

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.

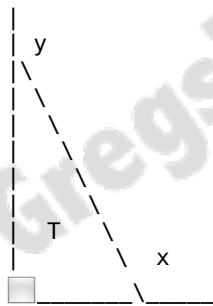
As it turns out, I haven't been able to get to do as many livestreams as I have in past years (yet, hopefully that changes). Therefore, I thought it would be fun to start a Problem Of The Day Series. I will put up a problem and leave it running for a while. You guys will then analyze it, and come up 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: <—  
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The measure of the non-right angles of right triangle T shown below are in a ratio of 3:2



Note: Figure not drawn to scale

How many degrees is  $x + y$ ?

- A) 90
- B) 180
- C) 270
- D) 360

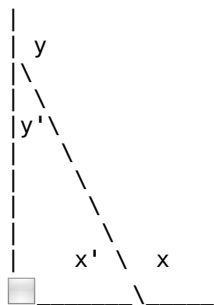
HERE'S THE SOLUTION:  
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See next page

HERE'S THE SOLUTION:

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Let's label two more angles  $x'$  and  $y'$ :



This means  $x' : y'$  is 3 : 2, but it could also mean  $y' : x'$  is 3 : 2 but we don't care which way it goes so long as we can compute  $x'$  and  $y'$

Well, there are 5 (3+2) angle parts altogether and  $x' + y' = 90$   
 $\therefore 90 / 5 = 18 \therefore 18 \times 2 = 36$  and  $18 \times 3 = 54 \therefore$  that's our two angles

And we can confirm that  $36 + 54 = 90$  and  $54 : 36$  is a 3 : 2 ratio

$\therefore$  if  $y'$  is 36 then  $y = 180 - 36 = 144$   
 $\therefore$  if  $x'$  is 54 then  $x = 180 - 54 = 126$   
 $\therefore x + y = 126 + 144 = 270$  Choice C

This would all still be true if  $x'$  was 36 and  $y'$  was 54

Furthermore, turns out that we don't need to compute the 3:2 ratio at all. Consider:

$x' + y' = 90 \therefore y' = 90 - x'$  and  $x' = 90 - y'$   
 $y = 180 - y' = 180 - 90 + x' \therefore y = 90 + x'$   
 $x = 180 - x' = 180 - 90 + y' \therefore x = 90 + y'$

Note: You should know these rules about angles such as  $x$  and  $y$  in addition to being able to compute them!

$x + y = 90 + y' + 90 + x' = 180 + x' + y'$   
 $x' + y' = 90$   
 $\therefore x + y = 180 + 90 = 270$  Choice C Word up!

Lastly, for a third perspective, as you know  $x + x'$  is 180 degrees and also that  $y + y'$  is 180 degrees, taken together ( $x + x' + y + y'$ ) they are 360 degrees. Since  $x' + y'$  is 90 then  $360 - (x' + y') = 360 - 90$  which is 270.

- Greg / GregsTutoringNYC@gmail.com LLAP ☺