Contest #1 **Bergen County Math League** **2018–2019**

Part I *Time Limit:* 12 minutes **Calculators Allowed**

Answers must be exact or have 4 (or more) significant digits, correctly rounded.

1–1. Two coplanar intersecting circles have radii of lengths 5 and 4 respectively. Find the difference between the areas of their non-overlapping regions.

1–2. Three numbers, having the ratio 2:3:4, are removed from a set of 20 numbers whose average is 6. The average of the remaining 17 numbers is also 6. Find these 3 numbers.

Part II *Time Limit:* 12 minutes **Calculators Allowed**

Answers must be exact or have 4 (or more) significant digits, correctly rounded.

1–3. You have two equally long candles. One burns down uniformly in 4 hours, while the other does so in 3 hours. One will be twice as long as the other (for the first time) h hours and m minutes after they are lit simultaneously. Find the ordered pair (h, m).

1–4. Express the repeating decimal $0.\overline{307692}$ as a fraction in lowest terms.

Part III *Time Limit:* 12 minutes **Calculators Allowed**

Answers must be exact or have 4 (or more) significant digits, correctly rounded.

1–5. In a certain right triangle, the length of each side is an integer and the sum of the squares of the lengths of all three sides is 338. Find the perimeter of this triangle.

1–6. Find the sum of all the digits in all the integers from 1 to 9999 inclusive.

Answers

1–1. 9π

1–2. $4, 6, 8$ (order is irrelevant)

1–3. $(2, 24)$

1–4. $\frac{4}{13}$

1–5. 30

1–6. 180000