Unit 8 Review Quiz: A

1. 
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3. 
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6. 
7. a. 
8. 
Material After Two Half-Lives

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<tr>
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<td>Radiation element</td>
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<td>Stable decay element</td>
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10. ____________________ years
Base your answers to questions 1 through 3 on the reading passage and the drawing below and on your knowledge of Earth science.

**Fossil With Signs of Feathers Is Cited as Bird-Dinosaur Link**

Paleontologists have discovered in China a fossil dinosaur with what are reported to be clear traces of feathers from head to tail, the most persuasive evidence so far, scientists say, that feathers predated the origin of birds and that modern birds are descendants of dinosaurs.

Entombed in fine-grained rock, the unusually well-preserved skeleton resembles that of a duck with a reptilian tail, altogether about three feet in length. Its head and tail are edged with the imprint of downy fibers. The rest of the body, except for bare lower legs, shows distinct traces of tufts and filaments that appear to have been primitive feathers. On the backs of its short forelimbs are patterns of what look like modern bird feathers.

Other dinosaur remains with what appear to be featherlike traces have been unearthed in recent years, but nothing as complete as this specimen, paleontologists said. Etched in the rock like a filigree decoration surrounding the skeleton are imprints of where the down and feathers appear to have been.

The 130-million-year-old fossils were found a year ago by farmers in Liaoning Province in northeastern China. After an analysis by Chinese and American researchers, the fossil animal was identified as a dromaeosaur, a small fast-running dinosaur related to velociraptor. The dinosaurs belonged to a group of two-legged predators known as advanced theropods . . .

excerpted from "Fossil With Signs of Feathers Is Cited as Bird-Dinosaur Link"
John Noble Wilford
*New York Times*, April 26, 2001

The drawing below shows an artist's view of the dinosaur, based on the fossilized remains.

1. During which period of geologic time have paleontologists inferred that the feathered dinosaur mentioned in the passage existed?
   - (1) Cambrian
   - (2) Cretaceous
   - (3) Paleogene
   - (4) Permian

2. This feathered dinosaur is not considered an index fossil because it
   - (1) existed too long ago
   - (2) was preserved in ash
   - (3) was a land-dwelling animal
   - (4) was found in only one area

3. The reference to the bird-dinosaur link is most likely referring to the concept of
   - (1) plate tectonics
   - (2) evolution
   - (3) dynamic equilibrium
   - (4) recycling
4. Which group of organisms, some of which were preserved as fossils in early Paleozoic rocks, are still in existence today?
(1) brachiopods  (3) graptolites
(2) eurypterids   (4) trilobites

5. The diagram below shows a fossil found in the surface bedrock of New York State.

Centroceras

Which other fossil is most likely to be found in the same age bedrock?
(1) Phacops  (3) Coelophysis
(2) condor   (4) Tetragraptus

6. Bedrock outcrops A and B are located at two different locations along the Genesee River in western New York State. Rock layers 1, 2, and 4 are the same in both outcrops.

Outcrop A
Outcrop B
Which statement best explains why rock layer 3 is missing from outcrop B?
(1) A fault exists between outcrops A and B.
(2) Erosion created an unconformity between rock layers 2 and 4 in outcrop B.
(3) A volcanic eruption destroyed rock layer 3 in outcrop B.
(4) Metamorphism of outcrop A created rock layer 3.

Base your answers to questions 7 through 8 on the geologic cross section below. Radioactive dating indicates that the granite intrusion is 279 million years old and the vesicular basalt is 260 million years old. The rock layers have not been overturned.

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<td><strong>Contact metamorphism</strong></td>
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7. List the six rock units in the order from the oldest to the youngest. (3)

8. During which geologic time period did the shale layer form? (1)
Base your answers to questions 9 and 10 on the diagram below, which represents a model of the radioactive decay of a particular element. The diagram shows the decay of a radioactive element (□) into the stable decay element (□) after one half-life period.

9. On the diagram provided in your answer booklet, shade in the amount of stable decay element present after the second half-life period.

10. If the radioactive element in this model is carbon-14, how much time will have passed after one half-life?