ROUND 1

1. TOSSUP: What is 50% of 128? (64) – 10 pts
   BONUS: In January the club had 5 members. By February there was a 300% increase in membership. By March there was a 200% increase over the February membership. How many members did the club have by March? (60) – 12 pts

2. TOSSUP: What is the product of the first two prime numbers? (6) – 10 pts
   BONUS: (a) Find the Greatest Common Factor of 180 and 630. (90) – 6 pts
   (b) Find the Least Common Multiple of 180 and 630. (1260) – 6 pts

3. TOSSUP: How many different numbers are possible sums, when you roll two standard dice? (11) - 10 pts
   BONUS: Suppose you roll two standard dice. What is the **probability** that the sum will be greater than 10? $\left(\frac{3}{36} \text{ or } \frac{1}{12}\right)$ – 12 pts

4. TOSSUP: Give the value of four factorial. (24) – 10 pts
   BONUS: (a) What is the product of 5 factorial and 6 factorial? (86,400) – 6 pts
   (b) What is the quotient when 999 factorial is divided by 998 factorial? (999) – 6 pts

5. TOSSUP: Five people each gave $8 and three people each gave $2. How much money did they give in all? ($46) – 10 pts
   BONUS: Thirty–three people gave $7, twenty–nine people gave $13, twenty–one people gave $17, and thirty–seven people gave $25.
   (a) What was the **mean** of all these gifts? ($15.75) – 6 pts
   (b) What was the **median** of all these gifts? ($13) – 3 pts
   (c) What was the **mode** of all these gifts? ($25) – 3 pts

6. TOSSUP: The set of all points in three–dimensional space that are exactly 2 inches from a fixed point form a figure called a what? (sphere) – 10 pts
   BONUS: For each of the following questions, give the answer to the closest tenth of the correct unit and say what that correct unit is.
   (a) Find the **volume** of a **cylinder** that has a diameter of 14 inches and a height of 6 inches. (923.6 in^3) – 6 pts
   (b) Find the **volume** of a **cone** with radius 5 inches and height 8 inches. (209.4 in^3) – 6 pts
   [In each case, give 4 of the 6 points if the number is correct, but the unit is wrong.]

ROUND 2

1. TOSSUP: Express the fraction "eleven sevenths" as a mixed number. $\left(1\frac{4}{7}\right)$ – 10 pts

   BONUS: Multiply $2\frac{2}{7}$ by the difference $4\frac{2}{3}$ minus $1\frac{3}{4}$. Express your answer as a **mixed number** in simplified terms. $\left(6\frac{2}{3}\right)$ –12 pts

2. TOSSUP: The number "one million" can be expressed as ten to what power? [accept "6" or "10^6"] - 10 pts

   BONUS: Divide ten to the negative second power by ten to the negative fifth power. Give your answer as a standard numeral, **not** as a power of ten. (one thousand) - 12 pts

3. TOSSUP: Name the largest prime factor of 15. (5) – 10 pts

   BONUS: What is the sum of all the composite numbers between 50 and 75, not including 50 or 75. (1116) – 12 pts

4. TOSSUP: The classified ads showed a pair of Dobermans being sold for $350. This amounts to how much per dog? ($175) – 10 pts

   BONUS: Dan Vaden advertised a 1997 Chevrolet Silverado that could be bought **either** for a single payment of $19,419 **or** for $353 a month for 5 years plus a down payment of $3500. How much more will the second method of payment cost than the first method? ($5261) – 12 pts

5. TOSSUP: What is the **exact** value of the ratio of the circumference of a circle and the diameter of the same circle? (pi) – 10 pts

   BONUS: A particular globe is a sphere with radius 6 inches. Give answers to the following questions in the correct unit.

   (a) What is the **distance around** the equator on that globe, to the closest tenth of a unit? (37.7 inches) – 6 pts

   (b) What is the **volume** of the globe, to the closest whole unit? (905 in^3) – 6 pts

   [Give 4 pts for each numerically correct answer if the unit is not correct.]

6. TOSSUP: the fraction $\frac{3}{4}$ is equivalent to what **percent**? (75 or 75%) – 10 pts

   BONUS: On November 6 of this year, the Centers for Disease Control and Prevention in Atlanta released a statement about 1997 smoking figures, state–by–state. [Enunciate the following numbers carefully.] These figures indicate that **22.4%** of Georgia **adults** smoke, and that **100.6** packs of cigarettes are sold per year per person (of all ages) in the state. Estimates show a total Georgia population of **7.2 million** people, of which **5.3 million** are adults.

   (a) According to these figures, how many adult smokers were there in Georgia? (Round your answer to the closest thousand.) (1,187,000) – 4 pts

   (b) How many packs of cigarettes were sold in Georgia in 1997? (724,320,000) – 4 pts

   (c) Assuming all the cigarettes were bought by adult smokers, what was the average number of packs of cigarettes bought per adult smoker, in Georgia, rounded to the closest ten? (610) – 4 pts

ROUND 3

1. TOSSUP: Find the average of the two fractions $\frac{2}{3}$ and $\frac{4}{6}$. $\left(\text{Accept } \frac{2}{3} \text{ or } \frac{4}{6}\right)$ – 10 pts

   BONUS: The average on Jim's first four exams is exactly 78. What score on his next exam would make his overall average exactly 80? (88) – 12 pts

2. TOSSUP: What is the square root of 121? (11) – 10 pts

   BONUS: Two of the three sides of a right triangle have lengths 12 and 13. Give the exact value for the third side if that side is:

   (a) the hypotenuse? $\left(\sqrt{313}\right)$ – 6 pts

   (b) one of the perpendicular legs? (5) – 6 pts

3. TOSSUP: Give the absolute value of negative 130. (130) – 10 pts

   BONUS: The highest point on the earth is Mount Everest, which is 29,028 feet above sea level. The shore of the Dead Sea, at 1,312 feet below sea level, is the lowest place on the surface of the earth. What is the vertical distance from the surface of the Dead Sea to the top of Mount Everest? (30,340 feet) – 12 pts

4. TOSSUP: What is fifty divided by one half? (100) - 10 pts

   BONUS: Slowpoke can wash a car in two hours. Procrastinator takes three hours to wash the car. If they do not change their speed when they work together, how long will it take the two boys to wash the car together?

   [Accept 72 minutes, or 1 hour 12 minutes, or $\frac{6}{5}$ hour, or $1\frac{1}{5}$ hour, or equivalent] - 12 pts

5. TOSSUP: A certain operation involves squaring each digit of a number and adding these squares together. What is the result of this operation when you perform it on the number 123? (14) – 10 pts

   BONUS: You must form a 5–digit number in which all 5 digits are different and each pair of digits that appear next to each other in the number must differ by at least 2. For instance, the number 25384 would be all right, but the number 25483 would not, because the 5 and the 4 appear next to each other and differ by only 1. Find the largest number that satisfies this property. (97586) – 12 pts

6. TOSSUP: In your answer to the following question, you must include am or pm as part of your answer. When it is 12 noon in Savannah, it is 7 pm in Helsinki, Finland. What time is it in Helsinki, when it is 8 am in Savannah? (3 pm) - 10 pts

   BONUS: Recall that it is 7 pm in Helsinki when it is 12 noon in Savannah. If you depart from the Helsinki airport at 1:45 pm Helsinki time and arrive in JFK airport in New York City at 3:25 pm New York time, how long did the flight take?

   (8 hours and 40 minutes, or $8\frac{2}{3}$ hours, etc.) – 12 pts

ROUND 4

1. TOSSUP: If you bought a bike for $59 and paid the exact amount with four paper bills, what were the bills? (a $50, a $5, and two $2's) – 10 pts

   BONUS: Chester delivers pizzas. On Friday, he earned a certain amount of money. On Saturday, he earned twice as much as he did on Friday. On Sunday, he earned half as much as he did on Friday. The three days' total earnings were $70. How much did he earn on each day? ($20 on Friday, $40 on Saturday, $10 on Sunday) [All three answers must be correct for any credit.] – 12 pts

2. TOSSUP: A rectangular box has length 5 and width 4. What must its height be if its volume is 60? (3) – 10 pts

   BONUS: A rectangular box is 15 inches long, 9 inches wide and 6 inches high. It is to be exactly filled with cubes that are all the same size.
   (a) How long is the edge of the **largest** cube that will work? (3 inches) – 6 pts
   (b) How **many** of these cubes will it take to exactly fill the box? (30) – 6 pts

3. TOSSUP: Give a prime number that is a factor of the number 81. (3) – 10 pts

   BONUS: (a) Give the complete prime factorization of the number 3500. (2 x 2 x 5 x 5 x 5 x 7, in any order, or $2^2 \times 5^3 \times 7$) – 6 pts
   (b) Find the greatest common factor of 315 and 135. (45) – 6 pts

4. TOSSUP: What is 25% of 80? (20) – 10 pts

   BONUS: If Sally buys an outfit for 30% off its regular price and the **sale price** is $94.50,
   (a) What is her total cost if there is a 6% sales tax? ($100.17) – 6 pts
   (b) What was the original price of the outfit, without the tax? ($135) – 6 pts

5. TOSSUP: What is the **sum** of one to the zeroth power and one to the first power? (2) – 10 pts

   BONUS: What is the exact quotient when you **divide** the number "four times ten to the twentieth power" **by** the number "eight times ten to the eighteenth power? (50) – 12 pts

6. TOSSUP: The Savannah newspaper showed a map of the United States, including Alaska and Hawaii, rating each state by how much they spend to fix urban roads. They identified three different spending levels. There were also some states that had so few urban roads that they were not rated at all, thus there were four groups of states. If **ten** states were in the highest spending group, **eleven** states were in the medium spending group, and **eleven** states were in the lowest spending group, how many states must have been **unrated**? (18) – 10 pts

   BONUS: McDonald's had a total of **16.4 billion dollars** of sales in its **12,249** domestic stores, and a total of **15.4 billion dollars** of sales in its **9997** overseas stores.
   (a) Determine, to the closest thousand dollars, the average sales per store for its domestic stores. (answer for (a) is $1,339,000) – 6 pts
   (b) Do the same for its overseas stores. (answer for (b) is $1,540,000) – 6 pts

ROUND 5

1. TOSSUP: If a store that is open only Monday through Friday is visited by a total of one thousand customers in one week, what is the average number of customers **per day**?
(200) - 10 pts

BONUS: In 1997, the Mighty Eighth Air Force Museum in Pooler was visited by **71,517** people. The museum is open **daily** from 9 am to 6 pm. Determine the average number of people visiting per hour. (Round to the closest whole number.) (22) - 12 pts

2. TOSSUP: Two coins are flipped. What is the probability that **both** come up tails?
$\left(\frac{1}{4}, 0.25, 25\%, \text{ or equivalent}\right)$ – 10 pts

BONUS: Express both your answers as **fractions** in simplest terms.
(a) Sherri makes **seven tenths** of her foul shots. what is the probability that she will make **both** of her next two free throws? $\left(\frac{49}{100}\right)$ – 6 pts
(b) One letter is randomly selected from the word MATH and one letter from the word ALGEBRA. What is the probability that both letters are consonants? $\left(\frac{3}{7}\right)$ – 6 pts

3. TOSSUP: In a recent sale, JC Penney's took 50% off the price of a Liz Baker coat and then subtracted one more penny, making the sale price $89.99. What was the original price?
($180) – 10 pts

BONUS: The same JCPenney's sale listed a variety of Yarnworks sweaters on sale for $19.99. Their regular prices ranged from $36 to $38. What was the **largest** percent discount represented among these sweaters, rounded to the closest whole percent?
(47%) – 12 pts

4. TOSSUP: If the point whose (x,y) coordinates are (2,2) is translated four units to the right and two units down, then what are its new (x,y) coordinates? (6,0) – 10 pts

BONUS: Start with triangle ABC, where the coordinates of A are (–1,4), the coordinates of B are (0,0), and the coordinates of C are (2,2). First, translate this triangle four units to the right and two units down. Then **reflect** this new triangle through the X–axis. Give the coordinates of the vertices of the final triangle. (3,–2), (4,2), (6,0) – 12 pts
[Give 3 pts for 1 correct pair, 6 pts for 2 correct pairs, 12 pts for all 3 correct - Don't worry about the letters for the vertices.]

5. TOSSUP: Using the correct unit, find the **perimeter** of a square with side length 11 meters.
(44 meters) – 10 pts

BONUS: John has 48 feet of fencing, and wishes to build a rectangular pen for his hunting dog, using all 48 feet of fencing.
(a) What dimensions will give a pen of area 128 square feet? (8 by 16) – 6 pts
(b) What dimensions would give the pen of **largest** area? (12 by 12) – 6 pts

6. TOSSUP: Golfer Craig Stadler shot a 70 in the first round of a recent golf tournament. If his total for the first two rounds was 141, what was his score in the second round?
(71) – 10 pts

BONUS: On November 7, the Savannah State University football team beat Miles College in Alabama. Savannah State gained a total of 186 yards on 47 running plays, and 112 yards on 15 passing plays. Miles college gained a total of 106 yards on 33 running plays and 110 yards on 24 passing plays.
(a) Combining runs and passes, tell how many yards Savannah State averaged per play. (Round your answer to the nearest tenth of a yard) (4.8) – 6 pts
(b) Similarly, how many yards did Miles College average per play? (3.8) – 6 pts

ROUND 6

1. TOSSUP: The pictures of food in Christmas catalogs always look delicious, but you pay for the convenience. The recent Christmas catalog from the Harry and David Company, which promised to take **10% off** your order, advertised a 2–pound box of cherries for **$29.95**. Rounding to the closest whole dollar, determine the final cost of this box of cherries. ($27) – 10 pts

   BONUS: The same catalog advertised a spiral sliced ham for $81.95. Its weight was listed as 10 to 12 pounds. Again, 10% will be taken off your order. Calculate the exact price **per pound** for each end of this range of possible weights, then round to the closest whole cent.

   [Accept $6.14 or $6.15] – 6 pts
   [Accept $7.37 or $7.38] – 6 pts

2. TOSSUP: At 60 kilometers per hour, how far will you travel in one minute? (1 km) – 10 pts

   BONUS: A car travels 1 kilometer at 20 km/hour and a second kilometer at 30 km/hour. What was that car's average speed? (24 km/hr) –12 pts

3. TOSSUP: I am thinking of two positive integers. Their **sum** is larger than their **product.** **One** of the numbers **must** be what number? (1) - 10 pts

   BONUS: You must form a two-digit numeral whose digits are chosen from the numbers from 1 to 9, inclusive.

   (a) How many ways can you do this if the two digits must be different? (72) - 6 pts
   (b) How many ways can you do this if the two digits can be the same or different? (81) - 6 pts

4. TOSSUP: On November 6 of this year, the high temperature in Memphis was 53 and the low temperature was 33. What is the average of these two temperatures? (43) – 10 pts

   BONUS: By the end of November 7 of this year, Savannah had had an official total of 46.96 inches of rain. To the closest **thousandth** of an inch, what was our average **daily** rainfall for that part of the year? (.151 = 151 thousandths of an inch) – 12 pts

5. TOSSUP: The square root of 75 is between which two consecutive whole numbers? (8 and 9) – 10 pts

   BONUS: I am a whole number whose square root is between 8 and 9. I am the product of three different prime factors. List all the numbers I could be. (66, 70, and 78) – 12 pts
   [Give 4 points for each right answer, and subtract 4 points for each wrong answer, but give no team less than zero)]

6. TOSSUP: How many hundreds are in ten thousand? (100 or 100 hundreds) – 10 pts

   BONUS: Last year, Bill Gates' net worth was estimated at 36.4 billion dollars. In an effort to give readers an idea of how much money this is, *Newsweek* Magazine facetiously sugested that if Mr. Gates wanted to, he could buy every man, woman, and child in the United States a pair of in–line skates. Assuming they were correct, and all of his money goes towards this purchase, what would a pair of in–line skates cost? Use the 1990 census figure of [read following figure slowly] 248,709,873 for the United States population, and round your answer to the nearest dollar. ($146) – 12 pts

Tie Breakers for Round 6 or 7 (Use ONE question at a time, and ONLY if teams are tied.)

TOSSUP: 55 centimeters equals how many millimeters? (550) - 10 pts
BONUS: Sound travels in water at a speed of 1450 meters per second. How many **kilometers** does it travel:

(a) in 15 seconds? (21.75 or $21\frac{3}{4}$ or $\frac{87}{4}$) - 6 pts

(b) in $\frac{1}{3}$ of a meter? (29) - 6 pts

TOSSUP: What is the product of "two point eight" times "one thousand"? (2800) - 10 pts
BONUS: A furniture salesman is paid a salary of $225 per week, plus a commission of 13% of the value of her sales for the week. What would be her pay for a week in which she sells furniture with a total value of $5386? ($925.18) - 12 pts

TOSSUP: What is the name for a quadrilateral with exactly two parallel sides? (trapezoid) - 10 pts
BONUS: A certain trapezoid has parallel sides of length 6 and 10. One of its other sides is perpendicular to the two parallel sides. The fourth side has length 5. What is the length of the side that is perpendicular to the two parallel sides? (3) - 12 pts