

JAG02k Unit 1

PART I – Being a geologist

Task 1 Specialisations in geology

Write down as many specialisations in geology as you can, e.g. *a seismologist*.

What do they do? E.g. *A seismologist studies earthquakes.*

Task 2 Video: Geology – Career Trek

(<https://www.youtube.com/watch?v=SsmaNLpA0g4>)

Listen and answer the questions.

1. What's Liz's job?
.....
2. How does she identify rocks?
.....
3. What hours does she work?
.....
4. What does the office job entail?
.....
5. Why does she need to keep track of her data?
.....
6. What does she do before going into the field?
.....
7. What qualifications can geologists get?
.....
8. What are the job opportunities for people with a degree in geology?
.....
9. What is the annual salary? What does the salary depend on?
.....
10. What is the great part of geology for students?
.....
11. What is Liz's advice to wannabe geologists?
.....
12. What does she say the most rewarding part of the job is?
.....

Can you explain the expressions in bold?

to look at an **outcrop**

fault lines

to be **on call**

to find a **deposit**

a substance **seeping** through the material

Task 3 A Day in the Life of a Geologist

A) Match words to make collocations.

- | | |
|-----------|------------------------|
| follow | meetings |
| collect | the rules |
| attend | with technical changes |
| keep up | data |
| determine | area |
| remote | the depth |

B) Read the interview and complete it with appropriate questions.

NAME: Sandie Will, P.G.

CURRENT TITLE: Geohydrologic Data Manager/Professional Geologist

AREA OF EXPERTISE: Water Resource Management/Data Collection/Hydrogeology

YEARS EXPERIENCE: 16

EDUCATION: B.S. Geology; M.S. Environmental Engineering Sciences

1. ?

I am the manager of 15 personnel in a large water resource management agency and my staff includes professional geologists, hydrologists, field supervisors, drillers, driller assistants, technicians and an intern. Our goal is to have a comprehensive understanding of the groundwater system and to collect high quality data.

2. ?

Most of my day is spent on administrative tasks, problem solving, communicating our efforts to others, organizing, planning and evaluating processes, and developing employees. Communication on the status of our efforts to others is important and I do this by attending meetings, giving presentations, and making sure our technical reports and data are shared with others.

3. ?

Visiting the sites! It's very interesting to get behind the rig with the drillers to see the cores come out of the ground and all the fossils and the characteristics of the different rock types. I also like to see when the geologists graph all the data together (lithology, aquifer testing, water levels, water quality, water discharge) to determine the depths where formation changes occur and whether a unit is a confining unit or an aquifer.

4.?

Life in the field can be hard and an ever-changing industry with new rules to follow can make employees frustrated but I'm very fortunate to have a cooperative team of highly experienced individuals who make my job easy. Keeping up with technical changes can be challenging also, but in a good way – it pushes us and makes us stronger. The geology field is very interesting and rewarding, but be prepared to work long, hard days in conditions that can be challenging including thunderstorms and rain, extreme heat and cold, remote areas, downtown cities with high traffic, as well as with numerous creatures including snakes, spiders, ants, etc. of all different varieties. In addition, you could spend numerous days traveling throughout the month. If you're adventurous,

though, this job will be right up your alley! Depending on the industry, you could end up seeing numerous states and countries, as well as all different types of geologic settings.

5.?

A good technical understanding will be key for a new job, but just as important are communication skills. Many times, when it comes down to two candidates for a job, the one with the better interpersonal skills will come out on top. Show your passion for your work in interviews and always be open to change in your upcoming positions.

(<http://rockheadsciences.com/whats-typical-day-like-geologist-series-professionals-students/>)

C) EXAM PRACTICE Find synonyms in the text above

1. someone (typically a student) who is finishing training by getting practical experience of the work: _____ (par. 1)
2. judging or calculating something: _____ (par. 2)
3. a layer of earth that contains water or allows it to pass through it: _____ (3)
4. exist or happen: _____ (par. 3)
5. feeling annoyed or unhappy _____ (par. 4)
6. something you are interested in and enjoy: _____ (par. 5)

Task 4 EXAM PRACTICE Ask about the underlined phrase:

1. This team will collect geohydrologic data.
.....?
2. She is responsible for the successful operations of the programs.
..... ?
3. James worked closely with his boss, co-managers and other members of staff.
..... ?
4. The technician analyses rock and mineral specimens.
.....?
5. The technician analyses rock and mineral specimens.
.....?

PART II PLATE TECTONICS

Task 1 Cause and effect

A) Speaking

Many things can have an effect on our daily lives. Work in pairs and discuss the impact of two or more of the following phenomena on your lives. Give reasons and examples.

- Transport
- Accommodation
- Technology
- The environment
- Education

B) Identify the nouns and verbs relating to cause and effect in the sentences below.

1. Reducing speed limits should lead to fewer deaths on the roads.
2. The financial collapse was triggered by a computer failure.
3. The positioning of the measuring device has a huge impact on the accuracy of the obtained data.
4. The main cause of change in the modern world is not technological advances, but human imagination.
5. Urban sprawl is caused in part by the need to accommodate a rising urban population.
6. Human behaviour has contributed most to the changes that we see in the planet today.

(adapted from Chazal, E.; McCarter, S. *Oxford EAP. A Course in English for Academic Purposes. Upper-Intermediate.* OUP, 2012)

C) Complete the sentences with prepositions *in, of, from*.

1. Improper diamond mining practices result ___ soil erosion.
2. One result ___ improper diamond mining is soil erosion.
3. Soil erosion in this area results ___ improper diamond mining practices.

Now complete the sentences:

The application of advanced technology in earth sciences results in...

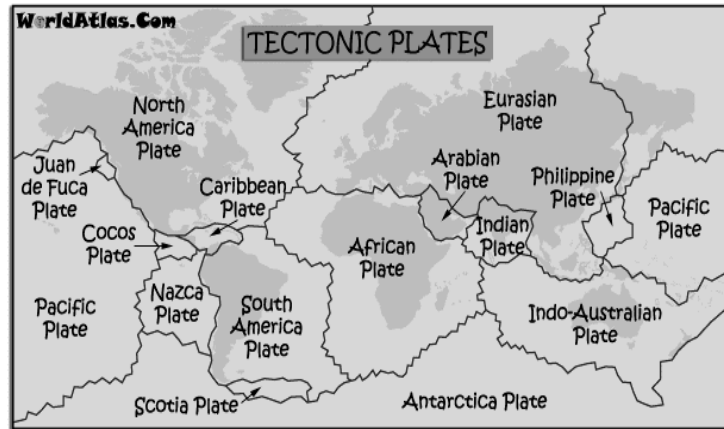
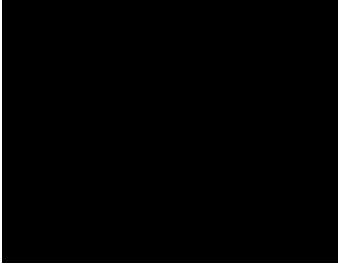
Landforms result from...

Task 2 Plate tectonics

A) Speaking

Describe the Earth's structure:

Study the map. What does it show?



B) Video – Plate Tectonics Theory Lesson

(<https://www.youtube.com/watch?v=zbtAXW-2nz0>)

Watch the video and answer the following questions:

1. What are the compositional layers of the Earth? What do they refer to?

.....

2. What are the mechanical layers? What do they describe?

.....

3. Who was Alfred Wegener?

.....

4. What is the continental drift?

.....

5. What is the Plate Tectonics Theory?

.....

6. What discoveries made Wegener's theory more plausible?

.....

7. What are convergent, transform and divergent boundaries? What do they cause?

.....

C) Plate movement – close test

Complete each gap with one word

As a of the convection cells generated by heat from the centre of the Earth, plates may move towards, away from or sideways adjacent plates. It is at plate boundaries that most of the world's major landforms occur, and where earthquake, volcanic and mountain-building zones are formed. However, before trying to account the formation of these landforms, several points should be noted.

1. to its relatively low density, continental crust does not sink and so is permanent; being denser, oceanic crust can sink. Oceanic crust is being formed and destroyed continuously.
2. Continental plates, as the Eurasian Plate, may consist both continental and oceanic crust.
3. Continental crust may extend far the margins of the landmass.
4. Plates can overlap. This means that either they must be pushed upwards on impact to form mountains, one plate must be forced downwards into the mantle and destroyed.
5. No 'gaps' may occur on the Earth's surface so, two plates are moving apart, new oceanic crust originating from the mantle must be being formed.
6. The Earth is neither expanding nor shrinking size. Thus when new oceanic crust is being formed in one place, older oceanic crust must be being destroyed in another.
7. Plate movement is slow (..... not in geological terms) and is usually continuous. Sudden movements are detected as
8. Most significant (fold mountains, volcanos, island arcs, and deep sea trenches) are found at plate boundaries. Very change occurs in plate centres (shield lands).

(D. Waugh, Geography, OUP, 2009)

D) Discuss the questions about the Andes Mountains.

1. Which countries are situated in the Andes?
2. How has the South American plate been deformed?
3. What causes the earthquakes and volcanoes?
4. What is the depth of the Peru-Chile trench?
5. Why is it difficult to live in these areas?

Read the text and check your answers to the questions 2 - 5.

The Andes Mountains run the length of the West Coast of South America, rising in the north in Colombia and finishing in Chile and Argentina in the south. They are the world's longest mountain range running for over 7,000 km and covering 6 countries.

The mountains have been formed as a result of the convergence of the Nazca plate and the South American plate. The heavier oceanic crust of the Nazca plate is pushed towards the South American plate, and because it is denser it is subducted underneath. The South American plate is less dense so it sits on top of this subduction zone, but the rocks of the South American plate have been folded upwards and crumpled into fold mountains. There are also volcanoes and earthquakes along this destructive plate boundary - earthquakes are caused by stresses building up as the two plates try to move past one another, and volcanoes are caused by magma working its way up through vents in the Earth's crust. This has created a sequence of volcanoes and fold mountains, rising up to 6962 m at Aconcagua. The trench (marking the boundary between the Nazca and South American plates) to the West of the Andes mountains is called the Peru-Chile Trench, and reaches an incredible depth of 8066 m under the sea level.

These areas are very hard to live in because of the physical geography. The relief is very steep making farming difficult, and the high altitude makes breathing difficult. Due to the mountainous terrain it is hard to construct roads and railways.

<http://www.coolgeography.co.uk/GCSE/AQA/Restless%20Earth/Andes/Andes%20Case%20study.htm>