

NAME _____

MATH 201 Geometric Mean Project Test, Fall 2018

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. A debutante has ranked her suitors in several categories. Here are the rankings for Albert and Charles.

	Albert	Charles
appearance	2	1
humor	3	9
intelligence	4	2
manliness	2	1
ambition	6	3
family	4	8

Fill out this grid:

	Albert	Charles
arithmetic mean \bar{x}		
geometric mean \bar{x}_g		

Answer:

	Albert	Charles
arithmetic mean \bar{x}	$21/6 = 3.5$	$24/6 = 4$
geometric mean \bar{x}_g	$(1152)^{(1/6)} = 3.24$	$(432)^{(1/6)} = 2.75$

She will marry Charles ($2.75 < 3.24$).

If she marries the man with the better (lower) geometric mean, whom will she marry ?

2. From 1671 to 2014, the population Reunion island (off the coast of Madagascar) increased from 90 people to 845,000. On average, that is a percent annual increase.

Answer: $(845000/90)^{(1/343)} - 1 = 2.7\%$

3. A website's traffic volume has had the following changes over the last four periods:

- increased 10%
- tripled
- dropped 30%
- increased 45%

On average (geometric mean), the compounded change was percent per period.

Answer: $((1.1)(3)(.7)(1.45))^{1/4} = 1.353$, so 35.3%

4. The integers: $\{2, 8, 14, x\}$ have a geometric mean of $\bar{x}_g = 15$. Find the missing value x . You can use algebra or trial-and-error; either way document the process.

Answer: $(224x)^{.25} = 15$, so $224x = 50625$ and $x = 226$.