

# Where in the World is Mt. Kilimanjaro and Mt. Aconcagua?

**Grade Level or Special Area:** 4<sup>th</sup> Grade

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**Length of Unit:** Seven lessons (three weeks)

## I. ABSTRACT

This unit is intended to provide fourth graders with an overview of relief maps, mountains and mountain ranges of the world, different types of mountain formations, and the role that mountains have had in the past, present, and future. It will cover the fourth grade Core Knowledge geography requirements for learning about spatial sense in relief maps, and location and elevation of the major mountains and mountain ranges of the world, and the science requirements for geology of How Mountains Are Formed. The unit uses a variety of approaches to learning as indicated in each lesson.

## II. OVERVIEW

### A. Concept Objectives

1. Students understand how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments. (Colorado Geography State Standard (CGSS) #1)
2. Students develop knowledge of Earth to locate people, places and environments. (CGSS #1.2)
3. Students understand how physical processes from within and without the Earth affect the Earth's surface and climate. (CGSS # 3.1)

### B. Content from the *Core Knowledge Sequence*

1. Spatial Sense
  - a. Relief maps: elevations and depressions
2. Mountains and Mountain Ranges
  - a. Major mountain ranges
    - i. South America: Andes
    - ii. North America: Rockies and Appalachians
    - iii. Asia: Himalayas and Urals
    - iv. Africa: Atlas Mountains
    - v. Europe: Alps
  - b. Highest mountains of the world
    - i. Asia: Everest
    - ii. North America: McKinley
    - iii. South America: Aconcagua
    - iv. Europe: Mont Blanc
    - v. Africa: Kilimanjaro
3. How Mountains Are Formed
  - a. Volcanic mountains, folded mountains, fault-block mountains, dome-shaped mountains
  - b. Undersea mountain peaks and trenches (Mariana Trench)

### C. Skill Objectives

1. Identify and interpret elevation and depression symbols on a relief map.
2. Define elevation, depression, relief map, and physical map.
3. Draw a relief map on paper that includes elevations that are color-coded on a legend.
4. Create a Colorado relief map out of salt dough.

5. Describe and demonstrate the process of how fold, fault-block, volcanic, and dome-shaped mountains are formed.
6. Identify pictures of each type of mountain formation.
7. Name specific mountains or mountain ranges that were formed by fold, fault-block, volcanic and dome-shaped mountains.
8. Research elevations of famous mountains.
9. Complete a mountain graph on a High Peaks chart by drawing mountain peaks to appropriate elevations on a chart.
10. Locate and label famous mountain ranges and mountains from the *Core Knowledge Sequence* on a map of the world.
11. Describe some obstacles that people in history have had with mountain environments.
12. Demonstrate verbally through class discussion what mountain passes and gaps are.
13. Explain through class discussion how mountains have acted as barriers and how people have discovered methods around these barriers.
14. Explain through class discussion and completing a poster some important uses of mountains such as mining, as a source of water, farming, and recreational use.
15. Create and present a research project about a famous mountain or mountain range.
16. Read to locate, select, and make use of relevant information from a variety of media, reference and technological services. (Colorado Reading and Writing Standard #5)
17. Generate topics and develop ideas for a variety of speaking and writing purposes. (Colorado Reading and Writing Standard #2.2)

### III. BACKGROUND KNOWLEDGE

#### A. For Teachers

1. Hirsch, E.D. *What Your 4<sup>th</sup> Grader Needs to Know*. New York, Dell Publishing Co., 1994.
2. Hirsch, E.D. *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade) and Teacher's Guide. U.S.A., Pearson Learning, 2002.
3. Simon, Seymour. *Mountains*. New York, Morrow Publishing Co., 1994.
4. Prior knowledge of state geographical features for relief maps.
5. Prior knowledge and partially created continent map and completed Colorado map (or map of own state) from Map of the Month, P.O. Box 2484, Providence, RI 02906; phone: 1-888-876-MAPS (very helpful resource)

#### B. For Students

1. Before teaching this unit, students will have already studied from the *Core Knowledge Sequence*, Geology: The Earth and Its Changes. Specifically, the students need to understand movement of tectonic plates and theories of how the continents and oceans were formed before they can understand the concept of how mountains were formed.
2. Another helpful resource is the state maps and continent maps from Map of the Month company. These are a wonderful resource as they are 16" x 20" maps, and are a super resource for teaching the state history and mountains of the world part of this unit. Other maps can be substituted, but these are referred to in Lesson #4.

### IV. RESOURCES

- #### A. Hirsch, E.D. *What Your 4<sup>th</sup> Grader Needs to Know*

- B. Hirsch, E.D. *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade) and Teacher's Guide
- C. Simon, Seymour. *Mountains*
- D. *Colorado: The Centennial State* map. Map of the Month
- E. *Continents of the World* map Map of the M

## V. LESSONS

### Lesson One: Relief Maps (one 60 minute class session)

#### A. Daily Objectives

1. Concept Objective(s)  
Students understand how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.
2. Lesson Content
  - a. Relief Maps: Elevations and Depressions
3. Skill Objective(s)
  - a. Identify and interpret elevation and depression symbols on a relief map.
  - b. Define elevation, depression, relief map, and physical map.
  - c. Draw a relief map on paper that includes elevations that are color-coded on a legend.

#### B. Materials

1. *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade) for every student and teacher's manual
2. Atlas
3. Globe
4. Play dough or clay for creating one 9" tall mountain
5. Four different colors of yarn or string (15" long each)
6. Pop can cardboard flat for displaying clay mountain
7. An assortment of coins for students to look at and feel
8. Pull-down wall maps of North America
9. Pictures of Appalachian Mountains and Rocky Mountains
10. Appendices A1, A2, and B

#### C. Key Vocabulary

1. Relief map - a relief map can either be placed on paper or on a globe-on a flat map, relief is referring to mountains appearing as though they are rising out of the paper; on a globe, relief means actually having the mountains stand out so that you can feel the ridges as you run your finger along the mountain ranges (definition taken from Map Skills-World Almanac Education)
2. Physical map - a type of map that shows hills, mountains, valleys and other geographical features of the world
3. Elevation - the height of something; on maps elevation is shown as the number of feet above or below sea level
4. Sea level - a point on our earth where the ocean meets the land at a particular height
5. Depression - a low place on the earth's surface
6. Map key - a table or chart that helps you decode a map
7. Map scale - the relationship or proportion between the distance as shown on a map and the actual distance on the ground

(Vocabulary definitions taken directly from the *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade))

D. *Procedures/Activities*

1. Review with students reasons why people need maps. Students should eventually respond that maps are tools that help us to locate places in relation to other places. At this point, review with students the different types of maps that have been studied so far and point these features out on a wall map as they are discussed. What do we refer to on a map to measure distances between places? Student response should be that we refer to the map scale. However, to find directions between and to places, what do we have to find on the map? The answer should be to read the compass rose to figure out which direction is north, south, east, and west.
2. Explain to class that today they are going to learn about another kind of a map called a *relief* map. Ask if anyone knows what the word relief means, then use it in one form in a sentence such as “The rainstorm yesterday afternoon gave us a relief from the heat.” In this context, relief is used as something to ease a discomfort. However, in the map sense, relief means something entirely different. Relief means anything that is raised above a flat level, such as the raised images on pennies, quarters, and dimes. Hold up these objects. On a globe, relief means actually having mountains stand up so that you can feel the ridges as you run your finger over the mountain range. On paper, mapmakers show relief by using different colors or lines to show various heights of land features such as hills, mountains, valleys and plateaus. Pull down overhead map and point out the colors. At this point, also introduce the word elevation. Elevation on a map is how tall or the height of something like mountains. On maps we show elevation as the number of feet above or below sea level. Also, introduce the term *depression*. Depressions are low places on the earth’s surface.
3. Prior to this lesson, the teacher can make a mountain out of play dough or clay that is approximately nine inches tall and place it on a piece of cardboard. The teacher can demonstrate how to mark a 1-inch elevation by placing a ruler lengthwise next to the mountain, then holding a pencil against the ruler, and poking a small hole in the mountain at this 1-inch height. Continue to make these holes sporadically around the mountain at the one-inch intervals. Next, the teacher can have a student come up to the mountain and mark 3-inch intervals. Another student can make 5-inch intervals and another one can make 7-inch intervals. After the holes are made, tie a different color of yarn around the 1-inch, 3-inch, 5-inch, and 7-inch intervals. Now ask the students, what elevation is the red string, the blue string, the green string, and the brown string?
4. Have students turn to page 19 in their *Pearson Learning Core Knowledge History and Geography* books (4<sup>th</sup> grade). After reading, ask what a physical map is. The answer should be that it is a special type of map that shows features of land, such as hills, mountains, and valleys. What do physical maps give information about? They give information about elevation. What is the elevation? The height of the land. How do mapmakers show different elevations? They use either colors or lines to show elevation. Say that a physical map is just a relief map on paper showing elevations.
5. After students read the next two paragraphs on page 20, point out the Rocky Mountains and Appalachian Mountains. Ask students why each of these mountain ranges is shown in different colors on a map. They should eventually answer that the reason that they are shown with different colors is because each of the mountain ranges are different in their elevations or the height of them is different. A good visual to also have is a picture of both of the mountain ranges.

6. Read the section on *Understanding a Physical Map*. As they are reading point out how the different colors on the map show different elevations. Ask them specific questions about how tall the mountains or landforms would be if they were particular colors. Then have students imagine that they are birds looking down on the mountains and hills. Discuss the ways that each of the illustrations differ. The Land Elevation picture of the mountain on page 20 displays a sideview of mountains and valleys and uses different colors to show elevation. The Land Elevation: Bird's-Eye View picture on page 21 displays a picture of the mountain as if a person was a bird looking down on the mountain from above; it also uses various colors to indicate differences in elevation.
7. Next, ask student why they think we need to know where specific land features are on a map. Do the introduction activity on page 12 from the teacher's manual with the Summer Fun Camp, and then read the section: *Finding Your Way on an Elevation Map*. After reading the section, have the students look at the Elevation Map: Lost Cave Valley. Have them choose the best route they would take from Lost Cave to Camp Bear and then work with a partner to pick out the changes in elevation they would encounter as they walked to the camp and the distances they might encounter as they travel to the camp. (See Following a Trail activity on page 13 of Pearson's Teacher's Manual for specific routes and elevations. Many of the ideas in this lesson have been adapted and borrowed from the Pearson Learning 4<sup>th</sup> Grade Teacher's Manual.)

E. *Assessment/Evaluation*

1. For evaluation, students will create two elevation maps, Appendices A1 and A2, adapted from Pearson Core Knowledge Using Maps Teacher's Guide. This is the criteria for this project:
  - a. name and create a mountain range
  - b. for the mountain range, draw a bird's eye view of the mountain in box A and a side view in box B of the mountain
  - c. complete the legend in provided boxes on each map
2. Each map should include a minimum of four elevations and be color-coded with a separate color for each elevation. Students will receive full credit if they have included the above criteria on their individual maps. See teacher check-off list-Appendix B.

**Lesson Two: Creating a State Relief Map** (a minimum of a three hour block in one class setting)

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students understand how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.
2. Lesson Content
  - a. Relief maps: Elevations and Depressions
3. Skill Objective(s)
  - a. Create a Colorado state relief map out of salt dough.

B. *Materials*

1. Salt dough (one recipe for each student)
2. Cardboard for mounting salt dough maps for each student (16" x 13")
3. Tin foil for covering the cardboard with
4. Previously created Colorado maps for geographical information from Map of the Month

5. Rolling pins (one for every two to three students)
  6. Tempera paint or permanent markers
  7. Toothpicks (two boxes)
  8. Appendices C and D
- C. *Key Vocabulary*
1. Relief map - a map that shows raised or lowered areas for landforms such as mountains and hills that stand up above a flat surface area or areas that are cut out below the earth's surface
- D. *Procedures/Activities*
1. If you read this lesson and are not a teacher in Colorado, I would suggest that a relief map be created of the state that you are in if it is conducive to the unity. The day before this lab is performed, give students the recipe for salt dough. Each student is to make a batch of dough at home, put it in an airtight container, and bring it in on the day the Colorado Relief Maps are made. Prior to this event, students will have studied Colorado Geography and completed the paper maps according to teacher's specifications.
  2. When students arrive for social studies, they will cover the cardboard templates with tin foil.
  3. Tell students that today we will be creating a relief map of the state of Colorado. For review, ask what are some specific geographical features a person would find on a relief map? Answer should reflect that there are mountains and mountain ranges, possibly plateaus, and Great Plains. Also, for depressions that are areas below sea level, one might locate lakes, rivers, volcanoes, etc. Today, on the Colorado Relief Maps, students will display where the Rocky Mountains are located by making raised areas in the dough that resemble peaks and mountains. On this map, besides the Rocky Mountains, they are to include four major Colorado Mountain ranges (Sawatch Range, West Elk Mountains, San Jan Mountains, and Sangre de Cristo Mountains) to display relief. Have students follow directions on Appendix C-Colorado Relief Map for more specifics on the map. Prior to creating the relief map, create a map legend or key indicating what each color and symbol will stand for, then, when the maps are created, students will know exactly what they are supposed to be doing. To have students label rivers, they can use toothpicks for drawing indentations. They could also use the toothpicks for creating triangular shaped flags glued on toothpicks to mark specific locations. Another method to identify the specific rivers, towns, mountain ranges, and parks would be to have students place numbers by these and then put a number code on their map legends. They should probably create this legend before rolling out the dough.
  4. After the teacher is done explaining, have each student roll out the salt map dough to the following specifications: 12 $\frac{3}{4}$ " by 9 $\frac{3}{4}$ ." Tell students to use their previously created Colorado maps to place all of the features on their salt-dough maps. Students must put the relief areas such as the mountains and rivers on quickly so the dough doesn't harden up on them. After these are placed, then students can start locating and drawing the rest of the features on their maps according to directions.
- E. *Assessment/Evaluation*
1. For assessment, teachers can use the direction sheet check-off list. Give the students a point for location and a point for following the color and relief formation's key. See Appendix C. If desired, students could also receive a point for numbering their maps or completing flags correctly. Also, give students

a certain amount of points for the legend that they have created. Students will also do their own assessment by writing a paragraph with no less than five sentences on what they learned from doing this activity.

**Lesson Three: How Mountains Are Formed** (two 45 minute class sessions)

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students understand how physical processes from within and without the Earth affect the Earth's surface and climate.
2. Lesson Content
  - a. How Mountains Are Formed
  - b. Folded mountains
  - c. Fault-block mountains
  - d. Volcanic mountains
  - e. Dome-shaped mountains
  - f. Undersea mountain peaks and trenches (Mariana Trench)
3. Skill Objective(s)
  - a. Describe and demonstrate the process of how fold, fault-block, volcanic, and dome-shaped mountains are formed.
  - b. Identify pictures of each type of mountain formation.
  - c. Name specific mountains or mountain ranges that were formed by fold, fault-block, volcanic and dome-shaped mountains.

B. *Materials*

1. *America the Beautiful* on CD or cassette to introduce lesson
2. Two sets of four different colors of clay or play dough for each 2-3 students in class (each color should be approximately 3" x 5" x 1/4")
3. *Mountains* book by Seymour Simon
4. Copies of the *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade) for each student
5. Student copies of Appendices E, E2, and F

*Key Vocabulary*

1. Tectonic plates - huge pieces of the earth's crust; the earth's plates fit together like a giant jigsaw puzzle
2. Fold mountain - a mountain that has been formed "when two of the Earth's plates collide, and the crust where they meet is bent and buckled into folds" (taken from *What Your 4<sup>th</sup> Grader Need to Know*)
3. Fault-block mountain - a mountain formed when cracks in the Earth's crust shift causing the plates to shift or sink which causes the adjoining plates to rise and form a block mountain
4. Dome mountains - these are formed when magma causes pressure, but is unable to work its way to the surface of the earth; the pressure of the magma pushes the layers of rock above it into a round or dome-shaped bulge, and eventually hardens into rock
5. Volcanic mountains - mountains formed when magma is forced out through a weak spot in the earth's crust, then piles up around the vent, and hardens into a mountain shape

D. *Procedures/Activities*

1. Before teaching this unit, students will have already studied from the *Core Knowledge Sequence*, Geology: The Earth and Its Changes, A: The Earth's Layers. Specifically, the students need to understand movement of tectonic

plates and theories of how the continents and oceans were formed before they can understand the concept of how mountains were formed.

2. To start teaching this lesson, play a tape or CD that has the song, “*America the Beautiful*” on it. After listening to the song, ask students what they think of when they hear the words:

*Oh beautiful for spacious skies,  
For amber waves of grain,  
For purple mountain majesties,  
Above the fruited plain.*

The point of this engagement activity is to start students thinking about America’s beautiful mountain majesties and the importance of mountains in our world. Read the first four paragraphs on page 26 about the importance of mountains in *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade). At this time, on butcher paper, have students make a class list of the importance of mountains from this reading and anything else they can think of. Some possible ideas for this list are:

- a. for their beauty,
  - b. some people have worshipped them by placing offerings on mountains in the hopes of good crops, good weather, or good fortune,
  - c. mountains play a part in many religions (Moses on the mountain and Greek gods lived in the mountains),
  - d. mountains are a home for animals,
  - e. mountains contain precious minerals such as gold, silver, iron ore, etc.,
  - f. mountains have acted as barriers, and
  - g. mountains are used for recreation.
3. Next, ask students if they have ever thought about how mountains were formed on this earth. Listen for responses. Have a student read from the *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade), page 27, first paragraph. Reiterate the fact “that the earth has a crusty shell made up of gigantic plates that can shift, crack, and wrinkle.” Explain to students that most mountain ranges have formed when these tectonic plates, or giant pieces of the earth’s crust, have pushed or pulled against each other. As teacher is reading and explaining how different types of mountain ranges are formed, students will take notes on their Mountain Note Sheet, Appendices E and E2. Use the book *Mountains*, written by Seymour Simon, at this point. Read pages 9 and 10, starting with the sentence, “Mountain ranges do not arise just anyplace.” After the teacher reads about the North American plate pushing against the Pacific Plate to form the Rocky Mountains, point this out on the illustration of the plates on page 10. Do the same with the Mid-Atlantic Ridge to illustrate the fact that mountain ranges form where two or more tectonic plates come together on the earth’s surface. Stress the fact that most mountain ranges and mountains take millions of years to form. The plate movement that occurs is a gradual process.
  4. As teacher is reading and explaining how different types of mountain ranges are formed, students will use their blocks of clay to create reenactments of the tectonic plate movement that shape various types of mountains.
  5. The first and most common type of mountain is a *fold mountain*. How are they formed? Thick layers of sediment pile on top of each other along the edges of continents. Tell students that each layer of their play dough represents one layer of sediment. Have them put one layer on top of another to illustrate the effect of layers of sediment. Have students form two blocks of clay. Each block should have four layers of sediment. Now explain to students that fold mountains are

formed when two tectonic plates meet at the edge of a continent. After the plates collide with each other, the force causes the edges to push into one another and buckle up, folding the plates into mountain ranges. This process takes millions of years to happen. This folding process has formed the Alps, Himalayas, Appalachians, Rockies, and Urals. Have the students hold a large piece of paper at either end and slowly push toward the middle. At this point, have students push their blocks of clay together at the edges and create a ripple fold. Read page 11 out of Seymour's book to further illustrate this point.

6. The second type of mountain on our earth is a *fault-block mountain*. Think back to our earthquake unit. Teacher reads from the *What Every 4<sup>th</sup> Grader Needs to Know* book, page 343, "Sometimes the rocks that make up the two colliding plates are so hard that they simply won't fold. Imagine two blocks being pushed together end to end. You could push and push, but those blocks wouldn't fold. If you could push hard enough, eventually one or both blocks would crack and tilt." Well that's exactly what happens with fault-block mountains. The blocks of rocks or plates are separated by faults. Read from Seymour's book, page 13, "Deep within the earth, hot currents of magma, molten rock, may well up and crack the weakened crust above. As the crust cracks, huge blocks of rock rise or fall, forming mountains." Often times the floating mantle's tremendous pressure causes the middle section to be pushed up and moved higher than the area on the sides, often forming a mountain with two steep sides. Sometimes these mountains may have one steep side and one gently sloping side. The tallest mountain in Africa, Mt. Kilimanjaro, is one in a chain of fault-block mountains. Other fault-block mountain ranges are the Sierra Nevada's in Utah and the Grand Tetons in Wyoming. Have students demonstrate this procedure by cutting the long strip of clay in half and forming two blocks of clay. Push the two blocks of clay together so that one block is pushed above the other one forming one steep side and one gently sloped side.
7. A third type of mountain is a *volcanic mountain*. Remember that a volcanic mountain is formed when magma (molten or liquid rock) is forced out through a weak place in the earth's crust. It hardens on the Earth's surface and forms a mountain through one of two ways. The first way is a quiet lava flow. The second type of formation is through an explosion. As pressure builds up under the crust, the magma blasts its way out onto the surface of the earth. A volcanic mountain is formed when the huge amounts of hardening lava and cinders pile up around the vent. The Hawaiian Islands, i.e. Mauna Loa, and Mount Hood in Oregon are examples of volcanic mountains. Read page 15 in Seymour's book to reiterate this type of mountain and point out the pictures on page 16.
8. The last type of mountain in our discussion today is a *dome mountain*. As you recall from the volcano unit, magma is trapped under the earth in the magma chamber. However, instead of rising to the earth's surface as in a volcanic mountain, the magma is unable to work its way to the surface. The magma instead pushes the layers of rock above it into a round or dome shaped bulge, and the magma gradually hardens into rock. Dome-shaped mountains can be found in the Adirondacks of New York and the Black Hills of South Dakota. Read page 17 in Seymour's book and point out the picture on page 18 of the dome-shaped mountain. Have students form their clay into a rectangular shape and push up from the bottom center to form a dome-shaped mountain. (Some of this information was taken from the *Geology Science Activity Book* published by Carson-Dellosa Publishing Co.)

9. Some mountains form out in the middle of the sea or ocean. Even in the ocean, plates move apart or together. When plates of the Earth's crust collide, deep trenches in the ocean may form, causing one plate to move down inside of the Earth's crust. A trench is a crack in the ocean's floor or earth's plate, kind of like a fault. Sediment or layers of earth, sand, mud and silt often build up in these 5-6 mile deep trenches. Have students turn to page 345 in *What Every Fourth Grader Needs to Know* book. Read the section *Under the Ocean* to help explain this concept of trenches. Emphasize that the Marian Trench in the Pacific Ocean was formed this way and that it has a depth of 36,000 feet in some places. Talk about how plants and animals must adapt to dark, cold conditions here because it is so deep.
  10. Collect and check students' notes and answers on Appendix E to check their understanding of how mountains are formed.
- E. *Assessment/Evaluation*
1. To assess students for this lesson, have them look at Appendix F. On this quiz, they will label each picture as a fault-block mountain, folded mountain, dome mountain, or volcanic mountain. They also need to name one place in the world where this type of mountain might be located and describe briefly how each type of mountain is formed. The *Hands-on Science Landforms* book has some wonderful pictures of each type of mountain.

**Lesson Four: Where in the World Are Famous Mountains and Mountain Ranges** (60 minute lesson)

- A. *Daily Objectives*
1. Concept Objective(s)
    - a. Students understand how to use and construct maps, globes and other geographic tools to locate and derive information about people, places and environments.
  2. Lesson Content
    - a. Mountains and Mountain Ranges
    - b. South America: Andes
    - c. North America: Rockies and Appalachians
    - d. Asia: Himalayas and Urals
    - e. Africa: Atlas Mountains
    - f. Europe: Alps
    - g. High mountains of the World
    - h. Asia: Everest
    - i. North America: McKinley
    - j. South America: Aconcagua
    - k. Europe: Mont Blanc
    - l. Africa: Kilimanjaro
  3. Skill Objective(s)
    - a. Research elevations of famous mountains.
    - b. Create a mountain graph on a High Peaks chart by drawing mountain peaks to appropriate elevations on a chart.
    - c. Locate and label famous mountain ranges and mountains from the *Core Knowledge Sequence* on a map of the world.
- B. *Materials*
1. Class set of encyclopedias
  2. *What Every Fourth Grader Needs to Know* Core Knowledge book-copies for every student

3. Previously made continent maps from Map of the Month Club
  4. Colored pencils
  5. Student copies of Appendix G
  6. World atlases (one for every two students)
- C. *Key Vocabulary*
1. Sea level – a point on our earth where the ocean meets the land at a particular height
  2. Elevation – the height of something; on maps it is shown as the number of feet above or below sea level
  3. Surveyors – people who measure land
  4. Elevations – heights of land above sea level
  5. Depressions – any areas below sea level
- D. *Procedures/Activities*
1. Say that yesterday we discussed how mountains in our world have been formed over millions of years. Today, students will play the role of detectives. Students will use reference books to find the altitude of the mountains listed on the board and locate what country or continent each tall mountain is located on. (Most of the first engagement activity and explanations are adapted from *Hands-on Science Landforms* from Edupress.)
  2. Tell students that a mountain can be defined as an area over 2,000 feet above its surrounding area. For instance, although Pike’s Peak in the Rocky Mountains is 14,495 feet high, what scientists really mean is that the summit is that distance above sea level. If one were to stand at the base of the mountain and measure it, a person would discover that the peak only rises 9,000 feet above the Great Plains. Scientists basically measure mountains by using people called surveyors. Surveyors have the job of measuring the altitude (height) of any land surface above sea level. Sea level is a point on our earth where the ocean meets the land at a particular height. Surveyors have to use special equipment to measure land elevations (highs) and depressions (lows) in land. Airplanes can also fly above and measure mountains from an airplane. The mountains that we are going to find out about today are some of the world’s most famous and highest mountains. Divide the students into five groups. Give each group a mountain; students need to find out what continent and country (if applicable) each mountain is located on; and the elevation in feet of each famous mountain. After this information is located, the students will inform the class of what they have found.
  3. When reporting back to the class, each student will take notes about the height of each mountain in miles and kilometers if possible, and the continents and country the mountain is located on.
  4. Next, they are to complete a mountain graph on the High Peaks chart by drawing mountain peaks to appropriate elevations on the chart (Appendix G). On the mountain graph, students will use a different colored pencil for each mountain. Lastly, they should label each mountain peak with its name and its height in feet and meters. This activity was adapted from a teacher resource book, *Hands-on Science: Landforms: Experiments, Games, Art, and Writing Activities*, by Edupress.
  5. Students will then work on their previously created continent maps from Map of the Month, which have been partially completed. Another continent map of teacher’s choosing may be substituted for this activity. Today, students should finish their maps by drawing on their maps, little peaks, where every mountain range from the *Core Knowledge Sequence* is located. Each mountain and mountain range should be color-coded; I would recommend using a different

color for each mountain range. Students will also use some type of symbol to illustrate the location of the underlined mountains on Appendix G on this continent map.

- E. *Assessment/Evaluation*
1. For assessment, students will be graded on the completion of their mountain graphs and maps according to their teacher's grading style.

**Lesson Five: Mountains as Barriers** (45-60 minute lesson)

A. *Daily Objectives*

1. Concept Objective(s)
  - a. Students develop knowledge of Earth to locate people, places and environment.
  - b. Students understand how physical processes from within and without the Earth affect the Earth's surface and climate.
2. Lesson Content
  - a. Describe some obstacles that people in history have had with mountain environments.
3. Skill Objective(s)
  - a. Demonstrate verbally through class discussion what mountain passes and gaps are.
  - b. Explain through class discussion how mountains have acted as barriers and how people have discovered methods around these barriers.

B. *Materials*

1. Students' and teacher's copies of *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade)
2. Pull down map of the United States
3. Worksheet for each student for small group completion, page 19 in *Pearson World Mountain's Core Knowledge Teacher's Guide-Facing Mountain Challenges* (delete questions 11 and 12)
4. Writing paper and pencil for each student

C. *Key Vocabulary*

1. Pass - a place in the mountains that is lower than the surrounding peaks and that people use to get through the mountains
2. Gap - a low place in the mountains, often created by a river
3. Plateau - a large area of high but level ground often located between mountain ranges

D. *Procedures/Activities*

1. Do the following introduction activity with the class. Have the students imagine that they are on one side of a high mountain range and they need to get to the other side; it's a matter of life and death. How might they get across? Allow for class discussion and ideas.
2. Next, pose this question for class discussion: Why might some people decide to live on or attempt to cross a mountain? Allow for class discussion.
3. Tell the students that for today's lesson they will be reading about the ways people dealt with the obstacles of traveling across mountains and living on them.
4. Introduce the key vocabulary for this lesson as noted under vocabulary section.
5. Now we are ready to begin reading the lesson, *Mountains as Barriers*, pages 32-34 in *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade).

6. Read lesson orally having students take turns, stopping for discussion as needed. When you come to the unit's new vocabulary, make sure that you stop and review word meaning and the example that is given in the text.
  7. When you get to the vocabulary word, gap, using a pull down map of the United States, have a student come to the map and locate the states of Virginia, Kentucky, and Tennessee. If the student puts his or her finger on the spot where the three states meet, that's where the Cumberland Gap is located. The gap has importance in the history of the United States because Daniel Boone is believed to have blazed a trail through that gap and the settlers used the gap to move westward.
  8. After the lesson has been read and discussion completed, group the students into partners and hand out worksheet from *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade), page 19, titled Facing Mountain Challenges, but delete questions 11 and 12.
  9. Review directions and then let the students complete the sheet. When they have all finished, review the sheet together, having student's grade own paper (allow enough time for the majority of class to complete work sheet).
  10. When that is finished put the following sentences on the board. These will be used as an evaluation tool for this unit.
    - a. What are some of the problems that mountains pose to travelers now and in the past?
    - b. Name some of the ways these problems have been corrected. Give at least two examples of each.
  11. Have the students copy these questions from the board onto writing paper. Assign a minimum of six sentences per question for their answers. These should be turned into the teacher for correction. (Bits and pieces of the activities used in this lesson have been adapted from the teacher's guide of *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade), pages 8 and 9.)
- E. *Assessment/Evaluation*
1. Assessment for this lesson is the student's written work as assigned in step eight of procedures and activity section. Grading of assignment will vary because of grading styles. We would suggest checking to see if concrete examples were given, remembering they need at least two of each and complete sentences used to defend their answers. You could assign points if completed correctly or use a check or minus system. Adapt to your grading system.

**Lesson Six: Making the Most of Mountains (60 minutes)**

- A. *Daily objectives*
1. Concept Objective
    - a. Students develop knowledge of Earth to locate people, places and environments.
  2. Lesson Content
    - a. An overview of our mountains today concerning moisture, power, minerals, farming and recreational use.
  3. Skill Objective(s)
    - a. Identify at least two natural resources found in mountains.
    - b. Explain through class discussion and completing a poster some important uses of mountains such as mining, as a source of water, farming, and recreational use.

- B. *Materials*
1. *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade) for each student
  2. Teacher's Guide from *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade)
  3. Legal size of white construction paper for each student or poster board for each student unless doing the expository writing
  4. Previously created list of uses for mountains from lesson 3, procedure 2
  5. Markers and colored pencils
  6. Student copies of page 18, Mountain Dwellers, from *Pearson Core Knowledge Teacher's Guide*
- C. *Key Vocabulary*
1. Hydroelectric plant - a place that uses the force of moving water to power generators that make electricity
  2. Mineral - a natural chemical substance found in the Earth's crust
  3. Terracing - the building of level surfaces on a mountain- side
  4. Avalanche – a large amount of snow rapidly falling
- D. *Procedures/Activities*
1. To begin this lesson, first review the list that was made in lesson three, procedure number two. Today we will go into further detail of how important our mountains are.
  2. Ask the class the following questions:
    - a. Are mountains wetter on one side?
    - b. What do mountains have to do with electricity?
    - c. How could mountains be farmed?
    - d. What kind of minerals might mountains contain?
    - e. What kind of recreational use would mountains provide people with? If so, what might they be used for?
  3. Allow the class time to think about the questions just asked. After a few minutes, ask for examples or opinions on the questions posed to them. Share these and record their ideas on the previously started class sheet from lesson three.
  4. Introduce new vocabulary as listed in vocabulary section of this lesson. Give an example of a hydroelectric plant (Hoover Dam), a mineral (lead, silver), and a recreational use (snow boarding).
  5. Now using the students' *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade), pages 35-38, read together and answer the questions first posed to them at the beginning.
  6. For homework, have the students read the Mountain Animal's chapter from *Pearson Learning Core Knowledge History and Geography* book (4<sup>th</sup> grade), pages 29-31, and complete the worksheet from the teacher's guide, page 18. This will prepare them for the mountain animals segment in the research project.
- E. *Assessment/Evaluation*
1. For evaluation of this chapter, students could do one of two ideas:
    - a. Students could write an expository paragraph about "How People Make the Most of the World's Majestic Mountains. For the paragraph, students need to include at least four ways that mountains are valuable to people and give examples plus a topic sentence and conclusion statement.
    - b. Or students could design a poster using the above title. They could draw pictures or cut out pictures of ways that mountains are valuable to

- people. For grading, they would need to show at least four ways that mountains are valuable to people with examples.
- c. In the Pearson Teacher’s Manual, on page 22, there is a good supplemental activity, “Mountain Minerals,” which would teach students how to read a chart and learn more about minerals.

**Lesson Seven: Creative Mountain and Mountain Range Research Project** (at least one week to complete research and project)

A. *Daily Objectives*

1. Concept Objectives
  - a. Students develop knowledge of Earth to locate people, places and environments.
  - b. Students understand how physical processes from within and without the Earth affect the Earth’s surface and climate.
2. Lesson Content
  - a. Major Mountain Ranges: Andes, Rockies, Appalachians, Himalayas, Urals, Atlas, and the Alps.
  - b. High Mountains of the World: Everest, McKinley, Aconcagua, Mont Blanc, and Kilimanjaro.
3. Skill Objective(s)
  - a. Create and present to the class a research project about a famous mountain range or mountain. (See Appendix I for project examples.)
  - c. Student read to locate, select, and make use of relevant information from a variety of media, reference and technological services.
  - b. Students generate topics and develop ideas for a variety of speaking and writing purposes.

B. *Materials*

1. Project criteria handout for each student (Appendix H)
2. Teacher created rubric for each student’s evaluation (Appendix I)
3. Assist the students in obtaining any necessary resource materials or supplies to complete their project

C. *Key Vocabulary*

None

D. *Procedures/Activities*

1. Provide each student with criteria and rubric handout.
2. Review with the class the criteria handout, reading to them the information as they follow along. Allow time for questions as needed when going through the handout.
3. Brainstorm with the class possible project ideas, writing them on the board as they are given. (See Appendix H.)
4. Brainstorm with the class resource materials that could be used for the project research.
5. Allow the time remaining from this class session to let the students begin their project.
6. After the student has chosen his or her mountain or mountain range and project format, teacher should initial spaces on project criteria sheet. If they have not chosen yet, give each student a date as to when that information is to be finalized.
7. Give the students the date the final project is due.
8. Allow the students to work on their projects in class as you have designated, majority of the project is to be done at home.
9. Final projects presented to class on date that has been designated as due date.

- E. *Assessment/Evaluation*
  - 1. The final mountain or mountain range project will be graded when presented to the class using the project rubric (Appendix I).

## VI. CULMINATING ACTIVITY

- A. One good resource that could be integrated into the majority of lessons except the relief lessons is the Eyewitness video, *Mountain*, by DK Publishing Company. The video discussed segments of history, how many of the mountains are formed, plant and animal life on mountains, and some recreational and other uses for mountains. It could be shown at the end of the lessons, or certain segments could be shown during specific lessons. It's a good overview of the unit.
- B. Another idea is if you live close to some mountains in your state, take a fieldtrip to these mountains. Students could go on a mining tour, listen to a park ranger give a presentation, take a ride on a narrow gage railroad, etc. This would be a fun way to culminate the unit.
- C. A formal way to evaluate what students have learned in this unit would be for them to take the Mountain Unit Test, Appendix J.

## VII. HANDOUTS/WORKSHEETS

- A. Appendix A1: Physical Relief Map
- B. Appendix A2: Physical Relief Map
- C. Appendix C: Colorado Relief Map Directions and Check-Off List
- D. Appendix D: Recipe for Salt Dough Maps
- E. Appendix E: Mountain Note Sheet
- F. Appendix E2: Mountain Note Sheet
- G. Appendix F: How Mountains Are Formed Quiz
- H. Appendix G: High Peaks Mountain Bar Graph
- I. Appendix H: Criteria for Mountain or Mountain Range Project
- J. Appendix I: Rubric for Research Project
- K. Appendix J: Mountain Unit Test

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**Appendix A1  
PHYSICAL RELIEF MAP**

Name \_\_\_\_\_

**Create your own mountain and mountain range.**

**Directions: 1. Name your mountain and put this name on the blank space. 2. For the mountain and mountain range you have created, draw two pictures. 3. In Box A, draw a Bird's Eye View of your mountain and mountain range. In the blank box, color-code the mountain for each level of elevation. 4. In Box B, draw a side view of your mountain and mountain range. Also, color-code this map like Box A for each level of elevation.**

Mountain's name \_\_\_\_\_

**Box A: Bird's Eye View**

<b>Box A: Bird's Eye View</b>											
	<p style="text-align: center;">Elevation in feet</p> <table style="width: 100%;"><tr><td style="width: 30px; height: 20px; border: 1px solid black;"></td><td style="text-align: right;">Over 4,000</td></tr><tr><td style="width: 30px; height: 20px; border: 1px solid black;"></td><td style="text-align: right;">2,001 - 4,000</td></tr><tr><td style="width: 30px; height: 20px; border: 1px solid black;"></td><td style="text-align: right;">1,001 - 2,000</td></tr><tr><td style="width: 30px; height: 20px; border: 1px solid black;"></td><td style="text-align: right;">501 - 1,000</td></tr><tr><td style="width: 30px; height: 20px; border: 1px solid black;"></td><td style="text-align: right;">0 - 500</td></tr></table>		Over 4,000		2,001 - 4,000		1,001 - 2,000		501 - 1,000		0 - 500
	Over 4,000										
	2,001 - 4,000										
	1,001 - 2,000										
	501 - 1,000										
	0 - 500										

Adapted from *Pearson Learning Core Knowledge 4<sup>th</sup> Grade History and Geography Teacher's Guide*, p. 22

**Appendix A2  
Physical Relief Map**

**Box B: Side View Map**

Elevation in feet	
<input type="checkbox"/>	Over 4,000
<input type="checkbox"/>	2,001 - 4,000
<input type="checkbox"/>	1,001 - 2,000
<input type="checkbox"/>	501 - 1,000
<input type="checkbox"/>	0 - 500

**Appendix B**  
**Teacher's Check-Off List for Elevation Maps**

	<b>Possible Pts.</b>	<b>Student Score</b>
<b>1. Student named the mountain</b>	_____	_____
<b>2. Student created a Bird's Eye Map correctly as if he or she was looking down on this mountain like a bird flying overhead.</b>	_____	_____
<b>Elevation completed in four colors in key on map.</b>	_____	_____
<b>3. Student created a Side-View Map correctly as if he or she was looking at this mountain from the ground.</b>	_____	_____
<b>Elevation completed in four colors in key on map.</b>	_____	_____
<b>Total pts.</b>	_____	_____

**Appendix C**  
**Colorado Relief Map Directions and Check-Off List**

**Directions: 1) For this relief, physical, and location map, you are to make a recipe of the salt block dough and put in an airtight container overnight.**

**2) Create a legend that has the following information categories on it: A) mountain ranges, B) mountains, C) rivers, D) lakes, E) national parks, F) national monuments, and G) towns and cities. You will receive all the points for your legend if you have color-coded, labeled, and numbered each item on the legend from your relief map.**

**3) After you have colored your cardboard template with foil, roll out the salt dough to the following size: 12 and  $\frac{3}{4}$  inches by 9 and  $\frac{3}{4}$  inches.**

**4) Next, use these directions to create your relief map. As you create your map, refer to this direction sheet. You should notice that beside each landform or town, there are two spaces. The blank spaces will be used as a place for you to check off after A. You locate and place the item on the map, and B. You color-code and/or put the relief formation on the map as requested by your teacher. The teacher will have another copy of this form that she or he will use when the project is graded. Each of the above items is worth two points.**

**5) Lastly, you are to write at least an 8 to 9 sentence paragraph including what you have learned from this project. This is your last point item that will receive a grade for on this project.**

**MOUNTAIN RANGES**

**With the salt dough, form miniature raised peaks, creating a relief map for the following mountain ranges.**

<b>Rocky Mountains</b>	_____	_____
<b>Sangre de Cristo Mountains</b>	_____	_____
<b>San Juan Mountains</b>	_____	_____
<b>Sawatch Mountains</b>	_____	_____
<b>West Elk Mountains</b>	_____	_____

**Paint these mountains purple.**

**MOUNTAINS**

**With a red ^, label Colorado's two tallest peaks.**

<b>Mt. Elbert</b>	_____	_____
<b>Pike's Peak</b>	_____	_____

Appendix C, page 2

**RIVERS**

Make indentations with a toothpick and color the following rivers blue.

- Arkansas River \_\_\_\_\_
- Colorado River \_\_\_\_\_
- Gunnison River \_\_\_\_\_
- Purgatoire River \_\_\_\_\_
- Rio Grande River \_\_\_\_\_
- South Platte River \_\_\_\_\_

**LAKES**

Label and shade the following lakes in blue.

- Blue Mesa Reservoir \_\_\_\_\_
- John Martin Reservoir \_\_\_\_\_
- Lake Granby \_\_\_\_\_

**NATIONAL PARKS**

Outline and color-code in green, Colorado's two national parks.

- Rocky Mountain National Park \_\_\_\_\_
- Mesa Verde National Park \_\_\_\_\_

**NATIONAL MONUMENTS**

Outline Colorado's national monuments in orange.

- Black Canyon of Gunnison National Monument \_\_\_\_\_
- Colorado National Monument In Grand Junction \_\_\_\_\_
- Dinosaur National Monument \_\_\_\_\_
- Great Sand Dunes \_\_\_\_\_
- Pawnee National Grasslands \_\_\_\_\_

**TOWNS and CITIES**

Draw a black star by Colorado's capital. Select and label eight of the following cities with a black dot. Label the town you live nearest too.

- |                        |                      |
|------------------------|----------------------|
| Alamosa _____          | Boulder _____        |
| Burlington _____       | Canon City _____     |
| Colorado Springs _____ | Craig _____          |
| Durango _____          | Cortez _____         |
| Glenwood Springs _____ | Ft. Collins _____    |
| Greeley _____          | Grand Junction _____ |
|                        | Lamar _____          |

**Appendix D**  
**Recipe for Salt Dough Maps**

**4 cups flour**

**1-cup salt**

**Water as needed – approximately 1½ cups**

**Mix flour and salt well, then slowly add the water mixing with a spoon to form a ball. If you add too much water, the dough becomes sticky. Knead 7-10 minutes until the dough is smooth and firm. Keep dough in a plastic bag to keep moist. One adjustment that might have to be made on this recipe is to add ½ cup to 1 cup more of salt. This recipe is taken from the Ladies of Grace Lutheran Church Cookbook in Hudson, Colorado.**

**Appendix E  
MOUNTAIN NOTE SHEET**

NAME \_\_\_\_\_

**1. For review, describe what tectonic plates are.** \_\_\_\_\_

\_\_\_\_\_

**2. How are folded mountains formed?** \_\_\_\_\_

\_\_\_\_\_

**3. Name some mountain ranges in the world that are fold-block mountains.** \_\_\_\_\_

\_\_\_\_\_

**3. What is the most common type of mountain?** \_\_\_\_\_

**4. Describe how fault-block mountains differ from fold mountains.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**5. Name two mountains or mountain ranges in the world that are fault-block mountains.** \_\_\_\_\_

**6. Volcanic mountains are formed when \_\_\_\_\_ is forced out through a weak spot in the earth's \_\_\_\_\_. Mountains are formed through either a) \_\_\_\_\_ or**

**b) \_\_\_\_\_. A volcanic mountain is formed when huge amounts of hardening \_\_\_\_\_ and \_\_\_\_\_ pile up around the vent.**

**7. Where in the world might someone locate volcanic mountains?**

\_\_\_\_\_

**8. Describe the main difference between volcanic mountains and dome-shaped mountains.** \_\_\_\_\_

\_\_\_\_\_

**Appendix E-2  
MOUNTAIN NOTE SHEET**

**9. One famous dome-shaped mountain range is located in the \_\_\_\_\_**

\_\_\_\_\_

**10. Some mountains even form out in the middle of the \_\_\_\_\_**

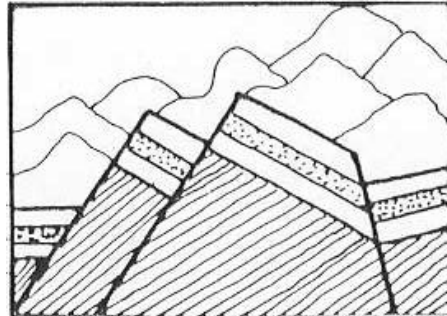
**forming deep-sea \_\_\_\_\_ . One famous trench is the**

\_\_\_\_\_ **located in the \_\_\_\_\_ .**

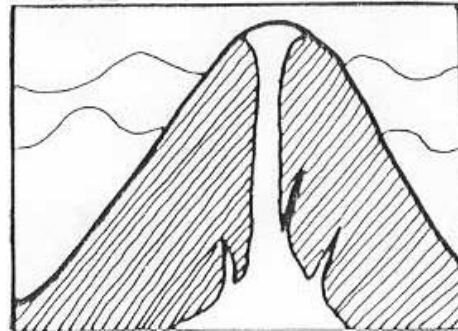
## HOW MOUNTAINS ARE FORMED QUIZ

The drawings below show four ways that mountains can form. Identify each formation as dome, folded, volcanic, or fault-block. Then provide the name of a mountain, and describe how the mountains were formed beside the picture.

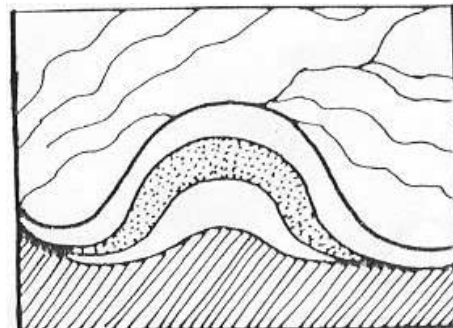
Type: \_\_\_\_\_  
 Example: \_\_\_\_\_  
 Describe how it was formed: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



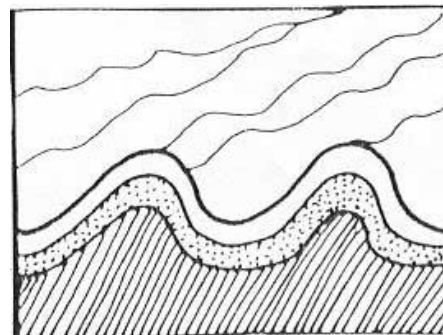
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 Describe how it was formed: \_\_\_\_\_  
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Type: \_\_\_\_\_  
 Example: \_\_\_\_\_  
 Describe how it was formed: \_\_\_\_\_  
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 \_\_\_\_\_



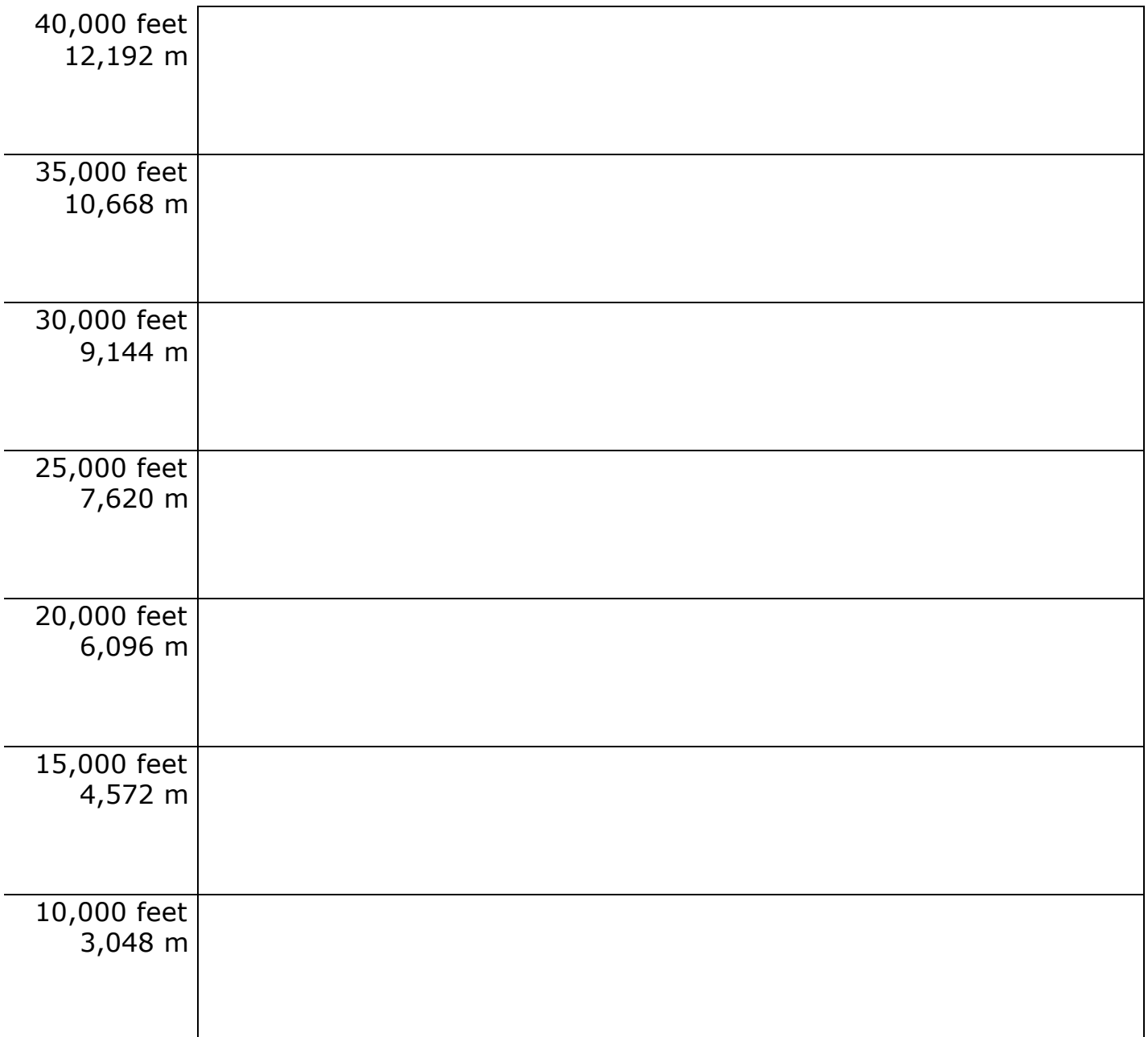
Type: \_\_\_\_\_  
 Example: \_\_\_\_\_  
 Describe how it was formed: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Pictures are adapted from *Hands-on Science Landforms* from Edupress

**Appendix G**  
**HIGH PEAKS MOUNTAIN BAR GRAPH**

Directions: After you have found out the heights of the following mountains:  
 a) Mt. Aconcagua; Mt. McKinley; c) Mt. Mitchell (highest peak in the Appalachians); de) Mt. Elbert (highest peak in the Rocky Mountains); e) Mauna Loa (highest peak in the Hawaiian Islands); f) Mt. Everest; g) Mt. Kilimanjaro; and h) Mt. Mont Blanc, draw a mountain peak to the appropriate height on the chart for each of the mountains. Be sure to use a different colored pencil for each mountain. Label each mountain peak with its name and height in feet or meters.



Adapted from *Hands-on Science Landforms* by Edupress

## Appendix H CRITERIA FOR MOUNTAIN OR MOUNTAIN RANGE PROJECT

Choose a favorite mountain or mountain range that we have been studying about, and in a creative manner share the information that you have researched and learned about during our unit. This information can be shared in a variety of ways such as : a diorama, a poster, a tri-fold pamphlet, newspaper article format, or a travel brochure. Be creative! The project will be broken into three parts: a, b, and c. After you have chosen and listed your mountain range or mountain project format, have that box checked off then you will be ready for Part B, research and create!

**Part A:** Mountain and/or mountain range I chose \_\_\_\_\_  
Project format I chose \_\_\_\_\_  
Teacher's signature \_\_\_\_\_

Now you are ready for Part B, creating your project. The following list includes items that the teacher will be looking for in some fashion. These need to be included in a creative format on your project in written form. Use the checklist to assist you in organizing what information you have found and used.

**Part B: Student checklist:**

1. Your name
2. Name of mountain range or mountain
3. Where is the mountain or mountain range located? What continent and country is it located on?
4. What type of mountain is it? How was it formed?
5. Would you find wildlife in the area? If so, what type? Would you find plants? What kind?
6. What is the climate and weather like?
7. What kind of people live on or near it?
8. What is the history of the mountain? Was it explored by someone famous? If so, who?
9. What is the mountain used for today? i.e. recreation or for mining to name a few
10. Your neatness, grammar, punctuation, and spelling will also be checked.
11. You also need to include a bibliography, with at least two resources that you used to gather your information from.

**Appendix H, page 2**

**Bibliography: (from step 11)**

**List resources here. List the name of the source, author(s), copyright date, websites, copyright date, and publishing company.**

**1.** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**2.** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**3.** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**4.** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Part C: Project Due Date and Class Presentation is \_\_\_\_\_**

**This is meant to be a fun, creative way to take the knowledge you have researched on your chosen mountain range and/or mountain and share it. Be creative and remember to ask questions. Nothing is set in stone; we can work together!**

**Appendix I  
Rubric for Research Project**

	<b>Pts. Possible</b>	<b>Your Score</b>
<b>1. Student's name on project</b>	_____	_____
<b>2. Name of mountain or mountain range</b>	_____	_____
<b>3. Location of mountain range is listed. Student names continent and country. Extra credit: Name the hemisphere.</b>	_____	_____
<b>4. Student identifies and explains if mountain is a volcanic, fold, fault-block, or dome-shaped and describes the process.</b>	_____	_____
<b>5. Student shows and explains the plant and animal life on mountain.</b>	_____	_____
<b>6. Student describes climate and weather.</b>	_____	_____
<b>7. Student tells and shows information about the history of the mountain and/or range. (if information is available)</b>	_____	_____
<b>8. Student describes how and what the mountain or mountain range is used for today.</b>	_____	_____
<b>9. Grammar, spelling, and punctuation are accurate.</b>	_____	_____
<b>10. Creativity and neatness</b>	_____	_____
<b>11. Presentation is creative. Student speaks loudly and clearly. Eye contact is visible.</b>	_____	_____

## Appendix J Mountain Unit Test

For each mountain or mountain range listed, identify the country and continent that it is located on.

	<u>Country</u>	<u>Continent</u>
1. Mt. Everest	_____	_____
2. Mt. Aconcagua	_____	_____
3. Mt. McKinley	_____	_____
4. Mt. Kilimanjaro	_____	_____
5. Mont Blanc	_____	_____
6. Mt. Mitchell	_____	_____

Matching: Write the letter of the appropriate definition of each mountain type on each line.

- |                      |  |
|----------------------|--|
| 7. _____ fault-block | a. formed when two of the Earth's plates collide or shift, and one piece of rock fold on top of another like a wrinkled tablecloth.                              |
| 8. _____ volcanic    | b. formed when magma causes pressure below the surface of the earth but is unable to work its way to the surface of the earth, thus forming a mountain or bulge. |
| 9. _____ fold        | c. formed when shifting tectonic plates break off and are driven upward by the force of the shifting plates.   |
| 10. _____ dome       | d. formed when magma is forced out through a weak spot in the surface of the earth, causing the magma to flow out, and harden into a mountain.                   |

For each type of mountain, name one mountain or mountain range in the world that was created by each mountain type.

- Mountain or mountain range
11. fault-block mountain- \_\_\_\_\_
  12. volcanic mountain- \_\_\_\_\_
  13. fold mountain- \_\_\_\_\_
  14. dome mountain- \_\_\_\_\_

## Appendix J, page 2

Multiple choice: For each question, circle the letter of the best answer or response for this question.

15. The tallest mountain in the world is
- a. Mt. McKinley
  - b. Mt. Aconcagua
  - c. Mt. Kilimanjaro
  - d. Mt. Everest
16. What feature do many mountain animals have that allows them to live and be safer on mountains?
- a. hoofs with sharp edges for gripping the rocky earth
  - b. longer legs on one side of the body
  - c. large antlers
  - d. none of the above
17. What development allows crops to be grown in the mountains?
- a. avalanches
  - b. hydroelectric power
  - c. terracing
  - d. all of the above
18. A mountain pass can be described as
- a. a tunnel
  - b. something that goes over the top of a mountain
  - c. a low area
  - d. an easier method to cross a mountain range
19. All of the following are methods of survival for mountain animals in the winter except
- a. growing heavy coats to keep them warm
  - b. hibernating
  - c. moving to warmer locations
  - d. going on a diet
20. Which of the following is not an example of a mountain animal?
- a. yeti
  - b. wolf spider
  - c. ibex
  - d. zebra
21. The coldest place on a mountain would be at an elevation of
- a. 1,400 feet
  - b. 10,000 feet
  - c. 4,000 feet
  - d. 8,000 feet
22. Plateaus can best be defined as
- a. areas in the mountains created by rivers cutting through them
  - b. jagged peaks
  - c. large areas located between mountain ranges generally on level, flat ground
  - d. all of the above
23. Mt. Everest could not be climbed until 1953 because people had to face
- a. strong, gusty winds
  - b. blizzards or snowstorms
  - c. below freezing temperatures
  - d. all of the above

## Appendix J, page 3

Short answers:

24. Describe five ways that mountains are important to people or serve as a valuable resource.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

25. Describe two events from history when mountains have served as barriers or obstacle for people.

a. \_\_\_\_\_

\_\_\_\_\_

b. \_\_\_\_\_

\_\_\_\_\_

Some questions have been adapted from the 4<sup>th</sup> Grade Unit Test in Pearson's *World Mountains Teacher's Guide*.