Name _____ Date _____

Evidence for Evolution Quick Check: Fossils, Homologous Structures, Embryos and Proteins

Directions: Answer each of the eight questions about evidence for evolution. The last group of questions uses a table of protein comparisons.

1. Choose the words that complete this statement about rock layers and the fossils in them.

Word bank
highest • lowest • middle • older • younger

In undisturbed layers of sedimentary rock, the _____ layers formed first, so fossils in deeper layers are _____ than fossils in layers nearer the top.

2. Fossils of whale ancestors come from rocks of different ages. The oldest show mammals with four legs that walked on land, younger ones show animals with legs that lived partly in water, and the youngest show whales with tiny back legs. What do these fossils support?

A. Whale ancestors lost their legs because they stopped using them in water.

B. Modern whales descended from four-legged mammals that lived on land.

C. Modern whales are slowly turning back into four-legged land animals.

D. These fossils come from unrelated animals, since fossils cannot show change.

3. The forelimbs of humans, cats, whales and bats are used for grasping, walking, swimming and flying, yet they contain the same set of bones in the same basic arrangement. What does this similarity most likely show?

A. These mammals inherited the forelimb bone pattern from a common ancestor.

B. The same bone pattern arose separately in each of these mammals by chance.

C. These forelimbs do the same job, so they had to be built in the same way.

D. Each mammal developed these bones because it needed them for its own job.

4. Bird wings and insect wings both let the animal fly, but a bird wing has bones and feathers, while an insect wing is a thin sheet with no bones. Which statement best describes these wings?

A. They are homologous structures, because birds evolved from insects that had wings of their own.

B. They are homologous structures, because both kinds of wings are used for flying through the air.

C. They are analogous structures: they do similar jobs but did not come from a winged common ancestor.

D. They are vestigial structures, because neither kind of wing works as well as it did in the past.

5. Whales have small hip bones inside the body that are not attached to any legs, and these bones still anchor some muscles. Why do biologists still call these hip bones vestigial?

A. Vestigial means the structure appeared only recently, after the whales' ancestors moved into water.

B. Vestigial means the structure is growing larger over time and will someday form new back legs.

C. Vestigial means the structure has no use of any kind, so these bones are called that by mistake.

D. Vestigial means reduced from the form in an ancestor, even if the structure still has some use.

6. Early embryos of fish, chickens and humans all have a tail and a series of folds in the neck region called pharyngeal arches. What does this shared pattern most likely show?

A. These embryos need tails so that they can swim around inside the egg or inside the mother.

B. Human embryos pass through a fish stage and then a chicken stage before they grow into babies.

C. These animals share a common ancestor, and parts of its pattern of development are still used.

D. These early embryos look alike only by chance, since the adult animals are so very different.

Comparing One Protein

In a study, the amino acid sequence of one protein was compared between humans and six other animals. The protein has the same length in all seven, and each number counts the positions where that animal's protein has a different amino acid from the human protein.

Amino acid differences between the human form of one protein and the same protein in six other animals

Animal	**Amino acid differences from the human protein**
Frog	57
Chimpanzee	1
Mouse	19
Shark	76
Rhesus monkey	6
Chicken	38

7. Based on the table, which animal most likely shares the most recent common ancestor with humans?

A. Chimpanzee B. Rhesus monkey C. Shark D. Mouse

8. Which conclusion about common ancestors fits the data in the table?

A. Mice share a more recent common ancestor with humans than chickens do.

B. Frogs share no common ancestor with humans, since their proteins differ a lot.

C. Chickens share a more recent common ancestor with humans than mice do.

D. Humans evolved from chimpanzees, since their proteins are nearly the same.