Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_ Pd.: \_\_\_\_\_\_\_\_

**Calculating Gradient**

***NOTE: For all problems, show all work and label the answers with the proper units.***

1. What is the general equation for Gradient?
2. Two cities are separated by 300 kilometers. City X has an elevation of 142 meters and city Y has a elevation of 160 meters. Calculate the gradient between the two cities.
3. New York City is 42 miles away from Stony Brook, NY. The two cities have a difference in elevation of 76 feet. Calculate the gradient between the two locations.
4. Chicago is 168 miles away from Bettendorf. Chicago is at 747ft above sea level, while Bettendorf is at 560ft above sea level. What is the gradient?
5. It is a 939 mile drive between Bettendorf and Pike’s Peak. What is the gradient if Bettendorf’s elevation is 560ft and Pike’s Peak is at 14110ft?
6. From Colorado Springs to Pike’s Peak, it is 29.8 miles. The drive begins in Colorado Springs at an elevation of 6035ft and ends at the 14110ft peak. Calculate the gradient.
7. **Critical Thinking:** There is a smaller elevation difference between Colorado Springs and Pike’s Peak than the elevation difference between Bettendorf & Pike’s Peak. Yet, the gradient is much bigger between Colorado Springs and Pike’s Peak. EXPLAIN why the gradient is steeper from Colorado Springs to Pike’s Peak if they are closer in elevation?

6. What is the gradient of line AB? The index contours are measured in feet)