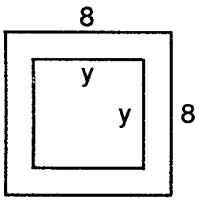
Sprint Round Name:

1. 1991 is a palindrome year. (The numbers are the same read from left to right or right to left.) When is the next palindrome year after 1991? 1. _____

2. If (x,y) = (3,9), what is $y^2 - 3xy + 8$? 2. _____

3. What is the probability of rolling doubles on a pair of fair dice? Express your answer as a common fraction. 3. _____

4. Darts thrown at a board are equally likely to hit anywhere within a region on the board. If 75% of the darts land inside the small square, what is the value of y to the nearest whole number? 4. _____




5. Find the number halfway between -3 and -15. 5. _____

6. If a rectangle has vertices (-2,3), (4,3) and (-2,-1), what are the coordinates of the fourth vertex? 6. _____

7. When a number is multiplied by its multiplicative inverse, the answer is 1. Find the multiplicative inverse, expressed as a common fraction, of the following: $\dfrac{1}{1 + \frac{1}{2}}$ 7. _____

8. How many integers n satisfy $-\pi < 2n + 1 < \pi$? 8. _____

9. What is the arithmetic mean of the numbers 0.1, 0.11, and 0.111? 9. _____

10. Suppose that by using the spare tire on her car as much as she uses the other four tires, Coleen drives the car 80,000 miles. What is the wear, in miles, on each tire? 10. _____

11. Ashley averages 40 miles per hour for the first 20 miles and 60 miles per hour for the next 40 miles of a 60 mile trip. How many minutes did the trip take? 11. _____

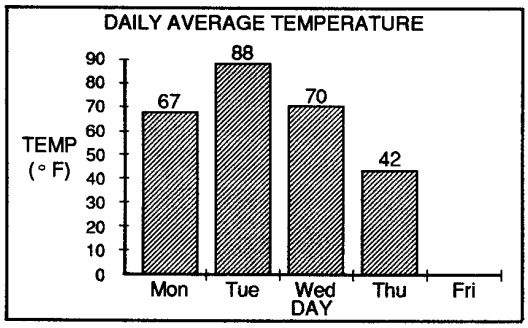
12. The sum of three integers is 193. The smaller two are consecutive integers and the larger two are consecutive even integers. What is the largest of these three integers? 12. _____

13. Insert three fractions between $\frac{1}{4}$ and $\frac{1}{2}$ so the five fractions form an arithmetic sequence. What is the sum, expressed as a common fraction, of these three new fractions? 13. _____

14. Marbles are packaged in bags of two sizes. A small bag contains 6 marbles and a large bag contains 12. A certain number of small bags and twice as many large bags are used to package 780 marbles. How many large bags are used? 14. _____

15. How many numbers from 1 through 200 have a 2 in the units place and are divisible by 4? 15. _____

16. What must the average temperature in degrees Farenheit be on Friday in order to have a 5-day average of 70 degrees? 16. _____




17. In the following multiplication problem, the $*$ represents the same digit in each number: $(73*)(*3) = 389**$. What digit does the $*$ represent? 17. _____

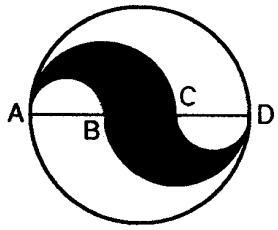
18. On a map drawn to scale, one-fourth inch equals ten miles. How far, in miles, is it from Drumdum to Singsing if the measurement on the map is five and three-eighths inches? 18. _____

19. What number is 10 more than 78 divided by $\frac{1}{2}$? 19. _____

20. To $87\frac{1}{2}$ % of 80, add 40% of 350. What is the sum? 20. _____

21. How many degrees are in the vertex angle of an isosceles triangle when the vertex angle is 16 degrees more than twice one of the base angles? 21. _____

22. In the figure, arcs AB, AC, BD, and CD are semicircles. If segments $\overline{AB}$, $\overline{BC}$, and $\overline{CD}$ have length 4, find the shaded area in terms of $\pi$. 22. _____




23. Express 3.010101010101... as a mixed number. 23. _____

24. Express as a common fraction: $1 - \dfrac{1}{1 - \dfrac{1}{1 - \frac{3}{8}}}$ 24. _____

25. The following ordered pairs are graphed on the coordinate plane and connected by line segments: A(0,1), B(3,-2), C(6,1), D(3,4) to form a closed figure ABCD. What is the most specific mathematical term describing figure ABCD? 25. _____

26. Using one kind of cheese, one kind of meat, and one kind of bread, how many different sandwiches can be made from the following: 26. _____

    Bread: rye, white, wheat, oatmeal
    Cheese: cheddar, swiss
    Meat: bologna, turkey, ham

27. In his locker, Andrew has 2 history books and 3 math books. In his rush to get to class, he grabs 1 book, then a second book, without stopping to look. What is the probability that he pulls a math book out first and a history book out second? Express your answer as a common fraction. 27. _____

28. How many distinct elements does the following set have? 28. _____
    $\{16 - 2(8),\ \ 2 \cdot 3^2 - 17,\ \ 6 + 2(4) - 13,\ \ \frac{24}{3(8)},\ \ 4 + 32 - 35\}$

29. Four pens cost d cents. In terms of d, how many pens can be bought for 40 cents? 29. _____

30. What is the next prime number after 89? 30. _____