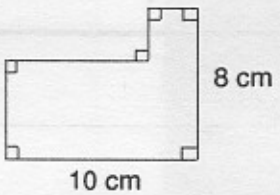
1. Simplify: $3 + 3\,(3) - 3 \div 3$ 1. _____

2. How many 32-passenger buses will be needed to take 200 students on a field trip? 2. _____

3. Find the product of the first 20 terms of the sequence below. Express your answer as a common fraction. 3. _____

$$\frac{2}{3}\ \frac{3}{4}\ \frac{4}{5}\ \frac{5}{6}\ , , \ldots$$

4. What is the perimeter, in centimeters, of this polygon? 4. _____



5. The ratio of boys to girls in a school is 4 to 5. How many girls are in the school if a total of 945 students are enrolled? 5. _____

6. If $a * b = a^2 + ab - b^2$, find $3 * 2$. 6. _____

7. A survey of 120 teachers determined the following: 7. _____

70 had high blood pressure
40 had heart trouble
20 had both high blood pressure and heart trouble

What percent of the teachers surveyed had neither high blood pressure nor heart trouble?

8. Look for a pattern: 8. _____

$11 \times 11 = 121$
$111 \times 111 = 12321$
$1111 \times 1111 = 1234321$

Find the value of n: $111111 \times 111111 = n$

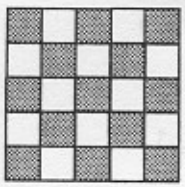
9. What is the maximum number of points of intersection when 5 lines intersect each other? 9. _____

10. Solve for x: $\frac{x}{2} + \frac{x}{3} = 5$ 10. _____

1990-1991

11. David purchased a boat for a total cost of $2240. He made a $440 down payment and agreed to pay the remainder in 24 equal payments. What will be the dollar amount of each payment? 11. _____

12. What percent of the five-by-five square is shaded? 12. _____



13. The sum of two numbers is 30. Their difference is 4. What is the larger of the two numbers? 13. _____

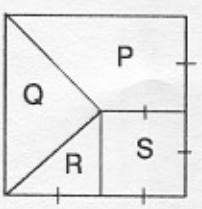
14. Find the sum: $1 + 2 + 3 + 4 + \ldots + 48 + 49$ 14. _____

15. Twice a number decreased by 13.7 is greater than 125.28. What is the smallest integer that satisfies this condition? 15. _____

16. A clothing dealer sold two shirts at $12 each. On one he made a profit of 20%; on the other he lost 20%. How many dollars did he lose on the two sales combined? 16. _____

17. When the fraction $\frac{465}{527}$ is expressed in lowest terms, what is the sum of its numerator and denominator? 17. _____

18. Four students agreed to pool their savings to purchase a computer. The portions contributed are represented proportionately by the areas in the diagram below. What percent of the total did Q contribute? 18. _____



19. In 4 baseball games, a batter had 3 hits in 5 times at bat, 1 hit in 4 times at bat, 2 hits in 5 times at bat, and no hits in 4 times at bat. What was her batting average for the four games? Express your answer as a decimal rounded to the nearest thousandth. 19. _____

20. What is the greatest common factor of 518 and 294? 20. _____

21. If $1,000 is invested at 10% compounded annually, what is the account balance in dollars at the end of two years? 21. _____

22. Kara randomly selected a number from the set {2, 4, 6, . . ., 22} as the length of a side of a square. What is the probability that the area of her square is less than 144? Express your answer as a common fraction. 22. _____

23. Find the smallest positive integer divisible by 10, 11, and 12. 23. _____

24. Six times the reciprocal of a number is $\frac{9}{4}$. What is the number? Express your answer as a mixed number. 24. _____

25. Express $0.\overline{5}$ as a common fraction. 25. _____

26. When a number is divided by 7, the quotient is 28 and the remainder is 6. What is the number? 26. _____

27. Name the greatest whole number less than 100 that has an odd number of positive factors. 27. _____

28. Find the value of the complex fraction below. Express your answer as a common fraction. 28. _____

$$\frac{1}{4 - \frac{1}{1 - \frac{1}{4}}}$$

29. Find the sum of the mean and the median of the given set:

$\{2^0, 2^1, 2^2, 2^3, 2^4, 2^5\}$.

Express your answer as a mixed number. 29. _____

30. How many distinct license plate "numbers" can be created that consist of two letters followed by four digits? Express your answer in scientific notation. 30. _____

1990-1991