

Hi, I'm Greg. I'm a NYC tutor! I love helping students. I tutor many subjects, assist with homework help, etc. I mainly specialize in specialized tests.

As it turns out, I haven't been able to get to do as many livestreams as I have in past years (yet, hopefully that changes). Therefore, I thought it would be fun to start a Problem Of The Day Series. I will put up a problem and leave it running for a while. You guys will then analyze it, and come up with possible solutions and alternative solutions on your own. I'll eventually post the answer in some manner.

For now we'll play it by ear how that will happen and for how long I'll leave up a problem. But right now I'm thinking of keeping the problem up maybe 2 hours minimum and maybe even in some cases 4 or 5 hours depending upon the dynamics and my situation. Unlike my AMA (Ask Me Anything) livestream sessions, I will not be checking in every few minutes although I may from time to time join into the discussion. Again, the idea is for you guys to discuss out the problem.

Please be respectful to each other in this endeavor and let's make this fun, educational and forward-thinking. Keep the comments within the spirit of what I'm doing here. Please email me at GregsTutoringNYC@gmail.com if needed.

HERE'S THE PROBLEM: <—

===== 56. Jack and Jill went up a hill to Summit Point in Central Park. They were so tired and thirsty by the time they got there that they sat and drank a whole pail of water. After drinking so much, they realized they had to go to the bathroom. In their quest to do so they separated; Jack ended up somewhere in uptown Manhattan and Jill downtown but both of them along Park Avenue. In order to meet up again, Jack ran from Hunter College High School on East 95th Street toward East 1st Street covering 4 blocks every 6 minutes. Starting at the same time, Jill ran from East 20th Street toward East 95th Street covering 1 block every 6 minutes. Eventually they literally ran into each other whereupon Jack fell down and broke his crown and Jill came tumbling after. Which landmark is closest to the street where they crashed into each other? GRID-IN: If they started running at 3pm, at what time did they crash?

(A) National Museum of Math 26th Street (B) Macy's Herald Square 34th Street (C) NY Public Library 42nd Street (D) Rockefeller Center 50th Street (E) Central Park South 59th Street

HERE'S THE SOLUTION:

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The "every 6 minutes" is constant for both Jack and Jill so it does not matter.

Givens:

Jack at 95th going lower 4 blocks per 6 min  $\rightarrow 95 - 4n$   
Jill at 20th going higher 1 block per 6 min  $\rightarrow 20 + n$   
n represents a 6 minute period

The math:

$$\begin{array}{r} 95 - 4n = 20 + n \\ \quad +4n \qquad \quad +4n \\ 95 \qquad \quad = 20 + 5n \\ -20 \qquad \quad -20 \\ 75 = 5n \\ /5 \quad /5 \\ 15 = n \end{array}$$

This means it takes  $15 \times 6 = 90$  minutes for them to crash into each other. But that's not what the question asks.

But with n we can figure out where they crash:

$$95 - 4n = 95 - 4 \times 15 = 95 - 60 = 35$$

Also:

$$20 + n = 20 + 15 = 35$$

$$35 = 35$$

So they crash on 35th street; the closest landmark is (B) Macy's

ALTERNATE SOLUTION USING "LOGIC":  
From 95th Street to 20th Street is 75 blocks

If Jack is going at a rate of 4 blocks per 6 min and Jill is going at a rate of 1 block per 6 min then they are moving towards each other at a rate of 5 blocks per 6 minutes.

This means there are  $75/5 = 15$  6-minute-groups they run through together in total

Therefore Jack travels  $15 \times 4 = 60$  blocks and Jill travels  $15 \times 1 = 15$  blocks  
If Jack left from 95th then he's at 35th, if Jill from 20 she's also at 35th.

ALTERNATE SOLUTION USING BRUTE FORCE:

Jack Jill

95 20th Street (minus 4 for Jack and add one for Jill)

91 21

87 22

83 23

79 22

. . . this becomes tedious so let's optimize it by having Jill go 10 blocks first which would mean Jack went 40 blocks:

Jack Jill

95 20th Street

55 30th now let's go back to by 1 for Jill

51 31

47 32

43 33

39 34

35 35

The rest is as above

We could have also tried 5 from the 55/30th point and gone straight to 35/35 that way too and whoop there it is still yielding  $10+5 = 15$

GRID-IN SOLUTION:

If it takes them 15 6-minute-groups then that is 90 minutes!

If they start running at 3pm they they crash at 4:30pm

- Greg / GregsTutoringNYC@gmail.com LLAP ☺