Name: _____ Per: _____ Date: _____

Fossils: Traces of Life Gone By Essay page 102

How does a deceased organism become a fossil?

* _____

* _____

_____

Where do we find many fossils?

_____

Two kinds of fully preserved fossils found and where:

1. _____
2. _____

Another example of fossils? _____

What two things do fossils provide?

1. _____
2. _____

Define **Pangaea:** _____

Define **Continental Drift:** _____

↓

Led to the theory of: _____

Changes in land connections allow:

1. _____
2. _____

↓

Confirming that species on earth have _____

↙ ↘

Some species have completely disappeared: _____

the fossil record indicates there has also been _____

Name: _____ Date: _____ Period: _____

Technologies That Strengthen Fossil Evidence

Text page 104

Indirect Dating:

Define stratigrahy:

_____

_____

Explain how it is used to date fossils:

_____

_____

_____

Kind of rock where fossils are often found:

_____

_____

Direct Dating:

How is this done?

_____

_____

_____

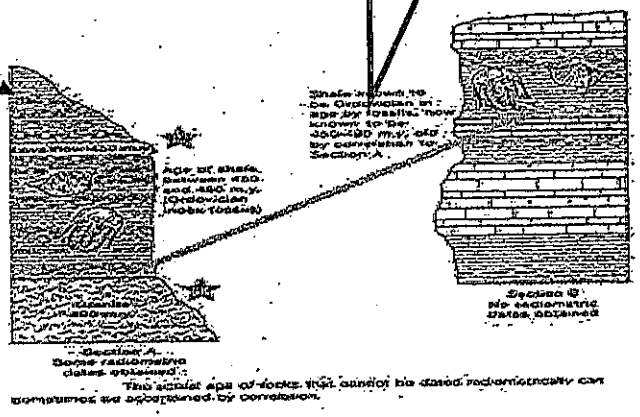
_____

_____

_____

List 3 kinds of radioactive isotopes in the circles below:

A



B

Which layer is oldest? _____

Which layer is most recent? _____

The oldest fossil found is _____ _____ _____ BYA

Then came microorganisms, ancestral plants, invertebrates.

Fish _____ MYA

Amphibians _____ MYA

Dinosaurs _____ MYA

Mammals _____ MYA

Birds _____ MYA

Flowering plants _____ MYA

Lucy _____ MYA

Name: _____ Period: _____ Date: _____

Modern Life: Evidence for Evolutionary Change Text page 107

Homology:

Define: _____

_____

_____

_____

_____

_____

_____

_____

Examples include:

_____

_____

_____

_____

_____

Vestigial Structures:

Define: _____

_____

_____

_____

_____

_____

_____

_____

Examples include:

_____

_____

_____

_____

The genetic code is inherited from a

_____ _____

DNA:

Stands for:

_____

Define: _____

_____

_____

The method of storing information- including *the code* used to interpret it-is the same in all organisms.

% of DNA same as human DNA:

Monkey: _____

Gibbon: _____

Chimp: _____

57

Evidence for Evolution

Jigsaw Summary Chapter 2

Name: ______________________

Period: _____ Date: __________

Place the name of the kind of scientist in the long boxes.

Define each.

Stratigraphy: ______________

Looked at horse over time; compared direct/indirect fossil dating.

Plate Tectonics: ______________

Homologous structures:

Examples:

Vestigial Structures:

Examples:

Embryology:

Looked at embryos of various animals.

DNA:

Compared DNA to see how close to humans different animals' DNA were.

Brain capacity:

Brow ridges:

Jaw bones:

Forehaeds:

Teeth:

6

Name: _____ Date: _____ Period: _____

Whale Evolution Internet Lesson

Directions: Answer the following questions by visiting the web site below.
http://www2.edc.org/weblabs/ExploringEvolution/evolution.swf

click NEXT

1) Define EVOLUTION. _____

click NEXT

2) What group of life are whales placed within? _____

3) What are the two mysteries you will try and solve?

a. _____

b. _____

click NEXT

4) Recopy each hypothesis below. At the end, you will have to predict which appears to be correct.

a. Hypothesis 1? _____

_____

b. Hypothesis 2? _____

_____

c. Hypothesis 3? _____

_____

click NEXT and then DNA EVIDENCE

5) How can we tell from DNA if two organisms are related? _____

_____

6) In evolutionary terms, what does it mean when 2 different animals have similar DNA? _____

click PERISSODACTYL DNA

7) What is a perissodactyl? _____

8) Click the extinct perissodactyls. According to the picture, how much bigger was Baluchitherium compared to humans? _____

9) Give three examples of modern perissodactyls.

a. _____ b. _____ c. _____

Return to the DNA page & click ARTIODACTYL DNA

10) What are artiodactyls? _____

11) Click and read. What are ungulates? _____

12) Give three examples of modern artiodactyls.

a. _____ b. _____ c. _____

Return to the DNA page & click WHALE DNA

13) What are four characteristics of all mammals?

a. _____

b. _____

c. _____

d. _____

7

14) Click and read. What does it mean to be warm-blooded?

_____

Return to the DNA page & click COMPARE DNA. (If "Compare DNA" does not appear, you will need to refresh your browser and reclick on perissodactyl DNA, artiodactyl DNA, and whale DNA.)

15) Compare perissodactyl DNA and artiodactyl DNA to whale DNA. Which looks most like whale DNA? _____

16) What do you think the answer to #15 means? _____

click EXPLORE (the magnifying glass) and then click FOSSIL EVIDENCE

17) Click and read. Fill in the data about sedimentary rock below.

a. What is sediment made from? _____

b. What is a horizontal layer of sedimentary rock called? _____

c. State the Law of Superposition. _____

Directions: There are 5 hidden fossils. Click around the page until you have found them all. Once you find them, drag the bones to the right side of the screen.

18) Fill in the table below from the information provided with the 5 fossils discovered.

	Cetotherium	Basilosaurus	Ambulocetus	Pakicetus	Mesonychid
Age of fossil in millions of years					

19) Click on the five fossils you found to answer the questions below.

a. Which two fossils have ear bones similar to whales today? _____ _____

b. Which whale might have lived on land and in water? _____

c. Which fossil has hind legs and flippers for swimming? _____

click NEW DISCOVERY (If "New Discovery" does not appear, you will need to refresh your browser and reclick on the five fossils.)

20) What was discovered for the 1st time in 2001? _____

21) The bones discovered in 2001 resemble the bones of which? Perissodactyl or Artiodactyls

22) What do you think the answer to #21 means? _____

click EXPLORE (magnifying glass) and then COMPARATIVE ANATOMY

23) Click and read. Define ANATOMY. _____

_____

24) Why do mammals share common physical traits? _____

Move your mouse over the picture of the whale. Click on the whale's pelvis.

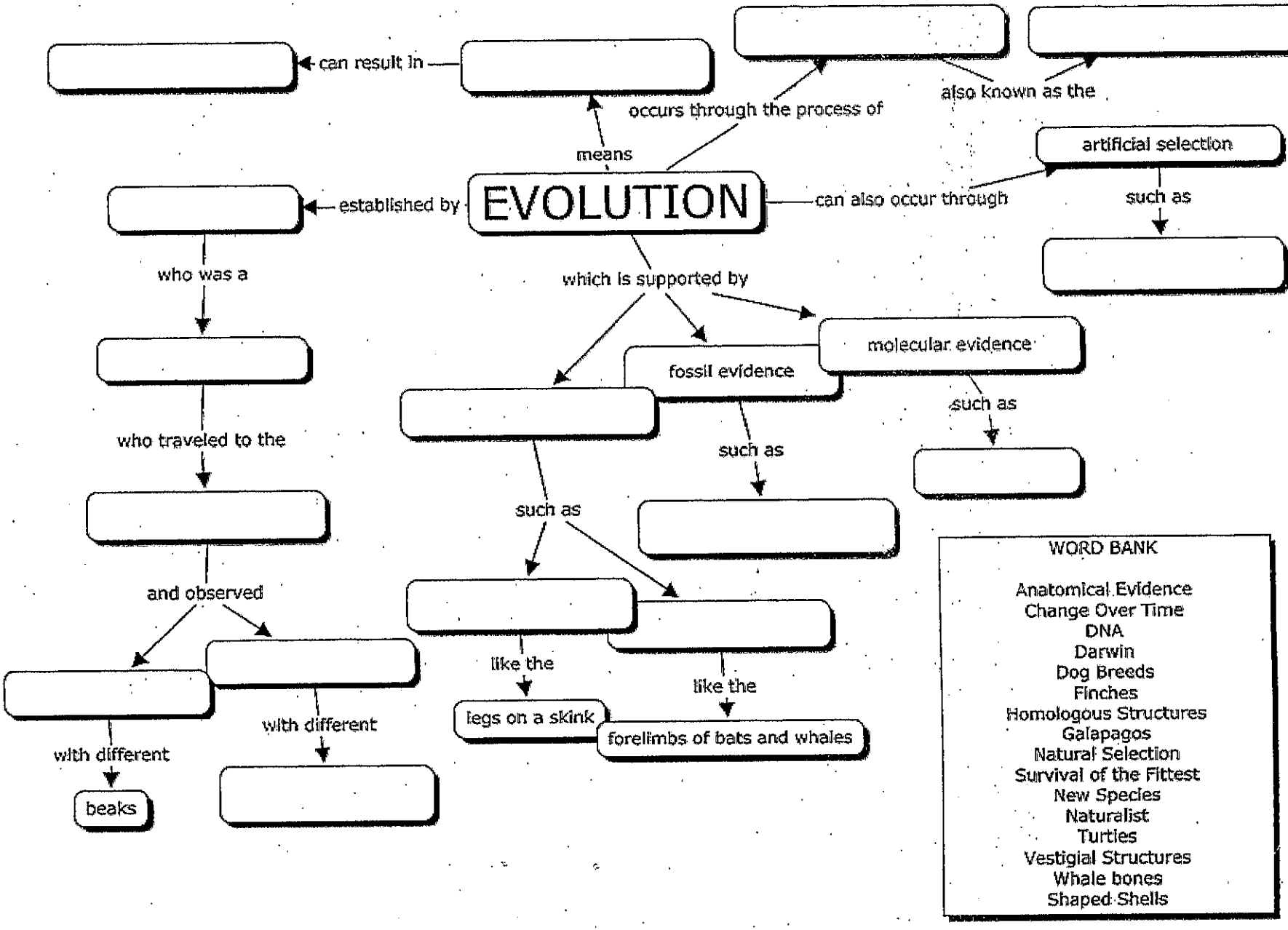
25) Define VESTIGIAL body parts. _____

26) Name two vestigial bones that some whales contain. _____ _____

Click SOLVE (check mark)

27) From the information you read throughout this web site, which hypothesis best explains the evolution of modern whales? Be sure to examine your previous answers. This question will be graded for accuracy.

Hypothesis 1 Hypothesis 2 Hypothesis 3


can result in
occurs through the process of
also known as the
means
artificial selection
established by
EVOLUTION
can also occur through
such as
who was a
which is supported by
molecular evidence
fossil evidence
such as
such as
who traveled to the
such as
and observed
like the
like the
with different
with different
legs on a skink
forelimbs of bats and whales
beaks
WORD BANK
Anatomical Evidence
Change Over Time
DNA
Darwin
Dog Breeds
Finches
Homologous Structures
Galapagos
Natural Selection
Survival of the Fittest
New Species
Naturalist
Turtles
Vestigial Structures
Whale bones
Shaped Shells

What Darwin Never Knew
PBS NOVA Special
Dec. 2009

Name:

Date:

Per:

Charles Darwin was born _____ years ago.

1.) What did Charles Darwin want to understand?

2.) What is called the best idea anyone ever had?

3.) Name the molecule shown in the beginning of this program.

4.) What was Darwin's job on the ship, the Beagle?

5.) List four organisms Darwin observed on the Galapagos Islands.

6.) What could the islanders tell about the tortoises on the Galapagos?

7.) Back in Britain, what did Darwin learn about the birds he collected? How many different species were there?

8.) What did Darwin discover while studying developing embryos (snakes, whales, human)?

9.) Darwin thought humans were descended from what animal?

10.) What helped Darwin come up with the idea for natural selection?

11.) Explain what it means to say <u>survival of the fittest</u>?

12.) How did Darwin explain how one species of finch had turned into many? What lead to the different shaped beaks?

13.) Because species have v_____, nature selects which individuals survive and which don't.

14.) What is the name of Darwin's book?

15.) Describe the two kinds of mice in the desert.

16.) What can we study today that Darwin couldn't?

17.) What is a gene? What do genes turn into?

18.) Name one way that DNA can change.

10

Name _____ Date _____ Period

Evolution Test Review

Directions: Answer *the following questions using your notes and textbook. .*

1. What is the term for a feature that allows an organism to survive better in its environment?

2. All the individuals of a species that live in a particular area are called a

3. The remnant of an organ that had a function in an early ancestor is known as a(n) structure

4. What observations did Charles Darwin make about finches in the Galápagos Islands?

5. The hind leg bones shown in the whale in Figure 10.2 are examples of

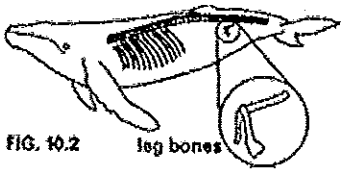


FIG. 10.2

6. What is the process in which humans breed organisms for certain traits?

7. Individuals that are well adapted to their environment will survive and produce _____ offspring

8. If two species have similar DNA sequences, it would indicate that they

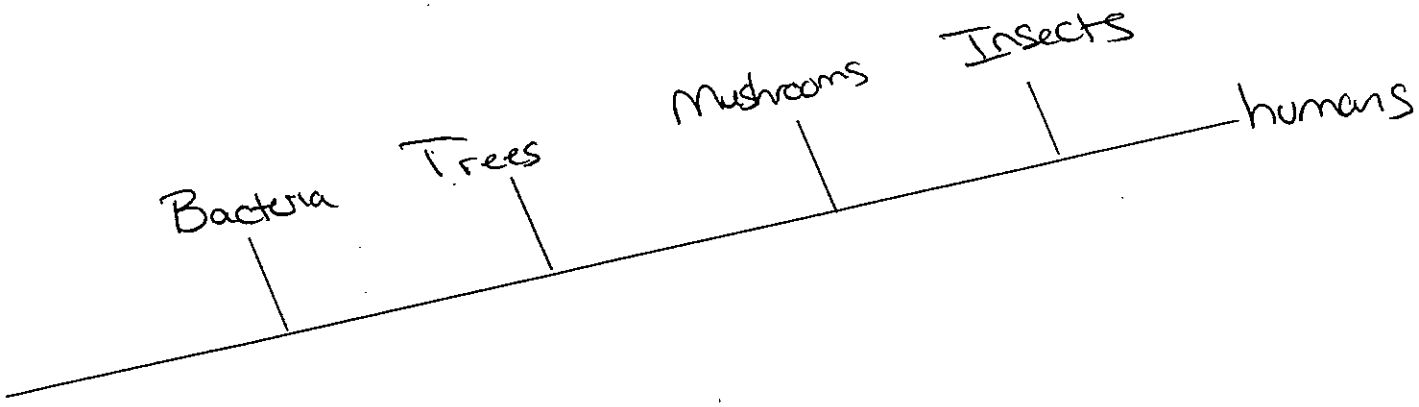
9. Coevolution is a process in which species

10. Two species that are closely related become increasingly different through

11. A river has cut a deep canyon that has separated a population of rodents into two groups. This separation is an example of what type of isolation?

12. The separation of populations by barriers such as rivers, mountains, or bodies of water is called

13. Most fossils form in _____ rock



14. On the cladogram above, are humans more closely related to mushrooms or trees? How do you know?

11

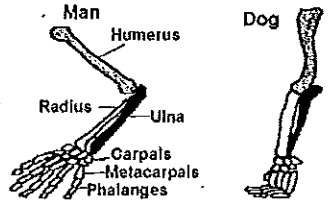
Evolution Review Worksheet Name:_____Date:_____Per:_____

Answer all questions using COMPELTE SENTENCES.

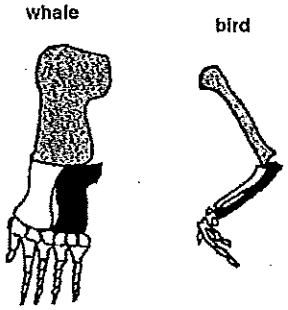
1. What is evolution?

2. What are 3 examples of adaptations?

3. What are the 3 main lines of evidence for evolution? Describe each one using a COMPLETE SENTENCE.



4. What does the picture on the right show?



5. What did Charles Darwin observe on the Galapagos Islands?

6, Charles Darwin studied finches on the Galápagos Islands. The finches on each island had slightly different shaped beaks. According to Darwin, how did the finches all get different beaks?

7. What is natural selection? (the definition)

8. Draw a picture to show what happens in each step of natural selection.

Step	Picture
1. Populations over-reproduce	
2. Individuals in a population vary	
3. Favorable adaptations are selected	
4. Favorable adaptations accumulate	

9. Light-colored lizards move to an area where there is dark-colored sand. After many years, most of the lizards are dark-colored. Why do you think this happened?