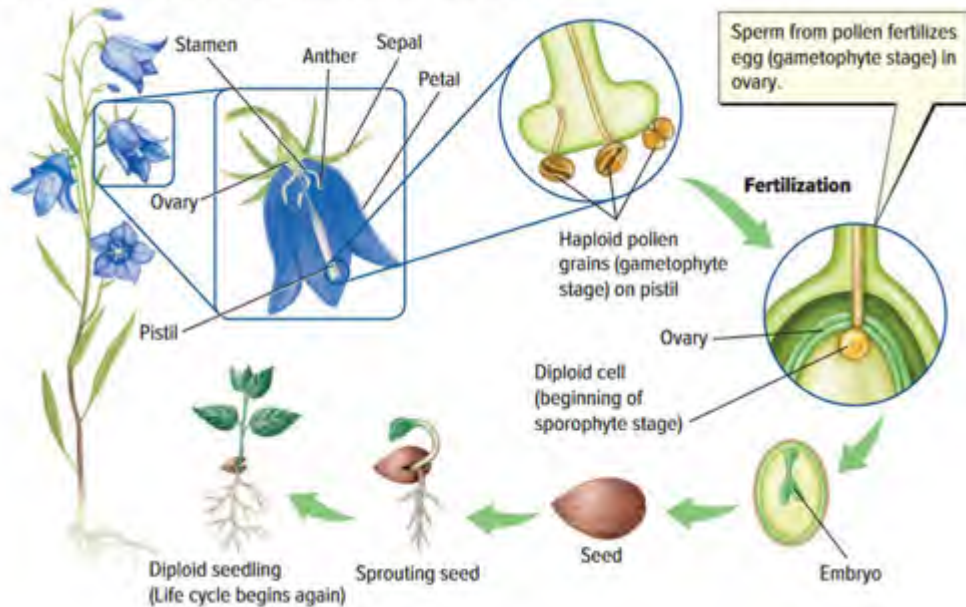
reproduce using pollen to produce seeds

Gymnosperms: \* cones



Angiosperms: \* flower

**Figure 13** The life cycle of an angiosperm involves several steps.



## Plant growing seasons

Annual	Biennial	Perennial
Only produce flowers in 1 growing season. must be replanted every year	Take 2 growing seasons to produce flowers dormant in between seasons	Grow and bud for many years Can also loose leaves and be dormant and regrow after

### In leaf of plant:

#### Photosynthesis occurs

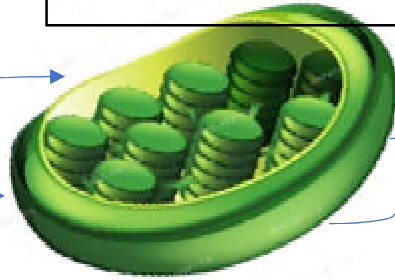
##### requires

light energy

carbon dioxide

water

**chloroplast**  
(site of photosynthesis)



gases enter and leave through tiny openings in the leaf called **stomata**

##### produces

glucose

oxygen

### In all Cells in animal and plants:

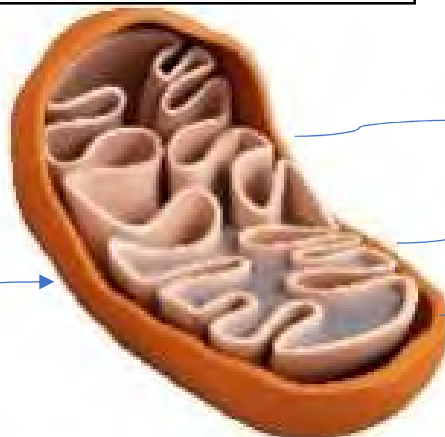
#### Cellular Respiration occurs

##### requires

glucose

oxygen

**mitochondrion**  
(site of cellular respiration)



##### produces

ATP energy

carbon dioxide

water

## Tropism: plants response to a stimulus

phototropism

light



thigmotropism

touch



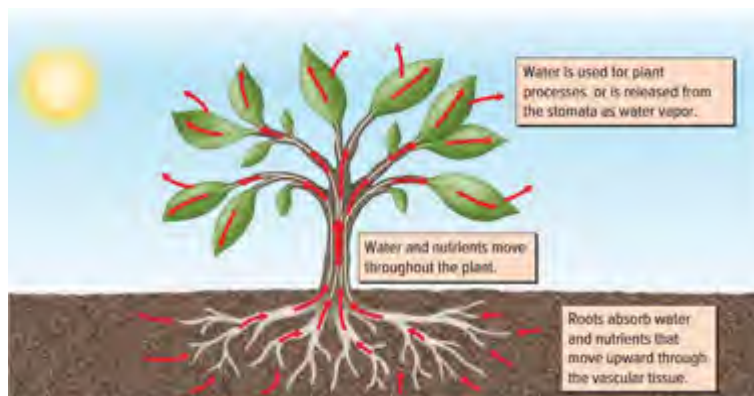
gravitropism

gravity



## Water movement through plant

- **absorption:** water enters through roots
- **transpiration:** water vapor exits through leaves (stomata)







**Grade 7 Chapter 10 Test Solutions****Section A: Multiple choice**

Circle the correct option.

1. Which material travels from the roots to the leaves through the xylem?

- a) oxygen
- b) sugar
- c) sunlight
- d) water

2. Which organelle is the site of photosynthesis?

- a) chloroplast
- b) mitochondrion
- c) nucleus
- d) ribosome

3. Which is a product of cellular respiration?

- a) ATP
- b) light
- c) oxygen
- d) sugar

4. What type of plant-growth response is shown in the photo below?

- a) flowering
- b) gravitropism
- c) photoperiodism
- d) thigmotropism

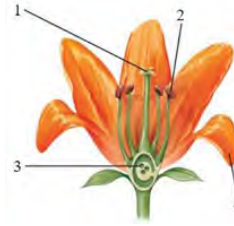


5. Which stimulus is responsible for this type of growth picture above)?

- a) gravity
- b) light
- c) nutrients
- d) touch

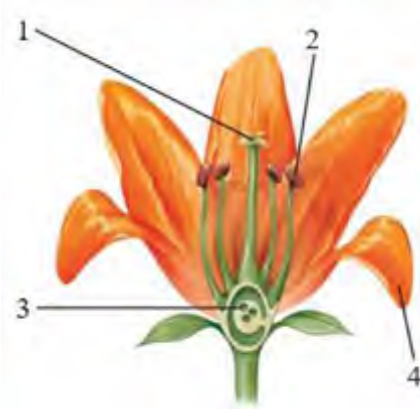
6. What is the name of structure number 3?

- a) anther
- b) ovule**
- c) petal
- d) pistal



7. Where is pollen produced?

- a) 1
- b) 2**
- c) 3
- d) 4



8. Which part of the flower becomes the seed?

- a) 1
- b) 2
- c) 3**
- d) 4

9. What plant is shown in the figure below?

- a) diploid fern**
- b) diploid moss
- c) haploid fern
- d) haploid moss



it is just  
starting to  
grow so it  
must be part  
of the diploid  
cycle

10. Which structure transports sugars throughout a plant?

- a) epidermis
- b) phloem**
- c) stomata
- d) xylem

11. What is one similarity between plants and animals?

- a) Both plants and animals carry on cellular respiration**
- b) Both plants and animals carry on photosynthesis
- c) Both plants and animals have chloroplasts
- d) Both plants and animals use xylem and phloem to transport materials

12. Look at the structure that is marked with an arrow in the image below. What will this structure become?

- a) a diploid moss
- b) a diploid seed plant
- c) a haploid fern
- d) a haploid flowerless seed plant



13. Which two plant hormones increase the rate of cell division?

- a) auxins and cytokinins
- b) cytokinins and gibberellins
- c) ethylene and auxins
- d) gibberellin and ethylene

14. Which is a product of photosynthesis?

- a) carbon dioxide
- b) glucose
- c) light
- d) water

15. Which cellular process occurs within the organelle shown below?

- a) photosynthesis
- b) cellular respiration
- c) transport of phloem
- d) transport of xylem



16. Which plant has a diploid stage that is difficult to see?

- a) conifer
- b) cherry tree
- c) dandelion
- d) moss

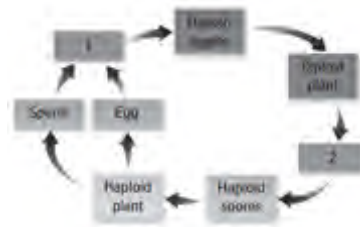


17. How is cellular respiration related to photosynthesis?

- a) Animals produce sugars through cellular respiration that are broken down by plants through photosynthesis
- b) Animals use cellular respiration while plants use photosynthesis.
- c) Cellular respiration produces sugars, which are stored through photosynthesis.
- d) Photosynthesis produces sugars, which are broken down in cellular respiration.

18. Which process occurs at the stage marked 2 on the plant life cycle diagram below?

- a) asexual reproduction
- b) fertilization
- c) meiosis
- d) mitosis



19. What type of plant response is occurring in the diagram below?

- a) gravitropism
- b) hydrotropism
- c) phototropism
- d) thigmotropism



20. Which structure moves water through plants?

- a) chloroplast
- b) mitochondrion
- c) nucleus
- d) xylem

21. Which is NOT likely to cause a plant response?

- a) changing the amount of daylight
- b) moving plants away from each other
- c) treating with plant hormones
- d) turning a plant on its side

22. Which is NOT part of the alternation of generations life cycle in plants?

- a) anther
- b) diploid
- c) haploid
- d) spore

## Quick Vocabulary

### Lesson 1

**cellular respiration** series of chemical reactions that convert the energy in food molecules into ATP

**energy** usable power

**photosynthesis** series of chemical reactions that convert light energy, water, and carbon dioxide into glucose and give off oxygen

### Lesson 2

**photoperiodism** plant's response to the number of hours of darkness in its environment

**plant hormone** substance that acts as a chemical messenger within plants

**stimulus** any change in the environment that causes organisms to respond

**tropism** response that results in plant growth toward or away from a stimulus

### Lesson 3

**alternation of generations** occurs when the life cycle of an organism alternates between diploid and haploid stages

**embryo** immature diploid plant that develops from the zygote

**fruit** forms from an ovary and sometimes other parts of the flower and contains one or more seeds

**generation** haploid and diploid stages in the life cycle of a plant

**mitosis** process during which a nucleus and its contents divide

**ovary** structure found at the base of the style that contains one or more ovules

**ovule** female reproductive structure of a seed plant where the haploid egg develops

**pistil** female reproductive organ of a flower

**pollen grain** structure that forms from tissue in the male reproductive structure of a seed plant and produces sperm cells

**pollination** process that occurs when pollen grains land on a female reproductive structure of a plant that is the same species as the plant that produced the pollen grains

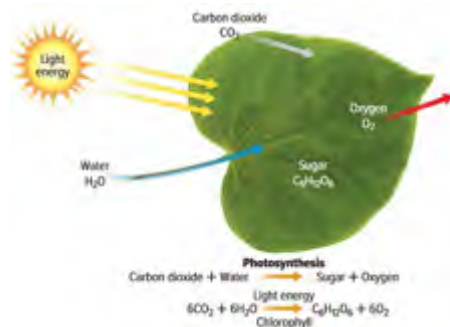
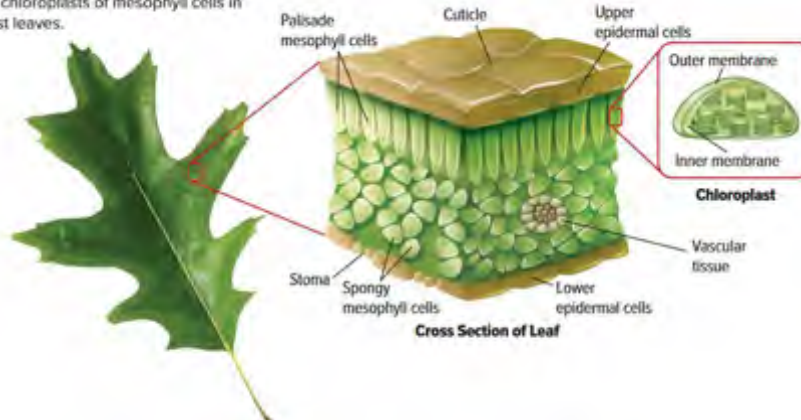
**seed** structure made up of an embryo, its food supply, and a protective covering

**spore** haploid generation of a plant; a daughter cell produced from a haploid structure

**stamen** male reproductive organ of a flower

## Where in the leaf photosynthesis occurs

**Figure 2** Photosynthesis occurs inside the chloroplasts of mesophyll cells in most leaves.



**Figure 3** Photosynthesis is a series of complex chemical processes. The first step is capturing light energy. In the second step, that energy is used for making glucose, a type of sugar.

Relationship between cellular respiration and photosynthesis:



## Tropisms

Phototropism



Thigmotropism



Figure 7: The tendrils of the vine respond to touch and coil around the branch.

Gravitropism



Photoperiodism: is how plants respond to different hours of light

Long day	Short day	Day neutral
plants that flower when exposed to <b>less than 10-12 hours of darkness</b>	plants require <b>12 or more hours of darkness</b> for flowering to begin	<b>does not matter</b> how much darkness it receives





## The hormones that plants produce and their effect on the plant

Hormone	Effect on Plants
Auxins	Cause cell elongation
Ethylene	Stimulates the ripening of fruit
Gibberellins	Cause cell division and elongation
Cytokinins	Increase cell division



**auxins** elongate plant stem on dark side causing phototropism



**gibberellins and cytokinins** elongate plant stem through cell division

## Structure of seeds

Figure 17 A seed contains a diploid plant embryo and a food supply protected by a hard outer covering.



## Seed formation:

1. Pollen forms in the male structure of the plant
2. Pollination occurs when the pollen lands on the female structures of the same species
3. Fertilization occurs and a zygote develops in the ovule
4. The ovule develops into an **embryo** (an immature diploid plant)

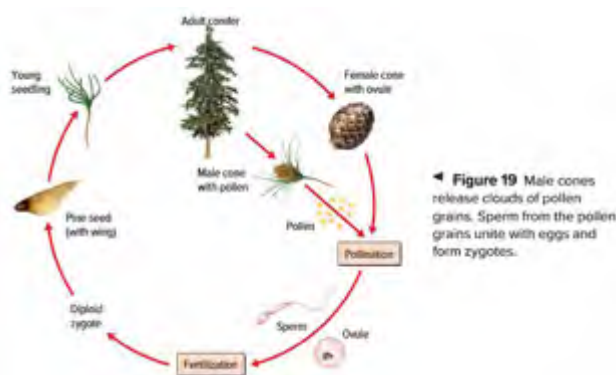


Figure 19 Male cones release clouds of pollen grains. Sperm from the pollen grains unite with eggs and form zygotes.

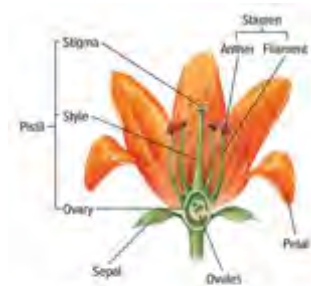


Figure 20 Typical flowers have both male and female structures.

pollen is produced on the anther



The ovary of flowering plants sometimes develops into a fruit with the seed in it.

Table 1 Flowers, Fruits, and Seeds of Common Plants			
Plant	Flower	Fruit	Seed
Pea			
Corn			
Strawberry			
Dandelion			