

CALIFORNIA STATE UNIVERSITY, BAKERSFIELD
Lee Webb Math Field Day 2017
Individual Medley, Freshman- Sophomore Level

Your answers to these questions should be on the side of the answer sheet that has answer spaces 1, 2, 3, 4, 5 (NOT A, B, C, D, E). On the answer sheet you should write your name, school name, level (Freshman-Sophomore), and Division (your proctor should have a list of which schools are in which divisions).

For each of the following questions, blacken the appropriate circle on the answer sheet. Each correct answer is worth four points. **One point is deducted for each incorrect answer.** An unanswered question is given zero points. Note that random guessing may adversely affect your score.

You have 50 minutes to complete the examination. If you finish early, review your answers. When the exam is over, give your answer sheet to the proctor.

All calculators, cell phones, music players, and other electronic devices should be put away in backpacks, purses, pockets, etc. Leaving early or otherwise disrupting other contestants may be cause for disqualification.

1. How many natural numbers are between $\frac{\pi}{10}$ and 10π ?

1. 10 2. $10\pi - \frac{\pi}{10}$ 3. $\frac{5\pi}{5}$
4. 30 5. 31

2. If 14 centimeters of a certain kind of wire weighs 125 grams, then how much of the same kind of wire weighs 5 kilograms?

1. 5.6 meters 2. 52 km 3. 56 cm
4. 28 cm 5. 2.8 meters

3. What is the units digit in the sum $2! + 4! + 6! + 8! + 10! + 12! + \dots + 100!$?

1. 2 2. 4 3. 6
4. 8 5. 0

4. What is the value of $\sqrt{2 + \sqrt{2 + \sqrt{2 + \sqrt{2 + \dots}}}}$

1. 2 2. $\sqrt{3}$ 3. 3
4. 8 5. ∞

5. What is the sum of the entries of the first row of Pascal's Triangle that contains the number 20?

1. 32 2. 64 3. 128
4. 256 5. 400

24. A sequence is defined as follows. $a_1=1, a_2=2$ And whenever n is even, $a_{2n}=n+a_n+a_{n/2}$. What is the value of a_{64} ?

1. 112	2. 107	3. 54
4. 76	5. 64	

25. The corners are cut off a square to form a regular octagon. What is the ratio of the area of the octagon to the area of the original square?

1. $\frac{\sqrt{2}}{(1+\sqrt{2})}$	2. $\frac{\sqrt{2}}{(1+\sqrt{2})^2}$	3. $3-2\sqrt{2}$
4. $\sqrt{2}-1$	5. $2\sqrt{2}-2$	