NAME _____

MATH 201 Geometric Mean Project Test, Spring 2020

Directions:

- This mini-test is worth 50% of your project's grade.
- You may refer to your notes or project, and use a stand-alone calculator. But electronic communication is prohibited, and you must work alone.
- To receive full credit, you must show all relevant work to justify your answer on the test paper.
- Clearly identify your final answer, correct to at least 3 significant digits.

Honor Pledge: I pledge that I will neither give nor receive unauthorized help on this test from any person, technology, or other resource, and that I will abide by the honor code of Carson-Newman University.

Signed: _____

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1. USA Today newspaper print circulation was 2100 thousand in 1995, but only 725 thousand in 2019. On average, that is a compounded decrease of ☐ percent annually.

   Answer: $(725/2100)^{1/24} - 1 = 4.33\%$

2. Here are the finishing positions for Agatha and Bertha in a pentathlon:

	Agatha	Bertha
sprint	4	1
distance run	2	4
swim	3	9
bike	4	3
long jump	5	3

   Fill out this grid:

	Agatha	Bertha
arithmetic mean $\overline{x}$		
geometric mean $\overline{x}_g$		

   Answer:

	Agatha	Bertha
arithmetic mean $\overline{x}$	$18/5 = 3.6$	$20/5 = 4$
geometric mean $\overline{x}_g$	$(480)^{(1/5)} = 3.44$	$(324)^{(1/5)} = 3.18$

3. An investment increased by 80% the first year, and then declined by 30% in the second year. Find the the average annual compounded return.
   Answer: $((1.8)(.7))^{1/2} - 1 = 12.25\%$

4. The integers: $\{1, 4, 10, x\}$ have a geometric mean of $\overline{x}_g = 5.25$. Find the missing value x. Either show your algebra, or use trial-and-error.
   Answer: $(40x)^{\cdot 25} = 5.25$, so $40x = 760$ and $x = 19$.