Short Performance Assessment: **MS-LS4-2**

Grade Level: **Middle School**

Adopted from [SNAP](#)[1]

Title	**Anatomical Evidence of Evolutionary Relationships**		
Designed by	**New York Teachers**	Course(s)	**MS Life Science**

Performance Expectation	**MS-LS4-2**: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. **Clarification Statement**: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures. **Assessment Boundary**: none

Science and Engineering Practice	**Constructing Explanations** • Apply scientific ideas to construct an explanation for real-world phenomena, examples, or events.
Disciplinary Core Ideas	**LS4.A: Evidence of Common Ancestry and Diversity** • Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent.
Crosscutting Concept	**Patterns** • Patterns can be used to identify cause and effect relationships.

Student Performance	1. Articulating the explanation of phenomena 2. Evidence 3. Reasoning

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Name_____

Background: The below fossil of an extinct fish was discovered in the Green River Formation of Lincoln County Wyoming. The fish existed approximately 50 million years ago. Make a claim as to which **extant** (currently surviving) fish are most related to this extinct species of fish.
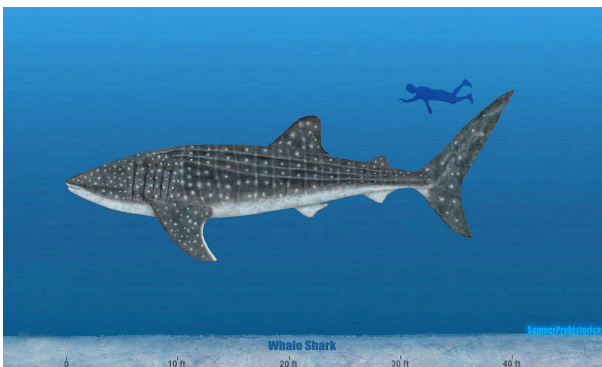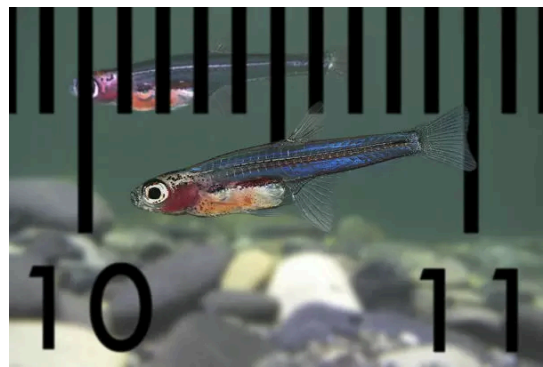
<u>**Fossil Fish**</u>

Diplomystus Fossil Fish approximately 50 million years old in what is now known as Wyoming, Colorado and Utah.

What is a fish?

The cyprinid fish (8mm) and the whale shark (12m) are some of the smallest and largest fish in the sea.
At first, this might seem like an easy question to answer, but it is difficult to define what makes a fish a fish because there is so much diversity among animals that we consider to be fishes. There are more than 27,900 species of fishes alive today, living in marine and freshwaters, in environments as hot as 104°F/40°C and as cold as 28°F/-2°C, and ranging in length from 0.3 inches/8 mm to 39 feet/12 m.
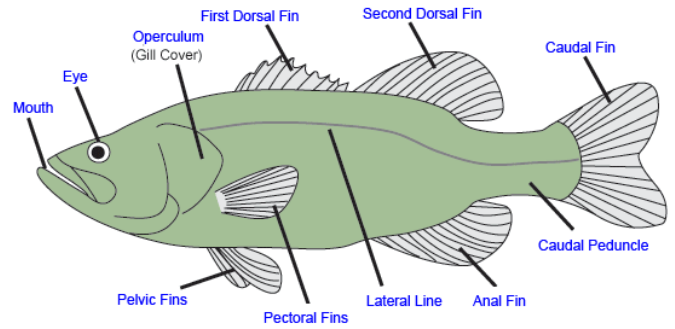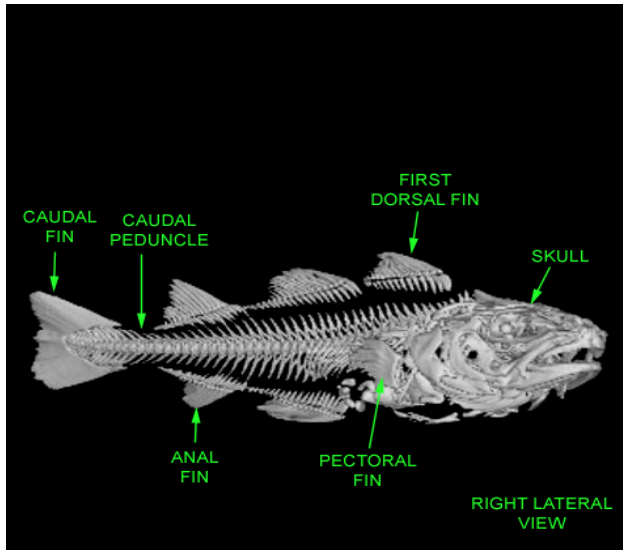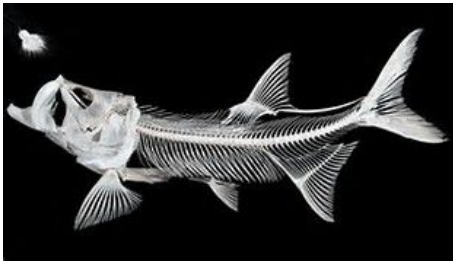

Whale shark	Cyprinid fish
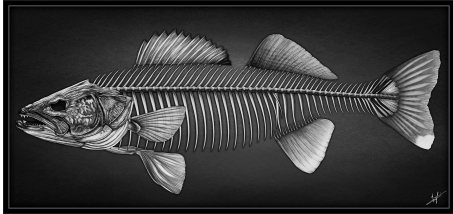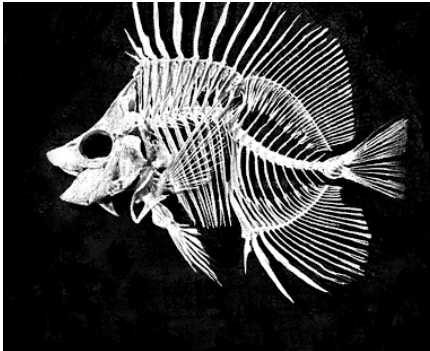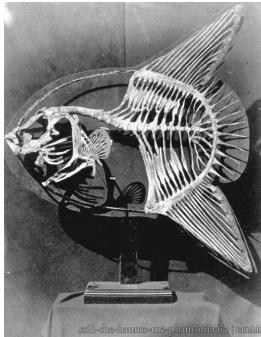
Labeled skeletal diagram (Right Lateral View): CAUDAL FIN, CAUDAL PEDUNCLE, FIRST DORSAL FIN, SKULL, ANAL FIN, PECTORAL FIN, RIGHT LATERAL VIEW

Labeled fish diagram: First Dorsal Fin, Second Dorsal Fin, Operculum (Gill Cover), Caudal Fin, Eye, Mouth, Pelvic Fins, Pectoral Fins, Lateral Line, Anal Fin, Caudal Peduncle

Present Day Fish: Skeletal Anatomy

Trout		**Shark**	
Walleye		**Angler**	
Lionfish		**Ocean Sunfish**	

1. Write a claim for the current fish that is most related to this extinct fossil above.
• Support your claim with data from the patterns of anatomical similarities and differences between the modern and fossil organisms.
• Share your reasoning.

CLAIM:

EVIDENCE: (include specific anatomical evidence)

REASONING:

2. Write a claim for two of the present day fish that are most closely related according to the above skeletal structures.
• Support your claim with data from the patterns of anatomical similarities and differences between the modern organisms.
• Share your reasoning.

CLAIM:

EVIDENCE: (include specific anatomical evidence)

REASONING:

Assessment Rubric* - Question 1				
	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Assessment Rubric* - Question 2				
	Emerging	Developing	Approaching Proficiency	Excelling
Description of performance				
Sample student responses				

Insert additional Assessment Rubrics (if needed) here.