Remote Learning Packet 2

Subject- Biology

School- VCHS

Monday April 9- Friday April 22, 2020

Students if you are working online then please continue to work online. If you are using paper pencil you can then please adhere to the daily instructions that are attached.

Day	Date	Online Activity	Paper and Pencil
Day 11	April 9	Google Classroom Daily Posted Activity Topic: Molecular Biology	EOC Review Page 3 Topic: Molecular Biology
Day 12	April 10	Google Classroom Daily Posted Activity Topic: Molecular Biology	EOC Review Page 4 # 1-13 Topic: Molecular Biology
Day 13	April 13	Google Classroom Daily Posted Activity Topic: Molecular Biology	EOC Review Page 4 # 12-25 Topic: Molecular Biology
Day 14	April 14	Google Classroom Daily Posted Activity Topic: Cell Structure and Function	EOC Review Page 5 Topic: Cell Structure and Function
Day 15	April 15	Google Classroom Daily Posted Activity Topic: Cell Structure and Function	EOC Review page 6 # 1-11 Topic: Cell Structure and Function
Day 16	April 16	Google Classroom Daily Posted Activity Topic: Cell Structure and Function	EOC Review page 6 # 12-22 Topic: Cell Structure and Function
Day 17	April 17	Google Classroom Daily Posted Activity Topic: Genetics	EOC Review page 7 Topic: Genetics
Day 18	April 20	Google Classroom Daily Posted Activity Topic: Genetics	EOC Review page 8 # 1-11 Topic: Genetics
EOC	April 21	Google Classroom Daily Posted Activity Topic: Genetics	EOC Review page 8 # 12-23 Topic: Genetics
Day 20	April 22	Google Classroom Daily Posted Activity Topic: Ecology	EOC Review page 9 Topic: Ecology

Online Biology Notes and activities(Ms. P. Thompson)

Since school is out for a while, I will be sending notes by PowerPoint and activities via Google classroom. Therefore it is mandatory that you have access in order to complete your assignments.

If you have not been using Google classroom, please use your school e-mail address which is firstname.lastname@vcs.k12.nc.us and the password: Vanc3c0! in order to access the account. Then use the Google classroom code j7dce52

Other helpful websites include:

Bozeman Science- Videos by subject that are great for reviewing topics

- http://www.bozemanscience.com

North Carolina Released Biology EOC with answers

- http://www.dpi.state.nc.us/docs/accountability/testing/releasedforms/biorelease.pdf

Khan Academy- Tutoring

- http://www.khanacademy.org

Any questions please email me at: pthompson@vcs.k12.nc.us

Biology Digital Learning Packet - Breinig

All content and work can be accessed online through Google Classroom. Students will need to use their school e-mail address which is: firstname.lastname@vcs.k12.nc.us and their password is: Vanc3c0! in order to access their classroom accounts. Depending on the class period in which they have biology, the classroom codes are as follows:

1st: ty6zsth

2nd: huwbyzi

3rd: 6ry4mqn

Using Google Classroom is the best way to keep up with grades and work at this time. This packet is an overview of everything that will be covered and has been covered during the course. This is designed as a review at the end of Biology and might be challenging without having learned the content on Google Classroom or in class.

Other helpful websites include:

- Bozeman Science – Videos by subject area that are great for reviewing topics.
  - http://www.bozemanscience.com/biology-main-page/
- North Carolina Released Biology EOC – Released tests with answers at the end to check your work.
  - http://www.dpi.state.nc.us/docs/accountability/testing/releasedforms/biorelease.pdf
- Khan Academy – Tutoring website
  - http://www.khanacademy.org

As always, if you have any questions or concerns I am always available through phone or email. Thank you for retrieving the work for biology and for your continued patience during this stressful time.

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252-430-6000 ext. 6288

252-375-8020 – text or call before 8pm

EOC Review Homework: Molecular Biology Name: _____

Directions: Annotate and answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. Which type of molecule do whales use for energy storage and insulation?
   A. DNA
   B. glucose
   C. fat
   D. starch

2. What type of organic molecules are enzymes?
   A. carbohydrates
   B. lipids
   C. nucleic acids
   D. proteins

3. A scientist is using an enzyme to get a chemical reaction to occur within a cell sample and observes that the reaction occurs best when the pH is lowered to 6.2. What does this experiment ***most likely*** demonstrate?
   A. Enzyme specificity
   B. Enzymes are reusable
   C. pH affects enzyme function
   D. Enzymes lower activation energy

4. Which is an example of a cell maintaining homeostasis?
   A. A cell moves away from a toxin
   B. A cell dies due to lack of food
   C. A cancer cell grows back in the same spot
   D. DNA mutates and different proteins are made

5. What are the subunits of DNA and their function?
   A. nucleotides that store information
   B. monosaccharides that provide quick energy for the cell
   C. lipids that store energy and provide information
   D. proteins that provide building blocks and structure in a cell

6. Which organic molecules supply energy to cells?
   A. carbohydrates and nucleic acids
   B. proteins and nucleic acids
   C. lipids and carbohydrates
   D. lipids and nucleic acids

7. Which type of molecules combine to make up the protein portion of hemoglobin?
   A. monosaccharides
   B. fatty acids
   C. amino acids
   D. polysaccharides

8. Which organic molecule is paired with its basic building block?
   A. carbohydrate : amino acids
   B. nucleic acids : nucleotides
   C. lipids : monosaccharides
   D. protein : fatty acids

9. A certain enzyme will break down egg white but not starch. Which statement best explains this observation?
   A. Starch is not composed of amino acids
   B. Enzymes are specific in their actions
   C. Egg whites act as a coenzyme for hydrolysis
   D. Starch molecules are too large to be hydrolyzed

10. Which pH indicates a substance that is more acidic than a substance with a pH of 4?
   A. 7
   B. 6
   C. 2
   D. 12

11. The cell membrane of the red blood cell will allow water, oxygen, and carbon dioxide to pass through. Because other substances are blocked from entering, this membrane is called
   A. perforated
   B. semi-permeable
   C. non-conductive
   D. permeable

12. Which macromolecule makes up the majority of the cell membrane?
   A. nucleotide
   B. lipid
   C. protein
   D. carbohydrate

Directions: Answer the questions to the best of your ability without your notes first. Then, you may use your notes to check your answers.

1. What are the four types of organic molecules needed for life? (biomolecules)

2. What is the function of carbohydrates?

3. What is the function of proteins?

4. What is the function of nucleic acids?

5. What is the function of lipids?

6. What is the function of enzymes?

7. What element makes a molecule organic?

8. What is osmosis?

9. What is the difference between active and passive transport?

10. What is a substrate?

11. What does it mean when an enzyme denatures?

12. Can an enzyme be used more than once? Explain.

13. Write the *chemical* equation for photosynthesis.

14. Write the *chemical* equation for cellular respiration.

15. What is glycolosis and how many ATP does it produce?

16. What is fermentation and what are the two types?

17. What is the difference between aerobic and anaerobic respiration?

18. What organelle does cellular respiration take place in?

19. What organelle does photosynthesis take place in?

20. Define isotonic, hypertonic, and hypotonic.

21. What happens to a the cell that is 30% NaCl if it is placed in a solution that is 90% NaCL?

22. What is homeostasis?

23. What biomolecule makes up most of the cell membrane?

24. Lactase is an example of an enzyme, how do you know?

25. How do you know the difference between an acid and a base?

EOC Review Homework: Cell Structure and Functions Name: _____

Directions: Annotate and answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. A single muscle cell is isolated and observed. Which organelle would you expect to be abundant in the cell?
   A. Ribosomes
   B. Mitochondria
   C. Lysosomes
   D. Golgi Body

2. Which function would an algae cell not be able to perform if its chloroplasts were removed?
   A. Cellular respiration
   B. Protein synthesis
   C. Storage and transport
   D. Photosynthesis

3. Which of the following is the organelle that is responsible for energy production in eukaryotic cells?
   A. Mitochondria
   B. Chloroplasts
   C. Ribosomes
   D. Endoplasmic Reticulum

4. The combined observations of Schleiden, Schwann and Virchow resulted in the formation of the cell theory. Which of the following is not part of the cell theory?
   A. All cells contain a nucleus.
   B. All cells come from other living cells.
   C. All living organisms are made of one or more cells.
   D. Cells are the basic unit of structure and function of all living things.

5. What process best explains how a nerve cell and a muscle cell can both develop from the same fertilized egg?
   A. selective breeding
   B. natural selection
   C. genetic engineering
   D. differentiation

6. Which process produces the most variation within a species?
   A. asexual reproduction
   B. sexual reproduction
   C. mitosis
   D. cloning

7. Which would most likely produce a mutation that is passed onto offspring?
   A. radiation changing the DNA sequence in skin cells
   B. a gamete with an extra chromosome forming
   C. tobacco smoke altering the genes in lung
   D. cells exposure to chemicals altering nerve cell function

8. Which characteristic is present in offspring produced by sexual reproduction, but is missing in offspring produced by asexual reproduction?
   A. an identical copy of parent chromosomes
   B. twice the number of parent chromosomes
   C. only half the number of parent chromosomes
   D. an independent assortment of parent chromosomes

9. The liver is an animal organ that removes and processes waste materials from the blood. Which of the following organelles would be found in a higher than normal frequency in liver cells?
   A. Ribosomes
   B. Lysosomes
   C. Mitochondria
   D. Golgi apparati

10. If the diploid (2n) number of chromosomes in an organism is 58, what is the haploid (1n) number of chromosomes for this organism?
   A. 29
   B. 58
   C. 116
   D. Unpredictable

Directions: Answer the questions to the best of your ability without your notes first. Then, you may use your notes to check your answers.

1. Explain the difference between organic and inorganic compounds.

2. Explain the difference between a prokaryotic cell and a eukaryotic cell.

3. List 5 organelles and their functions.

4. Which two organelles are found only in plant cell and not in animal cells?

5. What is a somatic cell?

6. What is a zygote?

7. What is the difference between mitosis and meiosis?

8. How many chromosomes are in the each body cell?

9. How many chromosomes are in each gamete?

10. XX = _____ and XY = _____

11. What are diploid cells?

12. What are haploid cells?

13. What is the end result of mitosis?

14. What is the end result of meiosis?

15. What is crossing-over and when does it occur?

16. Who are the scientists that contributed to cell theory?

17. What did Robert Hooke invent?

18. What is gametogenesis?

19. What is nondisjuntion?

20. List the 4 phases of mitosis.

21. How many divisions are there in meiosis?

22. What are two examples of gametes?

EOC Review Homework: Genetics Name: _____

Directions: Annotate and answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. Which technique would most likely be used by forensic scientists?

   A. gene cloning
   B. gene therapy
   C. DNA fingerprinting
   D. Karyotyping

2. Which distinguishes mitosis from meiosis?

   A. Mitosis has one DNA replication, while meiosis has two DNA replications.
   B. In mitosis, one nuclear division occurs. In meiosis, two nuclear divisions occur.
   C. In mitosis, homologous chromosomes pair up. In meiosis, there is no pairing of chromosomes.
   D. Mitosis results in the production of gametes, while meiosis results in the production of body cells.

3. Which is least likely to be a concern involving the Human Genome Project?

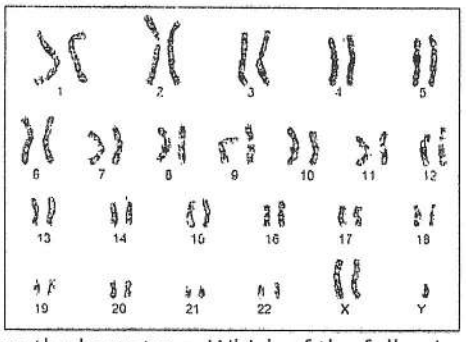
   A. How companies can use genetic information
   B. The use of genetic fingerprinting in forensics
   C. Which agency has control of genetic information
   D. Which agency has access to personal genetic information

4. What DNA sequence gave rise to the mRNA sequence AAC GUU ACU?

   A. AAC GTT ACT
   B. CCT TGC AAA
   C. TTG CAA TGA
   D. UUG CAA UGU

5. How are mutations generally formed?

   A. By splicing genes from a plant and an animal
   B. By copying genes from a somatic cell into a gamete
   C. By introducing small errors into the gene code of a cell
   D. By splitting a cell into cells with differing numbers of chromosomes



6. Analyze the karyotype. Which of the following descriptions is correct?

   A. Normal, male
   B. Down's Syndrome, female
   C. Kleinfelter's, male
   D. Normal, female

7. How does DNA code for proteins in a cell?

   A. by creating a new double helix structure
   B. by using its phosphate and sugar molecules
   C. by adding more hydrogen bonds to its structure
   D. by arranging certain nitrogen bases of the cell in a particular order

8. What is the correct relationship between an allele and a gene?

   A. Alleles dictate which genes go into a hybrid
   B. Alleles are the alternative forms a gene can take
   C. Genes are the physical form of allele combinations
   D. If two dominant genes combine it results in an allele

Directions: Answer the questions to the best of your ability without your notes first. Then, you may use your notes to check your answers.

1. What is the shape of DNA?

2. What are the four bases of DNA and how do they pair up?

3. What is DNA replication?

4. What is Transcription and where does it take place?

5. What is Translation and where does it take place?

6. What is genetics?

7. What are the 3 types of RNA?

8. Write a complimentary strand of DNA from this strand: A T A G G C T A C C

9. Transcript from this strand of DNA: G G C T T A G C C A A G

10. What is the difference between a dominant and recessive allele?

11. What is protein synthesis?

12. What is the difference between homozygous and heterozygous?

13. What is a genotype?

14. What is a phenotype?

15. What is the difference between codominant and incomplete dominance?

16. What is a sex-linked trait and who is more likely to get them?

17. Draw a Punnett Square for the cross of a mother who is heterozygous for brown eyes and a father who has blue eyes. What percentage of the children will have brown eyes?

18. Who is Gregor Mendel?

19. Draw a Punnett Square for the cross of a mother with AB blood and a father with Type O blood. What are the genotypes of their offspring?

20. When does a mutation in a parent affect the offspring?

21. What is the full name of DNA?

22. In RNA, what are the base pairing rules?

23. What is an allele?

EOC Review Homework: Ecology Name: _____

Directions: Annotate and answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. A certain office decided to protect the environment by using less paper. How will this *most likely* benefit the environment?

A. It will help increase the biodiversity
B. It will help conserve forests and save energy
C. It will help protect soil
D. It will help reduce acid rain

2. Which process of the carbon cycle removes carbon dioxide from the atmosphere?

A. Photosynthesis
B. Cellular Respiration
C. Combustion of Fossil Fuels
D. Death and Decomposition of Organisms

3. Which environmental impact is most associated with the overuse of pesticides?

A. Biomagnification
B. Eutrophication
C. Acid Rain
D. Deforestation

4. In an ecosystem, each trophic level receives energy from the level below it. What is the source of energy for the first trophic level?

A. Energy is recycled to fist trophic level from all the higher levels
B. The first trophic level receives a continuous supply of radiant energy from the sun
C. The first trophic level produces energy without any input from the environment
D. The first trophic level converts nutrients in soil into energy

5. Which is a likely result of habitat destruction caused by human activities?

A. A loss of biodiversity
B. The introduction of new species
C. An increase in bacteria
D. Increased precipitation

6. What is the correct term for the maximum number of individuals in a population that can be supported by a particular ecosystem?

A. Lag phase
B. Carrying capacity
C. Population density
D. Exponential growth

7. What is the relationship between an ecosystem and a community?

A. A community is a very large ecosystem
B. An ecosystem is a very large community
C. An ecosystem includes a community and abiotic factors
D. A community includes an ecosystem and abiotic factors

8. Ecologists have studied the relationship between polar bears and seals in the Arctic Ocean. The polar bear population tends to follow that of the seals, through increases and declines. What kind of relationship does this example demonstrate?

A. Mutualism
B. Commensalism
C. Logistic Growth
D. Predator/Prey

9. What will most likely happen if the human population continues to grow at current rates?

A. There will be fewer natural resources for future generations
B. There will be an increase in nitrogen levels in the atmosphere
C. There will be a decrease in water pollution
D. There will be an increase in the number of strong hurricanes

Directions: Answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. What is ecology?

2. What is the difference between a community and a habitat?

3. What is an ecosystem?

4. What is the difference between biotic and abiotic factors?

5. What is the difference between autotrophs and heterotrophs?

6. List and describe three types of biotic factors.

7. List and describe three types of heterotrophs.

8. Draw a food chain with four organisms and label the 1st, 2nd, 3rd, and 4th trophic levels.

9. How is energy transferred between trophic levels and how much is being transferred?

10. What is a food web?

11. Briefly explain the nitrogen cycle.

12. Briefly explain the water cycle.

13. Briefly explain the carbon cycle.

14. What two cellular processes are involved in the carbon cycle?

15. What is competition?

16. What is symbiosis?

17. List and describe the three types of symbiosis.

. List the reasons why populations of organisms increase of decrease.

19. List the reasons why ecosystems are constantly changing.

EOC Review Homework: Evolution & Animal Behavior

Name: _____

Directions: Annotate and answer all the questions without using your notes first. Then, go back and use your notes to check your work.

1. Darwin explained the differences in beak shape among Galapagos finches as being the result of

A. chance events
B. adaptations to eating different foods
C. differences that existed in the colonizing species
D. inheritance of acquired characteristics

2. Which of the following statements best describes how adaptations benefit an organism?

A. It guarantees that the organism will survive
B. It guarantees that an organism will have a stout beak
C. It increases an organism's chances of survival
D. It increases an organism's chance of becoming extinct

3. In which populations does genetic drift most often occur?

A. in small populations
A. in large populations
B. in marine populations
C. in terrestrial populations

4. What is the correct term for inherited structures that appear to have no current function in an organism?

A. Vestigial structures
B. Adaptive structures
C. Homologous structures
D. Nonfunctional structure

5. A rat in a box learns to associate pressing a lever with obtaining food. Which of the following learned behaviors does this demonstrate?

A. Operant Conditioning
B. Habituation
C. Insight/Reasoning
D. Classical Conditioning

6. At night, moths travel toward light. Which type of behavior does this describe?

A. habituation
B. imprinting
C. innate behavior
D. learned behavior

7. A large population of cockroaches was sprayed with an insecticide. A few of the cockroaches survived and produced a population of cockroaches that was resistant to this spray. What can best be inferred from this example?

A. A species will adapt no matter what the environment.
B. The environment has no effect on the survival of an organism.
C. Insecticides cause mutations that are passed on to the next generation.
D. Individuals with favorable variations survive and reproduce.

8. What is the best explanation for the continual changes in the classification system of organisms?

A. All organisms struggle for existence and become extinct.
B. All organisms compete to be at the top of the food chain.
C. Technological advances have allowed scientists to better compare organisms.
D. More species have been discovered, but scientists have not analyzed all the data.

Directions: Answer the questions to the best of your ability without your notes first. Then, you may use your notes to check your answers.

1. What is evolution?

2. Who first stated the theory of evolution?

3. What is natural selection?

4. What is biodiversity?

5. List and describe 5 pieces of evidence that support the theory of evolution.

6. What is the difference between homologous and analogous structures?

7. What is a vestigial structure?

8. What is taxonomy?

9. What are the 7 different levels of taxonomy?

10. List and describe the 5 kingdoms of living things.

11. What is a scientific name and what language is it in?

12. What is an adaptation?

13. Define the following terms:

    a. Innate behavior:

    b. Learned behavior:

    c. Classical conditioning:

    d. Operant conditioning:

    e. Habituation:

    f. Imprinting:

14. Why do animals migrate?