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

What is this? I don't always have time to do a livestream, therefore instead I thought it would be fun to do a Problem Of The Day series. In this series I will put up a problem and 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 the past this has resulted in many interesting discussions. Some questions will be easy, others hard, some perhaps with a twist, some will be SHSAT 8 oriented while some SHSAT 9 oriented.

I'll leave a problem up for about an hour, however depending upon the dynamics and complexity of the question it could be much longer. Unlike my AMA (Ask Me Anything) livestream sessions, I may not always be able to join in the discussion. Again, the idea is for you guys to discuss things out.

Please be respectful in this endeavor. Let's keep this fun, educational, and forward–thinking. Keep your comments within this spirit. If needed, feel free to email me at GregsTutoringNYC@gmail.com. Past questions are at https://www.GregsTutoringNYC.com/POTD

HERE'S THE PROBLEM: <——
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A student is able to respond to each math question on a test of 100 questions exactly every 2 minutes; that student also takes exactly 1 minute to double check their answer before moving on to another question. A second student is able to respond to all math questions on the same test in 6 hours 40 minutes. A third student is able to respond to every 9 math questions on the same test on average every 45 minutes. The second and third students double check their answers once they respond to all questions first. On average, if all students start the test at the same time, how many questions have all three students responded to in total when all three students once again start a question at the same time?

HERE'S THE SOLUTION:
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The first time the students start a question together is when the exam starts.

After that, we need to seek when their times line up again. This will be the least common multiple (LCM) of their three time durations. Note that even though the first student takes 2 minutes to respond, that student also spends another minute double checking, therefore, it is not until 3 minutes later that the first student will do another question.

The second student responds in 6 hours 40 minutes which is 400 minutes. Therefore the second student's average response is 400 / 100 = 4 minutes per question.

The third student averages 9 questions every 45 minutes, or 1 question every 5 minutes.

We don't need to worry about the second and third student's double checking, as that is not including nor impacting their response times.

With these we can compute that the LCM(3, 4, 5) is 60. This means the three students will all be starting some question simultaneously after 60 minutes.

After 60 minutes, the first student would have answered 60 / 3 = 20 questions, the second 60 / 4 = 15 questions, and the third 60 / 5 = 12 question. The total is 20 + 15 + 12 = 47.

— Greg / GregsTutoringNYC@gmail.com   LLAP ☺