

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) lifestream 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: <—  
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$$\frac{3}{x} = \frac{1}{48x}$$

What is the value of x?

HERE'S THE SOLUTION:  
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At first glance this looks weird and perhaps not even possible.

Don't think it's 0 because division by zero is not possible as it's undefined behavior which would make the left fraction nonsense as well as the fraction that's the denominator of the greater right fraction.

We can "normalize" the greater right fraction by noticing that it's

$$1 \text{ divided by } \frac{48}{x}$$

And division by a fraction is that same as multiplication by its reciprocal. If we do that, we get:

$$1 \times \frac{x}{48}$$

∴ our problem becomes

$$\frac{3}{x} = \frac{x}{48}$$

This still looks weird and perhaps not even possible, and x as 0 still is inappropriate.

If we now do the cross product we get:

$$x^2 = 3 \times 48 = 144$$

If we take the square root of both sides  $\therefore x = 12$

Note that  $x$  is also  $-12$ .

This should be a 20 second problem. There are other variations to the steps in solving this but nothing earth-shattering in the variations. Feel free to play with this.

Perhaps the test will most likely not ask you this question so straightforward as I have here. However, it could be something you need to come up with in the middle of solving a word problem and it shouldn't throw you off.

- Greg / GregsTutoringNYC@gmail.com LLAP ☺