Raindrops Keep Falling on our Sensors

The University of Chicago Weather Service has purchased a new rainfall sensor. This sensor takes measurements every few seconds, which can be handed off to a computer for further analysis. Each measurement is a non-negative integer representing how many millimeters of rainfall have been recorded since the previous measurement.

Given this information, we would like to compute the average rainfall, which is simply the average of the non-negative integers produced by the sensor. However, there's one catch: this new sensor occasionally produces *negative* integers representing faulty measurements. These have to be discarded and shouldn't be taken into account.

Your task is to complete the function `raindrops`, which takes a list of integer measurements. If the input contains only negative numbers, your function should return the null value appropriate for your implementation language. Otherwise, your function should return the average rainfall for the dataset *rounded down* (that is, only the integer part of the average), taking into account that negative measurements should be discarded.

Here are some sample inputs and outputs:

Sample Input	Sample Output
5 10 15	10
-10 -6 -7	null value
14 -5 39 -5 7	20

Here is the header file for this task:

```
#ifndef _Problem2_
#define _Problem2_
#include <vector>
#include <optional>

/**
@class Problem2
*/
class Problem2 {
public:

    /**
    This function takes a list of rainfall measurements and
    computes the average rainfall. The function only considers
    measurements that are greater than or equal to 0. If only
    negative measurements are given, the function returns null.

    @param measurements A list of measurements.

    @return The average rainfall as an integer (round down). If only
    negative measurements are given, the function returns optional<int>.
    */
    static std::optional<int> raindrops(std::vector<int> measurements);
};

#endif
```

And here is the skeleton code for this task:

```
#include "Problem2.h"
#include <vector>
#include <optional>

/**
        This function takes a list of rainfall measurements and
    computes the average rainfall. The function only considers
    measurements that are greater than or equal to 0. If only
    negative measurements are given, the function returns null.

    @param measurements A list of measurements.

        @return The average rainfall as an integer (round down). If only
    negative measurements are given, the function returns optional<int>.
*/
std::optional<int> Problem2::raindrops(std::vector<int> measurements) {
    // YOUR CODE HERE
    return std::nullopt;
}
```

When you take the placement exam, you will be expected to copy the code for the header file and the skeleton code into specific files and then complete the function. For the practice problems, we have provided files `Problem2.h` and `Problem2.cpp` for your convenience.