Athenium Coding Exercise

A teacher gives a class of students an exam. She decides to grade the exam using the following method:

* A score in the top 20% of all scores is an A.
* A score in the next 20% of scores is a B.
* A score in the next 20% of scores is a C.
* A score in the next 20% of scores is a D.
* A score in the bottom 20% of scores is an F.

For example, if a class of 20 students has the following scores:

99, 92, 91, 91, 89, 85, 83, 82, 80, 79, 78, 78, 77, 76, 75, 74, 62, 55, 43, 20

As there are 20 grades in this example, each 20% grade bucket will contain 4 scores. The first four scores (99, 92, 91, 91) would be an A, scores 5 through 8 (89,85, 83, 82) would be a B, scores 9 through 12 (80, 79, 78, 78) would be a C,scores 13 through 16 would be a D (77, 76, 75, 74) and scores 17 through 20 (62, 55, 43, 20) would be an F.

Write a function that takes an arbitrary (possibly unsorted) score list of any length (not necessarily the list used as an example above) as a parameter, and returns a grade for each score.

ADDITIONAL REQUIREMENT: If there are two (or more) scores that are identical, then those identical numerical scores must always receive the same grade, even if that causes the grade distribution to be uneven.

We will use the following criteria to evaluate your solution:
1) Does the function return a data structure that contains the same number of scores as the input along with a corresponding letter grade of A, B, C, D, F. Example output for input [99,82,80,75,60]: [[99, A], [82, B], [80, C], [75, D], [60, F]]
You are not required to use this exact output format, as long as it's clear what grade goes with each score in the input.
2) Do identical scores receive the same letter grade (to accomplish this the number of scores receiving each grade may be uneven, which is fine)
3) Does it gracefully and consistently handle lists that are not divisible by 5
4) Does it handle lists that contain fewer than 5 scores.
5) Is your code syntactically valid for the language you chose (we will be executing your code)
6) Is your code well commented
7) Is your code well structured and extensible

Please complete this exercise by choosing your desired language from one of the options below and filling in the function for that language. Please only complete ONE.

Javascript

```
function atheniumGrading(scores) {
    // your code here
    return scoresWithGrades;
}
console.log(atheniumGrading([99, 92, 91, 91, 89, 85, 83, 82, 80, 79, 78,
78, 77, 76, 75, 74, 62, 55, 43, 20]));
```

Java

```
import java.util.List;
import java.util.Map;
// you may import more classes
class Main {
    public static List<Map<Integer,String>> atheniumGrading(List<Integer>
scores) {
        // your code here
        return scoresWithGrades;
    }
```

Python

```
def atheniumGrading(scores):
    // your code here
    return scoresWithGrades
print(atheniumGrading([99, 92, 91, 91, 89, 85, 83, 82, 80, 79, 78, 78,
77, 76, 75, 74, 62, 55, 43, 20]))
```

Ruby

```
def atheniumGrading(scores)
    // your code here
    return scoreWithGrades
end
puts(atheniumGrading([99, 92, 91, 91, 89, 85, 83, 82, 80, 79, 78, 78, 77,
76, 75, 74, 62, 55, 43, 20]))
```