**H. Geom Means Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. Find the arithmetic, geometric, and harmonic means of the pairs of numbers. List these in order from smallest to largest. Use decimals as necessary for comparisons.

a) 3 and 27 b) 4 and 9 c) 2 and 8

1. A student receives grades of 88, 93, 79, and 90 on four tests.

a) What is the student’s current average?

b) There is one more test in the marking period. What grade must the student achieve if she wants an average of at least 90?

1. Herman drives 60mph for one hour and 80 mph for the next hour.

a) What is his average speed?

b) Hank drives 60mph for one *mile* and 80 mph for the next *mile*. What is *his* average speed?

1. Andrew bikes at a speed of 5 mph uphill and 25 mph downhill. What is his average speed if he bikes up and down the same hill? (*NOT 15mph ! Assume the hill is a mile long and calculate total times).*
2. Harry drives one mile at 30mph, how fast must he drive the second mile if he wants to average 60mph? (*not 90 mph*!)
3. A bank charges a variable interest rate of 3% one year and 7% the second year. What is the equivalent average rate for the two years?
4. A growth of algae doubles in size every 6 days. If it takes 18 days to cover half a pond, how many more days will it take to cover the whole pond?
5. A culture of 1000 bacteria, which reproduces exponentially, grows to a population of 9000 after two hours. What was the population after just one hour?
6. A meter stick is to be divided into two pieces (see the diagram below).



Find the lengths of the two pieces if…

a) The larger piece, *x*, is the arithmetic average of the small piece and the whole.

b) The larger piece, *x*, is the geometric average of the small piece and the whole.

c) The larger piece, *x*, is the harmonic average of the small piece and the whole.