

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.

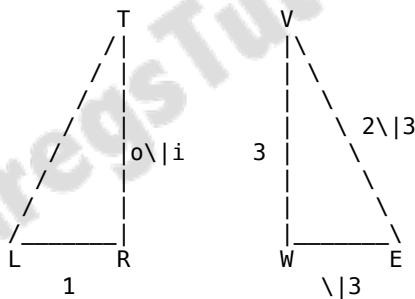
As it turns out, I haven't been able to get to do as many livestreams as I have in past years (yet, hopefully that changes). Therefore, I thought it would be fun to start a Problem Of The Day Series. I will put up a problem and leave it running for a while. You guys will then analyze it, and come up 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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Triangle TRL is similar to triangle VWE.



LR is in ratio to WE, as is TR to VW. “\|” means square root. What is o x i?

- A) 1 B) 2 C) 3 D) 6 E) 9

HERE'S THE SOLUTION:
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Solution is on the next page.

HERE'S THE SOLUTION:

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The ratio of WE to LR is $\sqrt{3} : 1$ or $\frac{\sqrt{3}}{1} = \sqrt{3}$

The ratio of VW to TR is similar, therefore we need to divide VW by $\sqrt{3}$

∴ We end up with $\frac{3}{\sqrt{3}}$

How to get this in a "o|i" form? Let's try to get rid of the denominator.

$$\frac{3}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{3} = \frac{\sqrt{3}}{1} = \sqrt{3}$$

∴ o is 1, and i is 3 ∴ $o \times i = 1 \times 3 = 3$ Choice C

Remember too that square root is the same as "to the power of 1/2"

∴ We have 3^1 divided by $3^{(1/2)}$
When there is a common base division, we subtract the exponents

$$\therefore 3^{(1-1/2)} = 3^{(1/2)} = \sqrt{3}$$

We can also solve this problem "directly" using a proportion:

$$\frac{WE}{LR} = \frac{VW}{TR} \implies \frac{\sqrt{3}}{1} = \frac{3}{x}$$

Run the cross product:

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

Which is what we had earlier to transform into o|i form.

I used x here instead of o|i for simplicity/convenience but I could have left it as is:

$$o|i = \frac{3}{\sqrt{3}} = \dots = \sqrt{3}$$

Etc.

For another approach: some of you may also be aware of a 30-60-90 triangle which is a right triangle with angles 90 degrees, 60 degrees, and 30 degrees. Well, turn out it's "Pythagorean Triple" (PT) is $1-\sqrt{3}-2$

∴ VWE is a 30-60-90 with a PT multiplied by a factor of $\sqrt{3}$

∴ TRL is a 30-60-90 with no factor just straight up a $1-\sqrt{3}-2$ PT

∴ TR is $\sqrt{3}$ and the rest is the same as earlier.

- Greg / GregsTutoringNYC@gmail.com LLAP ☺