Name: _____

GRADE 8 SCIENCE – MIDYEAR REVIEW

Your test is on _____ and covers the following topics:

Material World	Living World
Characteristic Properties	Taxonomy
States of Matter & Phase Changes	Habitat & Ecological Niche
Mass & Volume	Adaptations
Acids and Bases	Food Chains
Chemical and Physical Changes	Natural Selection & Evolution
Pure Substances & Mixtures	Genes
Separation of Mixtures	Plant Cell
Atoms and Elements	Animal Cell
Molecules	Photosynthesis & Cellular Respiration

LIVING WORLD REVIEW

1. **Adaptations enable animals and plants to improve their chance of _____.**
   a) Sleeping
   b) Hunting
   c) Survival ← Correct & Best Answer
   d) Fail

2. What is the purpose of taxonomy?
   a) To help animals survive
   b) To classify living organisms ← Correct Answer
   c) To classify chemical substances
   d) To organize the elements

3. Which of the following correctly identifies cellular inputs and outputs?

	Cellular Inputs	Cellular Outputs	
a)	Energy & Nutrients	Waste	
b)	Waste	Energy & Nutrients	
c)	*Nutrients, Water, Oxygen*	*Water, Carbon Dioxide, Waste*	*← Correct*
d)	Oxygen, Carbon Dioxide	Nutrients & Waste	

4. Are the following examples of physical or behavioural adaptations?

	Physical Adaptations	Behavioural Adaptations
Fur colour of a species matches the environment	√	
Ducks have webbed feet to help them swim.	√	
Opossums "play dead" to confuse predators		√
Birds migrate in winter to get food all year.		√
Plants grow towards the sunlight to capture more.		√
Hawks have sharp claws to help them catch and kill their prey.	√	

5. **What are some ways we can determine if living organisms are in the same species?**
   They have the same scientific name (Genus + species)

   They look alike (they have a physical resemblance)

   They can mate and their offspring can reproduce when they become adults

6. **Name three characteristics that define a habitat.**
   Habitats can be defined by their geographic location, climate, flora (plants), fauna (animals) and proximity to man-made constructions.

7. **What is an ecological niche?**
   The interaction a specific species has in its environment, for example where it sleeps, how it gets food and water.

8. **In a food chain, what is the role of each of the following?**
   a) The producers: *ANS: Create their own food by photosynthesis*
   b) The decomposers: *ANS: Recycle plant and animal matter into organic matter*
   c) The consumers: *ANS: Feed on producers and other consumers*

9. **What's the difference between evolution and natural selection?**
   Natural selection is Individuals who have characteristics that give them an advantage are more likely to survive and reproduce passing on those genes to their offspring. For example, fish that are born green instead of blue and can hide from predators in the seaweed.

   Evolution is a slow process that leads to changes in a species over time. Ex; birds have different beaks depending on the food they eat.

10. Where in the cell are genes located?

Genes are sections or parts of chromosomes (orDNA) which are located in the nucleus of a cell.

11. A) The scientific name for a grizzly bear is *Ursus arctos* and the scientific name for a polar bear is *Ursus maritimus.* What do the scientific names tell us about the taxonomy levels of bears?

The grizzly bear and the polar bear both belong to the same genus, Ursus but to different species (arctos and maritimus)

B) Are these two bears in the same species? Why or why not? *No because their scientific name is not exactly the same, they belong to different species (arctos and maritimus).*

12. In regards to photosynthesis,

a) **What are the inputs?** *ANS: Carbon dioxide, water and solar energy*

b) **What are the outputs?** *ANS: Oxygen and carbohydrates (glucose)*

13. In regards to cellular respiration,

a) **What are the inputs?** *ANS: Oxygen and carbohydrates (glucose)*

c) **What are the outputs?** *ANS: Carbon dioxide, water and solar energy*

14. What are the levels of taxonomy from the most general to the most specific?

Kingdom, Phylum, Class, Order, Family, Genus and Species

1. Label the parts of the cell below:

A: ***Cell Membrane***

B: ***Cell Wall (in plant cells only)***

C: ***Cytoplasm***

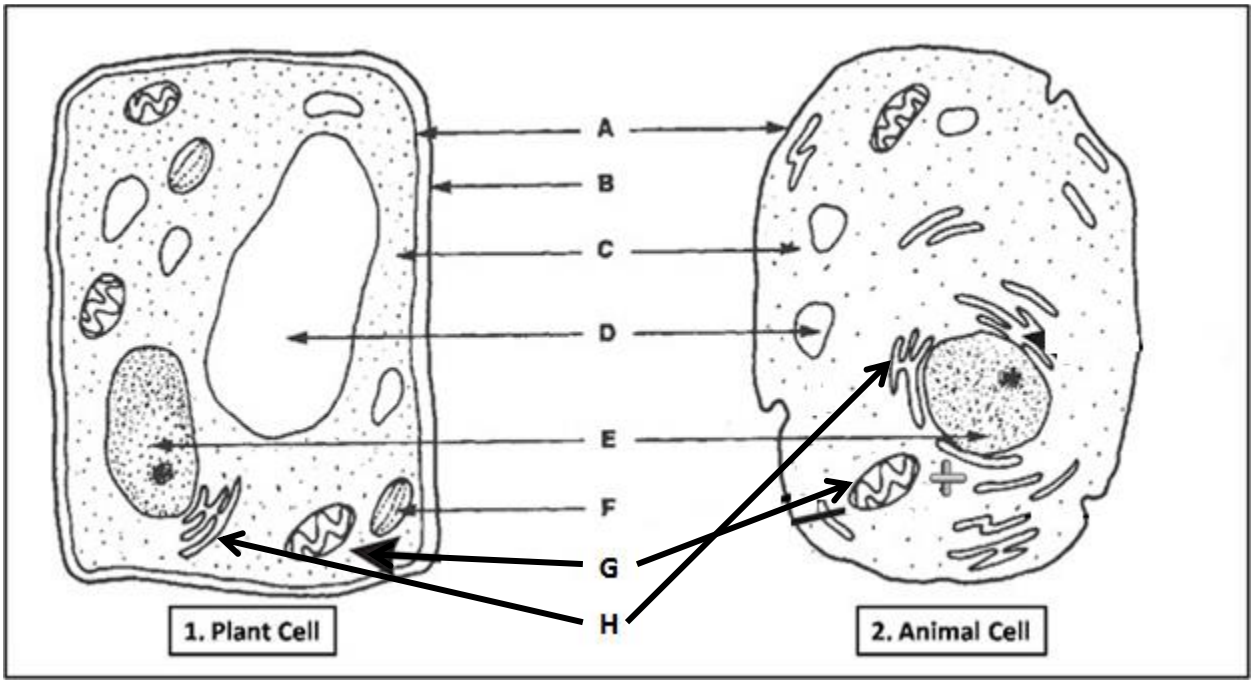
D: ***Vacuole***

E: ***Nucleus***

F: ***Chloroplast (in plant cells only)***

G: ***Mitochondria***

H: ***Endoplasmic Reticulum***



2. Cell Functions

   Which cell part…

   a) Acts as a border, allowing substances to enter and exit: **Cell Membrane**
   b) Produces energy: **Mitochondria**
   c) Is where photosynthesis occurs: **Chloroplasts (plant cell only)**
   d) Is a gel-like substance: **Cytoplasm**
   e) Acts like the cells brain: **Nucleus**

3. A) What substances enter the cell? **Water, Nutrients and Oxygen**

B) What substances exit the cell? **Water, Waste and Carbon Dioxide**

MATERIAL WORLD REVIEW

1. Classify the following as acids, bases or neutral solutions:
   a) Soap: Base
   b) Lemon Juice: Acid
   c) Distilled water: Neutral
   d) Solution with a pH of 6: Acid
   e) Solution that turns red litmus paper blue, and blue litmus paper stays blue: Base
   f) Solution with a pH of 7.5: Base
   g) Solution with a pH of 12: Base
   h) Solution with a sour taste: Acid
   i) Solution with a pH of 7: Neutral

2. What's the difference between mass and volume?
   ANS: Mass is the amount of matter a substance contains while volume is the amount of space a substance occupies.

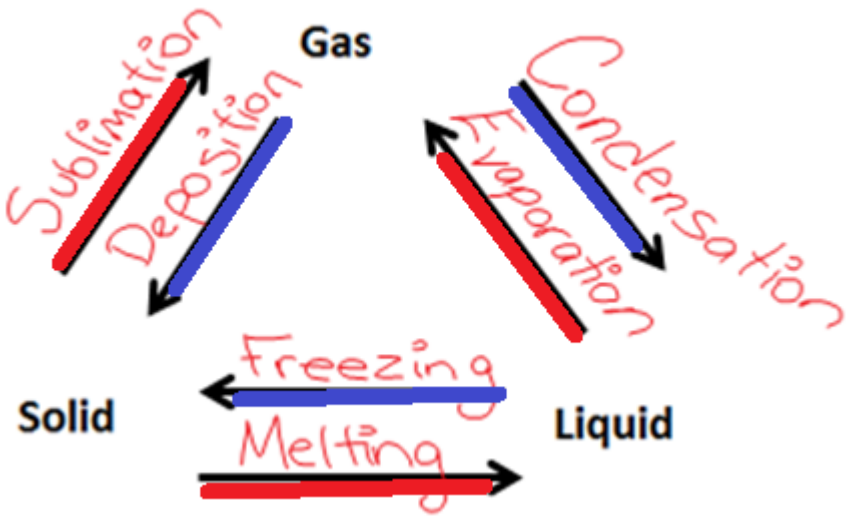
3. What are four signs that indicate that a chemical change has occurred?
   ANS: A gas forms, the colour changes, heat or light is produced and a residue forms.

4. What is the benefit of using universal indicator paper over litmus paper?
   ANS: Universal indicator paper is more precise, it gives you the exact pH level of a substance. Litmus paper can tell you whether a substance is an acid, base or neutral but it doesn't give you the exact pH level.

5. Place check marks to indicate whether the following are characteristic properties or not.

	Freezing Point	DNA	Hair Colour	Shoe Size	Mass	Fingerprint
Characteristic Property	√	√				√
Non-Characteristic Property			√	√	√	

6. Fill in the phase changes of matter in the table below:



7. What are some differences between a physical change and a chemical change?

ANS: During a physical change, the substance does not change what it is. For example, when you chop wood you still have wood afterwards. During a chemical change, the substance does change and it has new properties. For example, when you burn wood, you have ash afterwards.

8. What are the four methods used to separate mixtures?
   ANS: Sedimentation, Decantation, Filtration and Distillation

9. If atoms are like the letters of the alphabet, how are molecules like words?
   ANS: Atoms fit together to create molecules just like letters fit together to create words.

10. Are the following examples of heterogeneous mixtures or homogenous mixtures?

	Heterogeneous Mixture	Homogeneous Mixture
Chocolate Milk		√
Apple Juice		√
All Dressed Pizza	√	
Blood		√
Orange Juice with pulp in it	√	
Chicken Noodle Soup	√	
Earth	√	

11. Are the following examples of elements or compounds?

	Elements	Compounds
Nitrogen (N)	√	
Water (H_2O)		√
Carbon Dioxide (CO_2)		√
Neon (Ne)	√	
Hydrochloric Acid (HCl)		√
Argon (Ar)	√	

12. How could you measure the volume of an apple?
   ANS: You could fill an overflow can to the spout, place the apple inside and catch the water that overflows in a graduated cylinder. Take a reading of the amount of water in the overflow can, and this will be the volume of the apple, or the amount of space the apple takes up.

13. How would you go about separating the components of the following liquids?
    1. Beaker A has a heterogenous mixture in it. You can clearly see brown particles suspended in it. You also see a deposit at the bottom of the mixture.
       ANS: It appears that sedimentation has already occurred, Decantation would be a next good step. The layers could be separated through pouring out one of the layers. Filtration could also be used.
    2. Beaker B contains a blue solution. There are no visible particles.
       ANS: Distillation would be the best method to separate this mixture. The substance should be boiled and the steam will pass through a tube called a condenser. The steam will cool and return to a liquid state, separate from the residue that did not evaporate.
    3. Beaker C has a heterogenous mixture in it. The suspended particles are very fine. There is no visible deposit at the bottom of the beaker.
       ANS: Filtration would be the best method to separate this mixture, the mixture should be poured through filter paper which would leave the tiny particles on the paper and the liquid in the container.

14. A student places a drop of an unknown solution on red litmus paper. The paper does not change colour. What can she conclude about the solution?
    ANS: The solution is not basic (the red litmus paper would have turned blue if it was a basic solution). The solution could be acidic, or it could be neutral. More tests need to be conducted.