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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75. A football field is 100 yards long and 53 1/3 yards wide. An additional 10 yards for each end zone adds to the overall rectangular length dimension. A parent and their child are on opposite diagonals of the full field, and they run towards each other. The parent runs 16 feet per second and the child runs 1/4 that. How many seconds does it take for them to meet? Round the diagonal to the nearest hundred. Round your answer to the nearest second.

(A) 10 (B) 20 (C) 100 (D) 200 (E) 320

HERE'S THE SOLUTION:
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Givens:
100yds x 53 1/3 yds football field
Parent runs 16 ft/sec
Child runs Parent/4

"Direct" calculations upon givens:
Adding 10 yard end zones yields 120 yds x 53 1/3 yds football field
Child runs 4 ft/sec

Needed:
Calculate the length of the diagonal
Formula needed: c^2 = a^2 + b^2

Concern:
The field is in yards but the parent and child speeds involve feet
Convert feet to yards or yards to feet?
Well 16 and 4 seem poor in yards at least initially so let's leave them for now
So let's convert the field to feet:
120 yards is 360 feet
53 1/3 yards is 160 feet

So the field is 360ft x 160ft
Rip it through Pythag: c^2 = 360^2 + 160^2
360^2 = 129600 and 160^2 = 25600 .: c^2 = 155200
It might be a good time to learn how to get the square roots of numbers?
But we don't need to as the problem tell us to round the diag to nearest 100
.: For our purposes only need to consider 300 vs 400 yielding 90000 vs 160000
.: 155200 is clearly closer to 160000 .: yields 400 is what we want

Alternately, let’s consider that we can factor 40 out of 360 and 160!
.: 360/40 = 9 and 160/40 = 4
.: c^2 = 9^2 + 4^2 = 81 + 16 = 97
Well \|97 is close to \|100 (Note: \| mean square root)
.: We can figure that’s about 9.8 or 9.9
.: If we scale the factor of 40 back into that, we get a number closing in on 400
.: The problem tells us to round the diagonal to the nearest 100
.: The diagonal is to be considered 400 ft

Now if the parent is running 16ft/sec and the child 4ft/sec
.: They are running towards each other at 20ft/sec
.: 400ft / 20ft/sec = 20 sec
The problem asks us to round to the nearest second but it already is!
.: Whoop there it is Choice B

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