Round 3

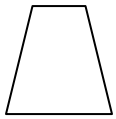
1. A right triangle has an acute angle that measures 58^0. What is the measure of the other acute angle in this triangle? Write your answer in the blank next to number 1 on the official answer sheet.

2. Let *k* be the answer to number 1. If *k* is the area of a right triangle with height $\frac{k}{2}$, what is the base length of the triangle? 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 radius of a circle, what is the area of a square that is circumscribed around the circle? Write your answer in the blank next to number 3 on the official answer sheet.

4. Let *k* be the answer to number 3. Consider a hexagon with 3 pairs of congruent sides with lengths, x, x+2, and x+6. If *k* is the perimeter of this hexagon, what is the length of the longest side? 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 difference between the measures of opposite angles in the isosceles trapezoid shown in the figure, what is the measure of the obtuse angle? 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 area 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. ($\pi \approx 3.14$)

32 4 64 14 97 11

Round 2

1. What is the largest integer whose cube is less than 80000? Write your answer in the blank next to number 1 on the official answer sheet.

2. Let *k* be the answer to number 1. Find the sum of the first two prime numbers larger than *k*. 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 remainder when the sum of *k*+2, *k*+4, and *k*+6 is divided by 15? 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 30, 45 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. What is the sum of $\frac{k}{10} + \frac{k}{20} + \frac{k}{30}$? 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^{12}? Write your answer in the blank next to number 6 on the official answer sheet.

43 100 12 180 33 1

Round 1

1. Solve the proportion for x: $\frac{x}{x+6}=\frac{1}{2}$. Write your answer in the blank next to number 1 on the official answer sheet.

2. Let *k* be the answer to number 1. Let *k* represent the slope of the line, 3x –*p*y = 7. What is the value of *p*? 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 $\frac{8}{1-\frac{1}{k}}$. 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 $\left(\frac{k}{4}\right)^3+\frac{(k+4)^2}{2}+\frac{k^2}{8}$. 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 -2, 1, 4, 7….?
   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 $\frac{\left(k^2-3k-10\right)\left(k^2-5k+6\right)}{\left(k^2-2k-15\right)\left(k^2-4\right)}$. Write your answer as a fraction in lowest terms in the blank next to number 6 on the official answer sheet.

6 $\frac{1}{2}$ -8 8 19 $\frac{8}{11}$

Practice Round

1. Solve for the equation k. $3(k - 1) - 7 = 20$. 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 y-coordinate $(2, k)$ of a point on a line with slope $-\frac{2}{3}$, what is the x-coordinate on the line at the point (x, 4)? 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 side length of a square, what is the sum of the numbers that represent the area and 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 sum of the prime factors of 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 circumference of the circle? $(\pi \approx 3.14)$ 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. Let k be the third term in a geometric sequence, 15, 30, k …….. Find the fifth term. Write your answer in the blank next to number 6 on the official answer sheet.

10 11 165 19 60 240