Practice Round

1. Solve for the equation \( k. \ 3k - 11 = 4k + 7 \). Write your answer in the blank next to number 1 on the official answer sheet.

2. Let \( k \) be the answer to number 1. If \( k \) is the slope of a line that passes through the origin, what is the \( y \)-coordinate on the line at the point \((-2, y)\)? Write your answer in the blank next to number 2 on the official answer sheet.

3. Let \( k \) be the answer to number 2. If \( k \) is the area of a square, what is the perimeter of the square? Write your answer in the blank next to number 3 on the official answer sheet.

4. Let \( k \) be the answer to number 3. What is the greatest common factor of 84 and \( k \)? Write your answer in the blank next to number 4 on the official answer sheet.

5. Let \( k \) be the answer to number 4. If \( k \) is the diameter of a circle, what is the area of the circle? Round your answer to the nearest whole number. Write your answer in the blank next to number 5 on the official answer sheet.

6. Let \( k \) be the answer to number 5. \( k \) is a prime number. Find the next larger prime number. Write your answer in the blank next to number 6 on the official answer sheet. \( (\pi \approx 3.14) \)

-18  36  24  12  113  127
Round 1

1. What is the slope of the line formed by the equation $10x - 2y = 17$? Write your answer in the blank next to number 1 on the official answer sheet.

2. Let $k$ be the answer to number 1. Solve the equation for $x$: $3(k - x) + 7 = 2k$. Write your answer in the blank next to number 2 on the official answer sheet.

3. Let $k$ be the answer to number 2. Evaluate $\sqrt{\frac{k^2}{2} + (k - 2)^3}$. Write your answer in the blank next to number 3 on the official answer sheet.

4. Let $k$ be the answer to number 3. Evaluate $\frac{k^2}{4} + \frac{(k - 2)^2}{2} + \frac{k^2}{8}$. Write your answer in the blank next to number 4 on the official answer sheet.

5. Let $k$ be the answer to number 4. What is the $k^{th}$ number in the sequence -1, 1, 3, 5,...? Write your answer in the blank next to number 5 on the official answer sheet.

6. Let $k$ be the answer to number 5. Find $\frac{(k^2 - 2k - 8)(k^2 - 5k)}{(k^2 - 9k + 20)(k^2 + 4k + 4)}$. Write your answer as a fraction in lowest terms in the blank next to number 6 on the official answer sheet.

5  4  4  8  13  $\frac{13}{15}$
Round 2

1. What positive integer produces the same result when the number is added to itself or the number is multiplied by itself? Write your answer in the blank next to number 1 on the official answer sheet.

2. Let $k$ be the answer to number 1. Raise $k$ to the 5th power and then find the first prime number larger than $k^5$. Write your answer in the blank next to number 2 on the official answer sheet.

3. Let $k$ be the answer to number 2. What is the quotient when the sum of $k+1$, $k+3$, and $k+5$ is divided by 6? Write your answer in the blank next to number 3 on the official answer sheet.

4. Let $k$ be the answer to number 3. What is the least common multiple of $k$ and 45? Write your answer in the blank next to number 4 on the official answer sheet.

5. Let $k$ be the answer to number 4. How many different prime numbers are factors of $k$? (Note: 1 is not a prime number) Write your answer in the blank next to number 5 on the official answer sheet.

6. Let $k$ be the answer to number 5. What digit is in the one's place of $k^{21}$? Write your answer in the blank next to number 6 on the official answer sheet.

2 37 20 180 3 3
Round 3

1. What is the sum of the angle measures in an isosceles triangle? Write your answer in the blank next to number 1 on the official answer sheet.

2. Let $k$ be the answer to number 1. If $k$ is the width of a rectangle and $k + 60$ is the length of the rectangle, what is the length of the diagonal of the rectangle? Write your answer in the blank next to number 2 on the official answer sheet.

3. Let $k$ be the answer to number 2. Consider a pentagon with side lengths, $x$, $x+5$, $x+10$, $x+15$, and $x+20$. If $k$ is the perimeter of this pentagon, what is the length of the longest side? Write your answer in the blank next to number 3 on the official answer sheet.

4. Let $k$ be the answer to number 3. If $k$ is the area of a rectangle where the length is 9 more than the width, what is the length? Write your answer in the blank next to number 4 on the official answer sheet.

5. Let $k$ be the answer to number 4. If $k$ is the height of the isosceles trapezoid shown in the figure, what is the area of the trapezoid? Write your answer in the blank next to number 5 on the official answer sheet.

6. Let $k$ be the answer to number 5. If $k$ is the circumference of a circle, what is the diameter of the circle to the nearest whole number? Write your answer in the blank next to number 6 on the official answer sheet. ($\pi \approx 3.14$)

180 300 70 14 630 200