Minimum Time Required ★

Problem Submissions Leaderboard Editorial

You are planning production for an order. You have a number of machines that each have a fixed number of days to produce an item. Given that all the machines operate simultaneously, determine the minimum number of days to produce the required order.

For example, you have to produce $goal = 10$ items. You have three machines that take $machines = [2, 3, 2]$ days to produce an item. The following is a schedule of items produced:

```
Day Production  Count
2   2            2
3   1            3
4   2            5
6   3            8
8   2           10
```

It takes 8 days to produce 10 items using these machines.

Function Description

Complete the minimumTime function in the editor below. It should return an integer representing the minimum number of days required to complete the order.

minimumTime has the following parameter(s):

- machines: an array of integers representing days to produce one item per machine
- goal: an integer, the number of items required to complete the order

Input Format

The first line consist of two integers n and $goal$, the size of $machines$ and the target production.
The next line contains n space-separated integers, $machines[i]$.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq goal \leq 10^9$
- $1 \leq machines[i] \leq 10^9$

Output Format

Return the minimum time required to produce $goal$ items considering all machines work simultaneously.

Sample Input 0

```
2 5
2 3
```

Sample Output 0

```
6
```

Explanation 0

In 6 days $machine_0$ can produce 3 items and $machine_1$ can produce 2 items. This totals up to 5.

Sample Input 1

Sample Input 1

```
3 10
1 3 4
```

Sample Output 1

```
7
```

Explanation 1

In 7 minutes, $machine_0$ can produce 7 items, $machine_1$ can produce 2 items and $machine_2$ can produce 1 item, which totals up to 10.

Sample Input 2

```
3 12
4 5 6
```

Sample Output 2

```
20
```

Explanation 2

In 20 days $machine[0]$ can produce 5 items, $machine[1]$ can produce 4, and $machine[2]$ can produce 3.

Change Theme JavaScript (Node.js)

```
}

// Complete the minTime function below.
function minTime(machines, goal) {
    let faster = Math.min(...machines)
    let slower = Math.max(...machines)

    let lowerBound = Math.ceil((goal / machines.length) * faster)
    let upperBound = Math.ceil((goal / machines.length) * slower)

    while(lowerBound < upperBound){
        let day = Math.floor((upperBound + lowerBound) / 2)
        let sum = machines.reduce((xs, x) => xs + Math.floor(day / x), 0)
        if (sum < goal) {
            lowerBound = day+1
        } else if (sum >= goal) {
            upperBound = day
        }
    }
    return lowerBound
}

function main() {
    const ws = fs.createWriteStream(process.env.OUTPUT_PATH);
```

Line: 44 Col: 22

Upload Code as File □ Test against custom input Run Code Submit Code

Congratulations!

You have passed the sample test cases. Click the submit button to run your code against all the test cases.

✓ Sample Test case 0

✓ Sample Test case 1

✓ Sample Test case 2

Input (stdin) Download

```
2 5
2 3
```

Your Output (stdout)

```
6
```

Expected Output Download

```
6
```

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