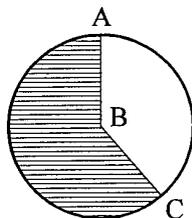


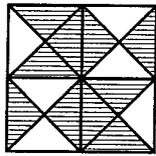
1. What is the tens digit of 5^{1998} ? 1. _____
2. Compute: $0.\overline{7} - 0.\overline{4} + 0.\overline{2}$. Express your answer as a common fraction. 2. _____
3. The corner of a square on a computer screen is clicked on and dragged so that the rectangle formed has three times the length and half the width of the original square. The area of the rectangle is what percent greater than the original square? 3. _____
4. The sum of a set of five consecutive integers is -5 . What is the least of these integers? 4. _____
5. Compute: $\frac{6! - 5!}{4!}$ 5. _____
6. What is the least integer solution of $|z + 2| \leq 3$? 6. _____
7. What is the positive difference between the degree measures of the complement and supplement of the same angle if the sum of their degree measures is 184° ? 7. _____
8. Compute: $3^4 - 5 \cdot 8$. 8. _____
9. Two rectangles are similar. The length and width of one are 1.2 inches and 0.9 inches, respectively. The length of the other rectangle is 2 inches. What is the number of inches in the width of the other rectangle? Express your answer as a decimal to the nearest tenth. 9. _____
10. Ping is learning Greek in a systematic manner. Every day, she learns eight new words. How many words will she learn in the next two years if neither year is a leap year? 10. _____
11. A fishing rod 16 feet long is made of two parts. In order to function properly, $\frac{3}{5}$ of the longer part must equal the length of the shorter part. How many feet are in the length of the longer part of the pole? 11. _____
12. Sixteen people attended a party, and each person brought a gift for everyone else at the party. Altogether, how many gifts were brought to the party? 12. _____
13. A is the set of positive multiples of 6 less than 600, and B is the set of positive multiples of 8 less than 800. How many elements are in $A \cap B$? 13. _____

14. A round pizza is $\frac{1}{3}$ of an inch thick and has a diameter of 12 inches. It is cut into 12 congruent pieces. What is the number of cubic inches in the volume of one piece? Express your answer in terms of π . 14. _____
15. How many whole numbers are between $\sqrt{7}$ and $\sqrt{77}$? 15. _____
16. What is the 200th positive odd integer? 16. _____
17. At the MATHCOUNTS practice, every team member *hi-fives* each of the other members. Altogether there are 45 hi-fives. How many team members attended the practice? 17. _____
18. What is the difference between the greatest whole number factor of 121 and the least whole number factor of 6? 18. _____
19. Assuming that the probability of the birth of a male or a female is equally likely, what is the probability that a family with three children has exactly two daughters? Express your answer as a common fraction. 19. _____
20. A tennis match begins at 5:34 pm and ends at 8:15 pm. How many minutes long is the match? 20. _____
21. What is the mean of $\frac{1}{2}$, $(\frac{1}{2})^2$, and $(\frac{1}{2})^3$? Express your answer as a common fraction. 21. _____
22. When two consecutive whole numbers are randomly selected, what is the probability that one of them is a multiple of 4? Express your answer as a common fraction. 22. _____
23. In circle B, the measure of $\angle ABC$ is 135° . What is the ratio of the area of the shaded region to the area of the unshaded region? Express your answer as a common fraction. 23. _____

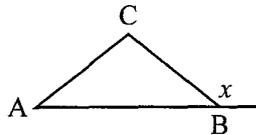


24. If a school bus leaves school with 48 students on board, and one-half of the students get off the bus at each of the first three stops, how many students remain on the bus after the third stop? 24. _____

25. A bowling lane is $3\frac{1}{2}$ feet wide and 60 feet long. How many square feet are in its area? 25. _____
26. What is the number of square inches in the area of a square if a diagonal of the square is $6\sqrt{2}$ inches long? 26. _____
27. A dartboard is constructed by using the diagonals of a square and the line segments connecting its midpoints as shown. What is the probability that a dart hits a shaded region given that the dart hits the dartboard? Express your answer as a common fraction. 27. _____



28. In $\triangle ABC$, $AC = BC$, and $m\angle BAC = 40^\circ$. What is the number of degrees in angle x ? 28. _____



29. A hamburger and juice together cost \$3.50. The hamburger costs \$1.50 more than the juice. How many dollars does the hamburger cost? Express your answer to the nearest cent. 29. _____
30. What common fraction is 50% more than $\frac{1}{7}$? 30. _____
31. Which digit should replace a in the units place so that $98\,675\,42a$ is divisible by 11? 31. _____
32. What number is $\frac{3}{4}$ of $\frac{8}{9}$ of 90? 32. _____
33. A sequence is formed by writing the word *MATHCOUNTS* over and over again. What is the 396th letter in this sequence? 33. _____
34. A necklace is formed by alternating 3 black beads with 5 white beads. If the finished necklace has 48 beads, how many of the beads are white? 34. _____

35. Give the greatest common divisor of 6^3 and 3^6 . 35. _____

36. A cow spends 18 hours each day chewing. What percent of the year does it spend not chewing? 36. _____

37. The measure of an interior angle of a regular octagon is how many degrees greater than the measure of an interior angle of a regular hexagon? 37. _____

38. What time in the morning is it when exactly one-fifth of the day is over? 38. _____

39. What is the tens digit in the decimal form of 11^8 ? 39. _____

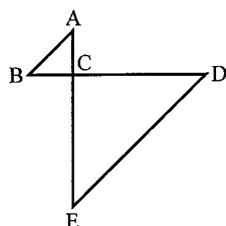
40. Simplify and express your answer as a common fraction. 40. _____

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

41. Jake bought $\frac{3}{4}$ pound of mixed nuts. On the way home, he ate $\frac{1}{3}$ of them. How many pounds of nuts were left when he got home? Express your answer as a common fraction. 41. _____

42. The circumference of a circle is 14π centimeters. What is the number of square centimeters in the area of the smallest square that contains all the interior points of the circle? 42. _____

43. The area of $\triangle ABC$ is 6 sq cm. $\overline{AB} \parallel \overline{DE}$. $BD = 4BC$. What is the number of square centimeters in the area of $\triangle CDE$? 43. _____



44. What is the degree measure of the complement of an angle whose supplement measures 125° ? 44. _____

45. The greatest common divisor of 21 and some number between 50 and 60 is 7. What is the number? 45. _____

46. If one-third of six apples sells for 60¢, how many dollars will one-fourth of 40 apples cost? 46. _____

47. How many diagonals does an octagon have? 47. _____
48. What is the sum of 60% of 75 and 75% of 60? 48. _____
49. Compute: $5^2 - 3(4) + 3^2$. 49. _____
50. What is the greatest common divisor of 45 and 75? 50. _____
51. What is the median of the set $\{5, 0.5, 55, 5.5, 0.55\}$? 51. _____
52. If $x = \frac{2}{3}$, what is the value of $\frac{36}{x}$? 52. _____
53. Express $0.4\bar{5}$ as a common fraction. 53. _____
54. Francine averages two home runs for each nine games that she plays. If she maintains that average and plays in every game, how many home runs will she hit in a regular 162-game season? 54. _____
55. A state requires that all boat licenses have the letter A or M followed by any five digits. What is the number of combinations of letters and numbers available for boat licenses? 55. _____
56. What is the number of square miles in the area of a square whose perimeter is 2 miles? Express your answer as a common fraction. 56. _____
57. What is the least possible number of digits in the positive difference between a positive five-digit integer and a positive four-digit integer? 57. _____
58. A number cube has the digits 1 through 6 each written on a different face. Two such number cubes are tossed and the numbers on top are added. What is the probability of obtaining a two-digit sum? Express your answer as a common fraction. 58. _____
59. If 0.5% of a number is 5, what is the number? 59. _____
60. What is the mean of $\frac{1}{4}$ and $\frac{1}{5}$? Express your answer as a common fraction. 60. _____
61. Given that $7x - 14 = 35$, what is the value of $x - 2$? 61. _____
62. For what value of x does $10(10^x)^2 = 100\,000$? 62. _____
63. Compute: $\frac{6!}{5!} - \frac{4!}{3!}$. 63. _____

64. Given that $a = b + 5$, what is the value of $|a - b| + |b - a|$? 64. _____
65. In a well-known nursery rhyme, Miss Muffet sat on a tuffet. In England, a *tuffet* is a unit of capacity that is equal to two pecks. If there are four pecks in a bushel, how many tuffets are there in nine bushels? 65. _____
66. If 15% of a number is subtracted from the number, the result is 51. What is the number? 66. _____
67. When Paul reported for summer football camp, he weighed 160 pounds. The coach told him he would be more effective if he weighed more. If Paul gained 24 pounds by the beginning of the season, what is the percent increase in Paul's weight? 67. _____
68. The sum of two whole numbers is 16 and their positive difference is 2. What is the product of the two numbers? 68. _____
69. A coin is flipped eight times, and the sequence of heads and tails occurring is recorded. How many distinct sequences are possible? 69. _____
70. Dominique has 800 cubes with edge length 1 cm. How many centimeters long is the edge of the largest solid cube she can build with these cubes? 70. _____
71. The circumference of the interior of a cylindrical water glass is 3π inches, and its interior height is 4 inches. How many cubic inches of liquid can the glass hold? Express your answer in terms of π . 71. _____