Year 12 Science: Geological processes at Franz Josef and the Southern Alps

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. In the cross-section, which of layers A, B and C is the oldest?

2. Is fault F older or younger than layer C?

3. Put A, B, C, D, E and F in order from oldest to youngest.

4. What rock type is schist, and which process made it at Franz Josef?

5. Why are most boulders in West Coast rivers greywacke, with less schist?

6. Write one sentence linking uplift and erosion in the Southern Alps, as an Excellence answer would.

Fix the mistake

7. Correct this statement: "Schist is igneous because it formed with heat."

8. Correct this statement: "The Alps are tall because plates push them up, and that is the whole story."

9. Correct this statement: "My report explains how schist forms anywhere in the world."

10. Correct this statement: "The top layer is the oldest because it has been there longest."

Answer key (for parents and tutors)

1. In the cross-section, which of layers A, B and C is the oldest?
   A, because it is at the bottom of undisturbed layers.
2. Is fault F older or younger than layer C?
   Younger: F cuts through C, so C was there first.
3. Put A, B, C, D, E and F in order from oldest to youngest.
   A, B, C, F, D, E: the layers by superposition, then the fault that cuts them, then the dyke that cuts the fault, then erosion and gravel E on top.
4. What rock type is schist, and which process made it at Franz Josef?
   Metamorphic; greywacke was buried deep by plate collision on the Alpine Fault and changed by heat and pressure.
5. Why are most boulders in West Coast rivers greywacke, with less schist?
   Most of the Alps are greywacke and schist is only a narrow band beside the fault, so rivers carry mostly greywacke.
6. Write one sentence linking uplift and erosion in the Southern Alps, as an Excellence answer would.
   For example: the Alpine Fault lifts the Alps about 10 mm a year, and because heavy rain, glaciers and landslides remove rock about as fast, the mountains stay roughly the same height while their valleys are cut deeper.
7. Correct this statement: "Schist is igneous because it formed with heat."
   Schist never melted: heat and pressure changed solid greywacke, so it is metamorphic.
8. Correct this statement: "The Alps are tall because plates push them up, and that is the whole story."
   Erosion matters too: the Alps rise about 10 mm a year but erosion removes rock nearly as fast, so their height stays about the same.
9. Correct this statement: "My report explains how schist forms anywhere in the world."
   Tie each process to your place: which plates, which fault, which rocks and which landforms are there.
10. Correct this statement: "The top layer is the oldest because it has been there longest."
    In undisturbed layers the bottom layer was deposited first, so it is the oldest.