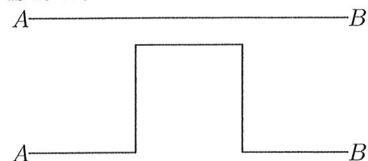


School: _____ Subject: _____ Points: _____

Greater Southeast Nebraska Math Challenge 2017 Group Test

- 1) A straight line 6 inches long, going from point A to point B , is 'fractured' into thirds. When you fracture, the middle third is removed and three segments one third the original length are added to the line segment as illustrated. If each of the straight line segments is again fractured as described and their straight line segments are fractured, how far along the new path is it from A to B ?



- 2) How many ways are there for 5 men and 5 women to sit at a round table if they alternate gender?
- 3) A superintendent wanted to study the distribution of grades in his junior high math, English, science, and history classes. To his dismay, he found that of his 100 junior high students, 10 had A's in all four subjects, any combination of three subjects contains 15 A's, any combination of two subjects had 26 A's, 7 students per subject received an A only in that subject. How many students didn't have an A in any class? How many students had an A in mathematics?
- 4) Consider all of the nine digit numbers formed using each of the digits 1 through 9 once and only once. How many of these nine digit numbers are prime?
- 5) Given that $m(\overline{PQ}) = 10$ inches and \overline{PQ} is a chord of the larger circle tangent to the inner circle, what is the area of the region between the circles?

