

## LISTENING 2 "GEOLOGY Class"

**Professor:** Okay, today we're going to discuss the four major types of drainage patterns. I trust you've already read the chapter so you'll recall that a drainage pattern is the arrangement of channels that carry water in an area. And these patterns can be very distinctive since they're determined by the climate, the topography, and the composition of the rock that underlies the formations. So, consequently, we can see that a drainage pattern is really a good visual summary of the characteristics of a particular region, both geologically and climatically. In other words, when we look at drainage patterns, we can draw conclusions about the structural formation and relief of the land as well as the climate.

Now all drainage systems are composed of an interconnected network of streams, and, when we view them together, they form distinctive patterns. Although there are at least seven identifiable kinds of drainage patterns, for our purposes, we're going to limit our study to the four major types. Probably the most familiar pattern is the dendritic drainage pattern.

This is a stream that looks like the branches of a tree. Here's an example of a dendritic pattern. As you can see, it's similar to many systems in nature, -In addition to the structure of a tree, it also resembles the human circulation system, This is a very efficient drainage system because the overall length of any one branch is fairly short, and there are many branches, so that allows the water to flow quickly and efficiently from the source or sources.

Okay, let's look at the next example.

This drainage pattern is referred to as a radial pattern. Notice how the streams flow from a central point. This is usually a high mountain, or a volcano. It kind of looks like the spokes that radiate out from the hub of a wheel. When we see a radial pattern, we know that the area has experienced uplift and that the direction of the drainage is down the slopes of a relatively isolated central point.



برای شنیدن فایل صوتی، کد بالا را  
توسط موبایل خود اسکن کنید.

Going back to the dendritic for a moment. The pattern is determined by the direction of the slope of the land, but it, uh ... the streams flow in more or less the same direction and so it's unlike the radial that had multiple directions of flow from the highest point.

Now this pattern is very different from either the dendritic or the radial.

This is called a rectangular pattern, and I think you can see why. Just look at all of those right-angle turns. The rectangle pattern is typical of a landscape that's been formed by fractured joints and faults. And because this broken rock is eroded more easily than unbroken rock, stream beds are carved along the jointed bedrock.

Finally, we have the trellis pattern. And here in this example, you can see quite clearly how the tributaries of an almost parallel structure drain into valleys and form the appearance of a garden trellis. This pattern forms in areas where there are alternating bands of variable resistance, and by that I mean that the bands of rock that are very strong and resistant to erosion alternate with bands of rock that are weak and easily eroded. This often happens when a horizontal plain folds and outcroppings appear.

So, as I said, as a whole, these patterns are dictated by the structure and relief of the land. The kinds of rocks on which the streams are developed, the structural pattern of the folds, uh, faults, and ... uplift will usually determine a drainage system. However, I should also mention that drainage patterns can occasionally appear to be, well, out of sync with the landscape. And this can happen when a stream flows over older structures that have been uncovered by erosion or when a stream keeps its original drainage system when rocks are uplifted. So when that happens, the pattern appears to be contrary to the expected course of the stream. But I'm interested in your understanding the basic drainage systems. So I don't plan to trick you with test questions about exceptional patterns, but expect you to know that exceptions to the patterns can occur when geological events influence them.

**Audio** What is this lecture mainly about?

**Answer** B A comparison of different types of drainage systems

**Audio** Listen again to part of the lecture and then answer the following question.

**Replay** "Okay, today we're going to discuss the four major types of drainage patterns. I trust you've already read the chapter so you'll recall that a drainage pattern is the arrangement of channels that carry water in an area."

**Audio** Why does the professor say this:

**Replay** "I trust you've already read the chapter so you'll recall that a drainage pattern is the arrangement of channels that carry water in an area."

**Answer** B "I trust you" means "I expect you to."

**Audio** How does the professor introduce the dendritic drainage system?

**Answer** B By comparing it to both a tree and the human circulatory system

**Audio** Why does the professor mention the spokes of a wheel?

**Answer** C To explain the structure of a radial drainage system

**Audio** What does the professor imply when he says this:

**Replay** "So I don't plan to trick you with test questions about exceptional patterns."

**Answer** C The basic patterns from the notes will be on the test. Professors who "trick" students ask questions that have not been discussed in class.

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