

5. 2004 AMC 10B SAMPLE QUESTIONS

6. Which of the following numbers is a perfect square?
(A) $98! \cdot 99!$ (B) $98! \cdot 100!$ (C) $99! \cdot 100!$ (D) $99! \cdot 101!$ (E) $100! \cdot 101!$
9. A square has sides of length 10, and a circle centered at one of its vertices has radius 10. What is the area of the union of the regions enclosed by the square and the circle?
(A) $200+25\pi$ (B) $100+75\pi$ (C) $75+100\pi$ (D) $100+100\pi$ (E) $100+125\pi$
15. Patty has 20 coins consisting of nickels and dimes. If her nickels were dimes and her dimes were nickels, she would have 70 cents more. How much are her coins worth?
(A) \$1.15 (B) \$1.20 (C) \$1.25 (D) \$1.30 (E) \$1.35
21. Let $1, 4, \dots$ and $9, 16, \dots$ be two arithmetic progressions. The set S is the union of the first 2004 terms of each sequence. How many distinct numbers are in S ?
(A) 3722 (B) 3732 (C) 3914 (D) 3924 (E) 4007

6. 2004 AMC 12B SAMPLE QUESTIONS

6. Minneapolis-St. Paul International Airport is 8 miles southwest of downtown St. Paul and 10 miles southeast of downtown Minneapolis. Which of the following is closest to the number of miles between downtown St. Paul and downtown Minneapolis?
(A) 13 (B) 14 (C) 15 (D) 16 (E) 17
11. All the students in an algebra class took a 100-point test. Five students scored 100, each student scored at least 60, and the mean score was 76. What is the smallest possible number of students in the class?
(A) 10 (B) 11 (C) 12 (D) 13 (E) 114
18. Points A and B are on the parabola $y = 4x^2 + 7x - 1$, and the origin is the midpoint of AB . What is the length of AB ?
(A) $2\sqrt{5}$ (B) $5 + \sqrt{\frac{3}{2}}$ (C) $5 + \sqrt{2}$ (D) 7 (E) $5\sqrt{2}$
19. A truncated cone has horizontal bases with radii 18 and 2. A sphere is tangent to the top, bottom, and lateral surface of the truncated cone. What is the radius of the sphere?
(A) 6 (B) $4\sqrt{5}$ (C) 9 (D) 10 (E) $6\sqrt{3}$

