Reconstructing the Past

paleontologists: scientists who study life from past geological periods

physiology: the study of the structure and makeup of organisms and how they function

In some labs, CT scans—like the kind hospitals use to do brain scans—are used on dinosaur skulls. Then, researchers use computers to create 3-D models of the insides of the skulls. This helps them figure out the size of the dinosaur's brain and can even give them information about the animal's sight or sense of smell.

An elephant's trunk is muscle and its large, floppy ears are made of cartilage, a relatively soft material. This means that the skeleton of an elephant would give no indication of two of its most recognizable features.

How do scientists figure out what dinosaurs looked like?

Do you know what dinosaurs look like? You've probably seen their images hundreds of times. Although most people could easily describe one, the truth is that no one really knows what dinosaurs looked like. The creatures that the word *dinosaur* bring to mind are actually the joint creations of **paleontologists** and artists. While they do their best to be scientifically accurate, a lot of educated guesswork is involved.

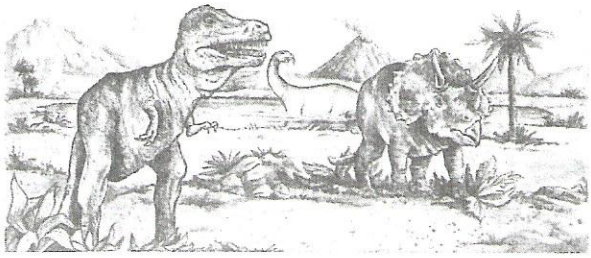
Fossils are the source of most of what is known about dinosaurs. As paleontologists unearth dinosaur bones, they must note the location of the bones in relation to one another. This information can be useful when they assemble a skeleton. It's very rare to find all the bones of an individual dinosaur. Many are washed away by water, moved by scavengers, or damaged by bacteria or the effects of weathering. Scientists look for other dinosaurs of the same species so that they can assemble a complete skeleton.

An in-depth knowledge of animal **physiology** is necessary because it can give paleontologists clues about how dinosaur bones fit together. The study of other dinosaur skeletons can also provide information, though there is no guarantee that all other dinosaur skeletons have been put together correctly.

Once a complete skeleton has been created, the next step is to determine how the muscles and tendons would have filled out the body of the dinosaur. Soft-tissue generally isn't preserved because it decays too quickly. However, soft tissues often leave microscopic marks on bones. The places where muscles were attached also leave marks. By comparing these marks to the marks on the bones of modern-day animals, paleontologists and artists can make more accurate predictions about the outward appearance of dinosaurs.

It's impossible to know what colors the dinosaurs were, but they are usually drawn in shades of brown and green, because these colors would have provided camouflage. Making this assumption requires researching the environments where dinosaurs lived. By choosing this sort of coloration, scientists also assume that dinosaurs could see in color—otherwise color camouflage wouldn't have protected them from one another.

Although there are new ways of learning about the appearance of dinosaurs, it's likely that some elements of what they looked like will always remain a mystery. Filling in the details will be left to the paleontologists who study them and the imaginations of the artists who portray them.



NAME _____

Write true or false next to each statement below.

1. _____ Complete dinosaur skeletons are rarely found.

2. _____ The images most people have of dinosaurs were created totally from the imaginations of artists.

3. _____ Imprints of soft tissues are found near most fossilized dinosaur bones.

4. _____ Dinosaur skeletons in museums are usually made from the bones of more than one dinosaur of the same species.

5. _____ There is no sure way to know what colors dinosaurs were.

Write your answers on the lines below.

6. After reading the sidebar text, you know that it isn't obvious from looking at an elephant's skeleton that it has a trunk and huge ears. What does this tell you in terms of the appearance of dinosaurs?

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7. How can modern technology help scientists figure out what dinosaurs looked like?

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8. Explain why the environment in which a dinosaur lived can give paleontologists a clue about its coloring.

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9. If it turned out that dinosaurs were colorblind, how would this affect some assumptions scientists have made about them?

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10. What information can paleontologists gain by doing comparative studies of the bones of dinosaurs and the bones of modern-day animals?

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