

Table 4.1. Determine if the following animals are fish.

Animal	Attributes	Is it a fish?	Do you want to change your definition of a fish based on this example? If yes, how?
Minnow	This animal does not live in the ocean; it only lives in streams and lakes. It has a bony backbone, fins, scales, and gills. It is cold-blooded and lays eggs.		
Shrimp	This animal can be found in the ocean and in freshwater. It has no backbone or internal skeleton. It breathes with gills and is cold-blooded.		
Shark	This animal is primarily found in the ocean. It has a backbone made of cartilage, not bone, many gill openings, and tough skin with tooth-like elements embedded in the skin. Most (although not all) are cold-blooded and most give birth to live young (but some lay eggs).		
Lungfish	This animal lives in freshwater. It is cold-blooded and breathes with a lung as well as with its gills. It has a bony backbone, fins, and sometimes scales. It can spend long periods of time out of water.		
Eel	This animal can be found in the ocean and in freshwater. It is cold-blooded, with a single gill opening and a bony backbone. Some eels have no scales and no side fins, but they do have a top fin and a tail fin, sharp teeth and a muscular body.		
Mud-skipper	This animal can be found in the ocean and in muddy intertidal habitat. This animal has a bony backbone and fins but no scales. It can breathe under water with its gills or in the air through its skin. Mudskippers can crawl on the land for long distances, and they can spend a lot of time out of the water. They are cold-blooded and lay eggs.		

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Tadpole	This animal is found in freshwater. It is cold-blooded, has a bony backbone, lives in the water, has a long tail, and breathes with gills.		
Lamprey	This animal is found in the ocean. This animal has a cartilaginous backbone, no jaws, and many gill openings. It does not have scales or side fins. It is cold-blooded and lays eggs.		
Hagfish	This animal is found in the ocean. It has a very primitive cartilaginous backbone, no jaws, no eyes, and no scales or fins. It has many gill openings. It is cold-blooded and lays eggs.		
Whale	This animal is found in the ocean. It has a bony backbone. It must breath air. It has fins, but no scales. It has hair. It is warm-blooded, and it gives birth to live young.		

Activity Questions

1. As you developed your group definition of a fish in Step 2,
 - a. what ideas did your group have that you had not thought of?
 - b. how did you change your mind about your original definition?
2. Describe how your definition of a fish changed as you worked through Table 4.1.
3. Why do you think it is so challenging to define what a fish is?
4. Why do you think that some animals are called fish when they are not really a fish, for example, jellyfish?
5. Give your best definition of a fish.