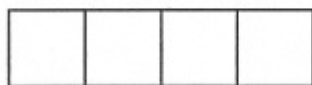
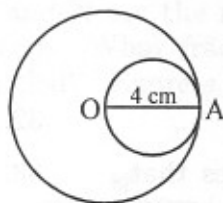


1. Christina contributes \$15 per month to a charity, and Javon contributes \$12 per month. How many more dollars will Christina contribute in  $3\frac{1}{3}$  years? 1. \_\_\_\_\_
2. How many lines of symmetry does a regular octagon have? 2. \_\_\_\_\_
3. Trish and Carla are asking each other trivia questions. Each time one of the girls gives a correct answer, the other gives her one cent. At the end of the game, Trish had gotten three questions correct, and Carla had three more pennies than when she started. How many questions were answered correctly? 3. \_\_\_\_\_
4. Three coins are tossed. What is the probability of getting 2 heads and 1 tail? Express your answer as a common fraction. 4. \_\_\_\_\_
5. A number plus one-seventh of the same number equals 20. What is the number? Express your answer as a common fraction. 5. \_\_\_\_\_
6. Money invested in the Sunshine Investment Club has tripled every 10 years. If \$100 is invested in the account and increases at the same rate, how many dollars will be in the account after 30 years? 6. \_\_\_\_\_
7. How many ways can you change a \$5 bill into a combination of dimes or quarters? 7. \_\_\_\_\_
8. What mixed number, added to  $6\frac{2}{3}$ , results in a sum of  $18\frac{4}{5}$ ? 8. \_\_\_\_\_
9. If  $x + y = 7$  and  $xy = 12$ , what is the value of  $x^2 + y^2$ ? 9. \_\_\_\_\_
10. Four congruent squares are placed as shown to form a single rectangle whose perimeter is 100 inches. What is the number of square inches in the area of one of these squares? 10. \_\_\_\_\_



11. Merlin can type 5 words in 12 seconds. How many words can he type in 10 minutes? 11. \_\_\_\_\_
12. There are 3 piles of 6 sticks each. What is the smallest number of sticks that can be moved so that the second pile contains twice as many sticks as the first pile, and the third pile contains three times as many sticks as the first pile? 12. \_\_\_\_\_

13. Kaitlyn drove from Baltimore to Philadelphia on a route that was 126 miles. It took her 2 hours and 20 minutes to make the drive. How many miles per hour was her average speed? 13. \_\_\_\_\_
14. When a number is divided by 5, the remainder is 3. What is the remainder when twice the number is divided by 5? 14. \_\_\_\_\_
15. How many times does the factor 5 occur in the prime factorization of 65!? 15. \_\_\_\_\_
16. The average of a set of 24 numbers is 25. What is the average when 0 is added to this set? 16. \_\_\_\_\_
17. In the diagram,  $\overline{OA}$  is a radius of the large circle and a diameter of the smaller circle. What is the number of square centimeters in the area inside the larger circle but outside the smaller circle? Express your answer in terms of  $\pi$ . 17. \_\_\_\_\_



18. What integer can be added to both the numerator and denominator of  $\frac{3}{4}$  to obtain a fraction equal to  $\frac{7}{8}$ ? 18. \_\_\_\_\_
19. For what value of  $n$  does  $4(4^2 + 4^2 + 4^2 + 4^2) = 2^n$ ? 19. \_\_\_\_\_
20. The base length of an isosceles triangle is 24 feet, and the side length is 20 feet. What is the number of feet in the altitude to the base? 20. \_\_\_\_\_
21. The average weight of five offensive linemen is 310 pounds. The first four linemen weigh 298 pounds, 304 pounds, 305 pounds and 296 pounds, respectively. How many pounds does the fifth lineman weigh? 21. \_\_\_\_\_
22. What is the sum of the integer solutions of  $|x + 3| < 4$ ? 22. \_\_\_\_\_
23. There are 250 soldiers in a company, 4 companies in a battalion, 3 battalions in a regiment, 3 regiments in a brigade, and 3 brigades in a division. How many soldiers are in a division? 23. \_\_\_\_\_
24. What is the value of  $2000^2 - 1999^2$ ? 24. \_\_\_\_\_
25. What is the sum of the solutions to  $(y + 2)^2 = 25$ ? 25. \_\_\_\_\_

26. The perimeter of a rectangle is 42 meters. The length of the rectangle is four less than four times its width. What is the number of square meters in the area of the rectangle?

27. Compute:  $\frac{8!}{(2^6)}$ .

28. What is the slope of a line perpendicular to the line through (4,3) and (7,-5)? Express your answer as a common fraction.

29. Alexis, Britt, Carol, Danielle and Elizabeth are waiting in line. Alexis is behind Carol but ahead of Danielle. Elizabeth is ahead of Britt, but behind Carol. Danielle is ahead of Britt. Who is first in line?

30. Compute and express your answer as a common fraction:

$$5 + \frac{5}{5 + \frac{1}{5}}$$

31. If  $6x = 15$ , what is the value of  $12x - 5$ ?

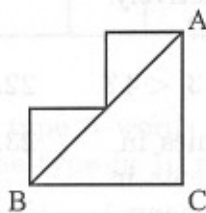
32. What is the greatest prime factor of 2525?

33. Lewis is thinking of a number. If he multiplies that number by 2, adds 4, divides by 5, multiplies by 10, finally divides by 5, he will get the number with which he started. What is the original number?

34. What is the median of the factors of 144?

35. What is the  $y$ -coordinate of the image when (5,3) is reflected over the line  $y = x$ ?

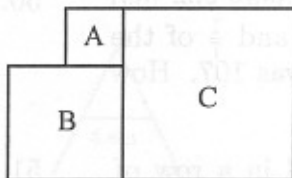
36. As Karl Frederick was walking up a flight of stairs, he noticed that for every 1 foot that he rose vertically, he covered a horizontal distance of 1 foot. What is the number of degrees in  $m\angle ABC$ ?



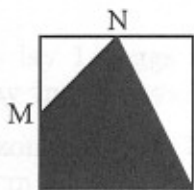
37. If  $f(x) = x^2 + 3x + 7$ , what is the value of  $f(5) - f(-4)$ ?

38. What is the value of  $3^5 - 3^4$ ?

39. A, B and C are squares. The area of A is  $9\text{ cm}^2$ , and the area of B is  $36\text{ cm}^2$ . What is the number of square centimeters in the area of square C? 39. \_\_\_\_\_



40. Given that  $a \star b = a^3 - b^2$ , what is the value of  $4 \star (2 \star 1)$ ? 40. \_\_\_\_\_
41. Given 40 feet of fencing, what is the greatest possible number of square feet in the area of a rectangular pen enclosed by the fencing? 41. \_\_\_\_\_
42. What is the product of the greatest common factor and the least common multiple of 10 and 35? 42. \_\_\_\_\_
43. Points M and N are the midpoints of two sides of the square shown. What fractional part of the square's area is shaded? Express your answer as a common fraction. 43. \_\_\_\_\_



44. Each integer 1–9 is squared. What is the sum of the resulting units digits? 44. \_\_\_\_\_
45. Julian has weights of 1, 3 and 7 pounds. What is the smallest whole number of pounds he cannot weigh using these three weights and a balance scale? 45. \_\_\_\_\_
46. The lengths of the legs of a right triangle are 36 cm and 48 cm. What is the number of centimeters in the perimeter of the triangle? 46. \_\_\_\_\_
47. Matt drove to his grandmother's home 210 miles away. He stopped one-third of the way there to buy gas. On the return trip over the same route, he stopped half-way home to buy gas again. How many miles between the two gas stations? 47. \_\_\_\_\_
48. What is the sum of all solutions to the equation  $x^2 - 9 = x + 3$ ? 48. \_\_\_\_\_

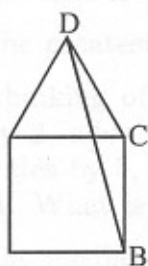
49. The supplement of an angle is three times its complement. What is the number of degrees in the measure of the angle? 49. \_\_\_\_\_

50. A math teacher was asked how many students she had taught. She replied that the sum of  $\frac{1}{5}$ ,  $\frac{1}{6}$  and  $\frac{1}{7}$  of the total number of students she had taught was 107. How many students had she taught? 50. \_\_\_\_\_

51. Two girls and three boys are to be seated in a row of five desks. What is the probability that the students at the ends of the row are both boys? Express your answer as a common fraction. 51. \_\_\_\_\_

52. On her birthday, Jennifer always has a birthday cake decorated with the number of candles that corresponds to her age. So far, she has used a total of 253 candles on her cakes. How many years old is Jennifer? 52. \_\_\_\_\_

53. An equilateral triangle shares a common side with a square as shown. What is the number of degrees in  $m\angle CDB$ ? 53. \_\_\_\_\_



54. For what value of  $n$  does  $\frac{n}{12} + \frac{n}{6} = \frac{n}{n}$ ? 54. \_\_\_\_\_

55. Larry, Curly and Moe estimated the distance of a trip as 320 miles, 330 miles and 335 miles, respectively. If two estimates were off by 5 miles and the third was off by 10 miles, what was the number of miles in the actual distance of the trip? 55. \_\_\_\_\_

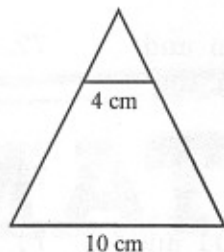
56. How many of the positive integer divisors of 100 are not prime? 56. \_\_\_\_\_

57. A bowl is  $\frac{1}{4}$  full with sugar. If 2 cups of sugar are added to the bowl, it becomes  $\frac{1}{3}$  full. How many cups of sugar will the bowl hold when it is full? 57. \_\_\_\_\_

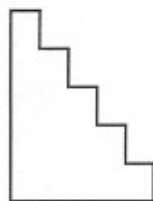
58. What is the sum of the two whole numbers that have a product of 36 and a difference of 5? 58. \_\_\_\_\_

59. Solve for  $x$ :  $0.\overline{36} = \frac{24}{x}$ . 59. \_\_\_\_\_

60. In the diagram, the two triangles shown have parallel bases. What is the ratio of the area of the smaller triangle to the area of the larger triangle? Express your answer as a common fraction. 60. \_\_\_\_\_



61. The points  $(7, -6)$  and  $(-3, -4)$  are the endpoints of a diameter of a circle. What is the sum of the coordinates of the center of the circle? 61. \_\_\_\_\_
62. Compute:  $\frac{10,000 \div \frac{1}{100}}{1000}$ . 62. \_\_\_\_\_
63. Evaluate  $(a^b)^a - (b^a)^b$  for  $a = 2$  and  $b = 3$ . 63. \_\_\_\_\_
64. On a rectangular coordinate system, what is the number of units in the distance between  $(4, 1)$  and  $(16, -4)$ ? 64. \_\_\_\_\_
65. If  $1\frac{1}{2}$  hens lay  $1\frac{1}{2}$  eggs in  $1\frac{1}{2}$  days, how many eggs will 24 hens lay in 24 days? 65. \_\_\_\_\_
66. Each horizontal step is 3 cm in length, and each vertical step is 4 cm in length. All angles shown are right angles. What is the number of centimeters in the perimeter of the figure? 66. \_\_\_\_\_



67. The graphs of  $-2x + 5y = 7$  and  $10x + ky = -6$  are perpendicular. What is the value of  $k$ ? 67. \_\_\_\_\_
68. For what value of  $n$  does  $(5,000,000)^2 \cdot (2,000,000)^2 = 10^n$ ? 68. \_\_\_\_\_
69. A bin in the shape of a rectangular prism is 10 feet long, 5 feet wide and 5 feet deep. There are  $1\frac{1}{4}$  cubic feet in a bushel. How many bushels are in the bin? 69. \_\_\_\_\_

70. The human brain accounts for 2% of a person's body weight. What is the weight, in pounds, of a person whose brain weighs 2.8 pounds? 70. \_\_\_\_\_
71. Jack B. Nimble may choose any 3 books from a set of 7 books. How many different sets can he pick? 71. \_\_\_\_\_
72. The legs of a right triangle have lengths 10 cm and 24 cm. What is the number of centimeters in the length of the hypotenuse? 72. \_\_\_\_\_
73. What is the value of  $\frac{2000! - 1999!}{1999!}$ ? 73. \_\_\_\_\_
74. What integer value of  $n$  will satisfy  $n + 10 > 11$  and  $-4n > -12$ ? 74. \_\_\_\_\_
75. The book Marie purchased was priced at \$20.00 plus \$1.40 sales tax. What percent was the sales tax? 75. \_\_\_\_\_

