

Finally, one last note. In the event that you choose to find the square root of a number that has a *rational* square root (such as 17.64, whose square root is exactly 4.2), you will find that at some instance of step 9 the subtraction comes out to exactly zero and there are no more groups of digits left to deal with that aren't "00" themselves. If that happens, you know you're done, and you have found the exact square root you're looking for (not merely an approximation of it). This is easy to prove; if you assume that the result of step 9 is exactly 0, and you follow that zero through the calculation, you'll see that all other digits produced by the algorithm will also be 0.

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