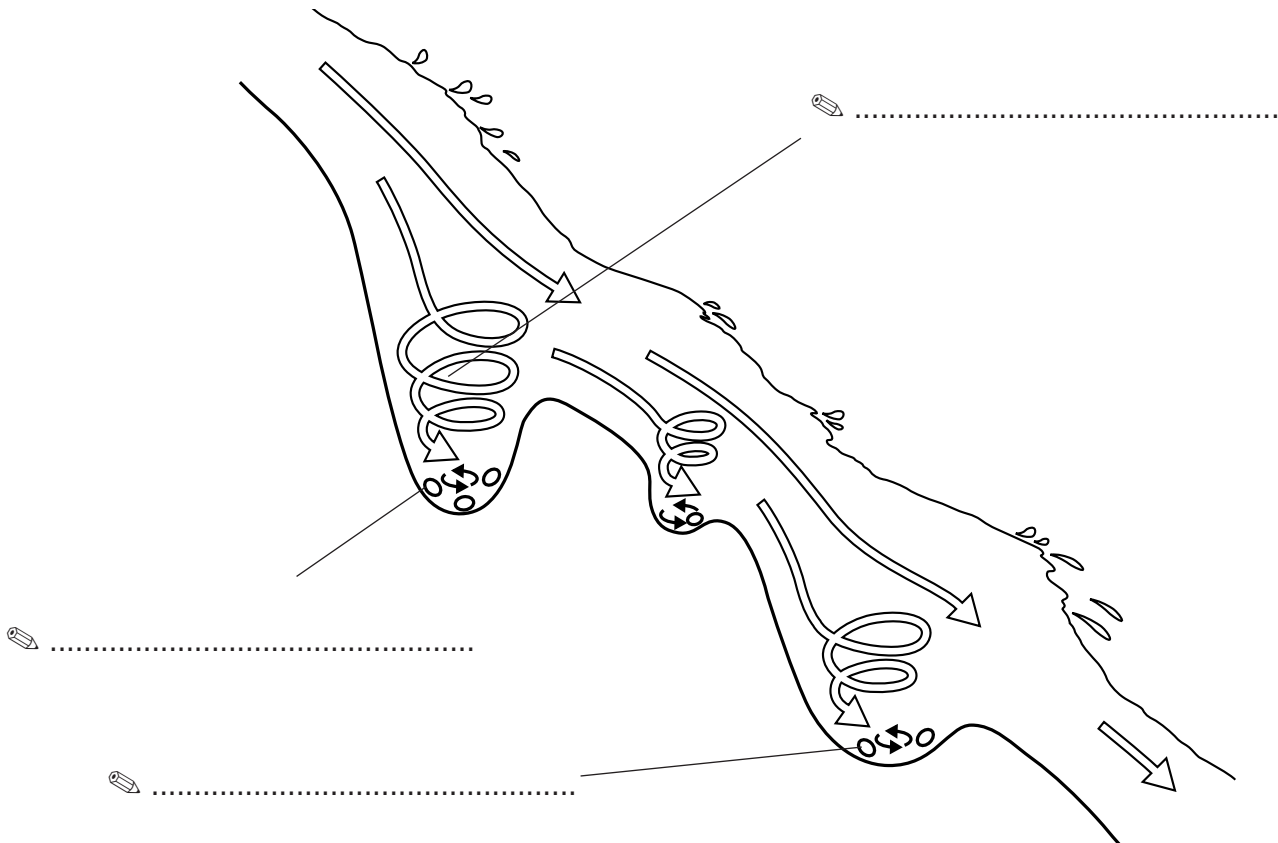


Potholes

Potholes are special features that occur in some fast-flowing rivers with rocky beds. They show very clearly the way that the river bed is erode.

Q1. Label each of the features marked.



Q2. How best would you describe a pothole: (a) a hole in the ground through which water sinks, (b) a deep bowl-shaped pit in the river bed, or (c) a black hole filled with water?

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Q3. Why do potholes form?

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Q3. In what kind of river bed would you look for potholes?

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Answers

- Q1. (Top to bottom) Eddy, Pothole, Pebbles.**
- Q2. (b) A deep bowl-shaped pit in the river bed.**
- Q3. The continuous swirling of pebbles in an eddy causes potholes to abrade the rock.**
- Q4. Those with rocky beds (i.e. no covering of sediment).**

Background support

Potholes are a dramatic feature of some rivers with rocky beds. They often provide fascination for younger students and so they are given a full spread here.

A river pothole (which is not the same as a pothole, meaning cave entrance) is produced in somewhat unusual circumstances, which is why the features provide such curiosity.

The condition required for a pothole to form is a pattern of eddies on the water that allows pebbles to remain circulating long enough to begin to erode a depression in the bed. Once this is established, the depression alters the flow of water and reinforces the swirling motion. It may be that local weaknesses in the bedrock also encourage some parts of the bed to erode faster than others, and thus influence the location of eddies.

The real value of eddies is that they dramatically show the way that pebbles can erode by abrasion. The nature of water movement in a pothole can be illustrated in class by swirling pebbles around in a glass jar partly filled with water.

The way in which pebbles become worn away as they rub against each other (until they are small enough to escape from the pothole) can be illustrated using a pebble polishing machine.

Ask students to look closely at the shape of the sample pebble shown on page 13 of the *River Book*, so they can appreciate that the pebbles are often substantial, and their rounded shape shows that they are worn down themselves as the pothole is formed (abraded).

Across the curriculum

Using this material you can link:

- ▶ Rocks and minerals, discussing a selection of actual rocks and minerals, and experimenting to find out which will wear others away, linking through to measures of hardness;
- ▶ Ideas of (kinetic) energy;
- ▶ The difference between mechanical and chemical weathering, and the formation of soils.