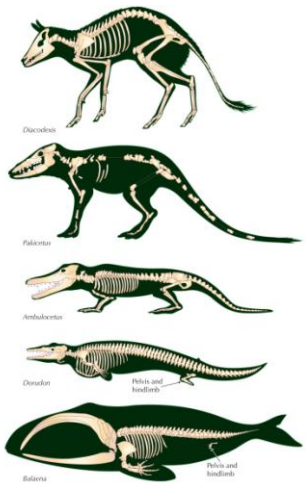
ANSWER ANSWER ANSWER

Round: 11B

1. Below is a series of fossils ranging from 50 million years ago to the present that depict how some mammals transitioned to life in the sea. During development, modern whale fetuses display characteristics that strongly echo this terrestrial origin. Describe three of these characteristics.



Front and rear appendages are present in cetacean embryos (2 pts). Rear become absent or vestigial in adults.

Pectoral fins with the bone structure of a five-fingered hand (2 pts). Persists into adult form.

Nostrils at the end of the snout (2 pts). Migrate to the blowhole position before birth.

2. Name five (5) external physical characteristics of modern cetaceans that make them well-suited to life in an aquatic medium (10 pts).

Accept any FIVE (5) of the following; 2 pts each, 10 pts total:

-No external ears
-Streamlined bod.
-Head continuous with rest of body
-Relatively devoid of hair
-In males, testes undescended (better streamlining)
-Flippers as stablizers
-Fluke for propulsion
-Eardrum plugged with wax
-Blowhole

3. What highly modified bony features of whales are BEST used to construct a phylogenetic tree?

The inner ear bone (Also accept: skull OR skull features) (2 pts)

4. Explain the condition of pachyosteosclerosis as it applies to the structure and function in marine mammals.

Bones become enlarged and thick (1 pt) for buoyancy/ ballast control in seawater (1 pt)