

29. $\frac{4}{10}$ of 40 = 16 = 4×4 = 400% of 4. A) 16 B) 40 C) 160 D) 400	29. D
30. $100\,000\,000 = 2^8 \times 5^8$. Like all powers of 5 $\geq 5^2$, 5^8 ends in "25." A) 0 B) 2 C) 4 D) 6	30. B
31. Try $1+2+3+4+5+6+7+8+9 = 45$; it's not divisible by 6. A) 1 B) 3 C) 6 D) 9	31. C
32. He'll need 4 corner tiles, 10 tiles for each shorter edge, and 14 more tiles for each longer edge. He'll need $4+10+10+14+14 = 52$ tiles. A) 52 B) 56 C) 58 D) 60	32. A
33. $0.4^2 = 0.16 < 0.4$. A) 0.2^2 B) 0.2^3 C) 0.4 D) 0.4^4	33. C
34. The only such triangle has sides of length 2, 3, and 3. A) isosceles B) right C) obtuse D) equilateral	34. A
35. Look for a pattern: $(1/10)^1 = 0.1$ has no 0; $(1/10)^2 = 1/100 = 0.01$ has one 0; $(1/10)^3 = 0.001$ has two 0s. Similarly, $(0.1)^{100}$ has 99 0s. A) 98 B) 99 C) 100 D) 101	35. B
36. Lance sells 60 bikes each month. Since $1/12$ of $60 = 5 = 1/3$ of the racing bikes he sold, Lance sells $3 \times 5 = 15$ racing bikes each month. A) 20 B) 15 C) 12 D) 5	36. B
37. As shown, a circle can cross each side of a square twice. A) 2 B) 4 C) 6 D) 8	37. D
38. Possible distributions for (Ali,Bob,Carl): are: (3,0,0), (0,3,0), (0,0,3), (2,1,0), (2,0,1), (1,2,0), (1,0,2), (0,2,1), (0,1,2), and (1,1,1). This shows that I can distribute 3 pizza slices in 10 ways. A) 8 B) 9 C) 10 D) 12	38. C
39. $4,8,\dots,96 = 24$ #s. $9,18,\dots,99 = 11$ #s. $25,50,75 = 3$ #s. $49,98 = 2$ #s. We counted 36 & 72 twice each, so total = $24+11+3+2-2 = 38$. A) 36 B) 38 C) 40 D) 44	39. B
40. The hour hand makes 2, the minute hand makes 24, and the second hand makes $60 \times 24 = 1440$ revolutions. A) 72 B) 733 C) 1466 D) 10 104	40. C



Information & Solutions

Tuesday, February 18 or 25, 2003

Contest Information

7

- Solutions** Turn the page for detailed contest solutions (written in the question boxes) and letter answers (written in the *Answers* column to the right of each question).
- Scores** Please remember that *this is a contest, not a test*—and there is no “passing” or “failing” score. Few students score as high as 30 points (75% correct). Students with half that, 15 points, *deserve commendation!*
- Answers & Rating Scale** Turn to page 139 for the letter answers to each question and the rating scale for this contest.



The end of the contest 7

1. $44444 + 88888 = 44444 + 22222 + 66666 = 66666 + 66666 = 66666 \times 2$.

A) 2 B) 6 C) 20 D) 66666

2. The tens' digit of 642 is 4; this is the double of 2.
A) 1 B) 2 C) 3 D) 4

3. B is divisible by 5, C is even, and D is divisible by 3.
A) 243+40 = 283 B) 497+28 = 525 C) 640+42 = 682 D) 720+81 = 801

4. $202 + 2002 = 2204 = 203 + 2003 - 2$
A) 1 B) 2 C) 3 D) 4

5. Since 2 hops = 4 hip-hops, 4 hops = 8 hip-hops. Since 2 hops = 1 hop, 8 hops = 4 hops = 8 hip-hops.
A) 2 B) 4 C) 8 D) 16



6. $(2+4+6)^2 = 12^2 = 144 = 36 \times 4 = 6^2 \times 4 = (1+2+3)^2 \times 4$
A) $(1+2+3)^4$ B) $(1+2+3) \times 2$ C) $(1+2+3)^2 \times 4$ D) $2^2 + 4^2 + 6^2$

7. The last digit of 99.99 is the hundredths' digit; it's already rounded.
A) 100.09 B) 100 C) 99.99 D) 99.1

8. $(200 \times 300) + (20 \times 30) + (2 \times 3) = 60606 = (2 \times 3) \times 10101$
A) 111 B) 10101 C) 60600 D) 60606

9. $33+66+99 = 33 \times (1+2+3) = 11 \times (3+6+9) = 22 \times (3+3+3)$
A) $1+2+3$ B) $3+6+9$ C) $3+3+3$ D) $9+9+9$

10. $\frac{3}{1} + (-\frac{1}{3}) = 0$, so A is correct. A) $-\frac{3}{1}$ B) -3 C) $\frac{3}{2}$ D) 3

11. The pizza's diameter equals the side-length of the box top. The perimeter = 4 side-lengths = $4 \times (2 \times \text{radius}) = 4 \times (2 \times 70)$ cm.
A) 140 cm B) 140π cm C) 280 cm D) 560 cm

12. $5 = \frac{8}{10} \times \frac{6}{5} \times \frac{4}{2} \times \frac{2}{1} = \frac{5}{1} \times \frac{1}{2}$, so $5 = \frac{5}{1} \times 25$.
A) 1 B) 4 C) 16 D) 25

13. During the past 4 years, 3 years had 365 days and 1 year had 366 days (a leap year). The average is $(365+365+365+366) \div 4 = 365.25$, which is choice B.
A) 365.00 B) 365.25 C) 365.33 D) 365.50



14. $5 \div \frac{6}{2} = 5 \times \frac{2}{6} = 5 \times 3$.
A) 4 B) 3 C) $\frac{2}{3}$ D) $\frac{3}{1}$

15. In order, the tenths' digits of the choices are 3, 0, 7, and 3.
A) 0.3073 B) 3.073 C) 30.73 D) 307.3

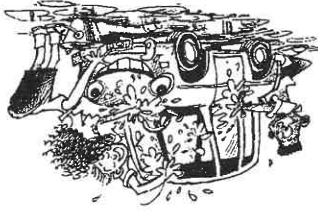
16. In the diagram at the right, the region in which they overlap is the shaded triangle.
A) triangle B) square C) rhombus D) rectangle



17. 50 dimes \div 50 quarters = 1 dime \div 1 quarter = $10/25 = 40\%$.
A) 10% B) 30% C) 35% D) 40%

18. $(999 \times 1000) - (999 \times 998) = 999 \times (1000 - 998) = 999 \times 2 = 1998$.
A) 1000+999 B) 1000+998 C) 1000-998 D) 1000-999

19. Since we washed cars from noon until 11:30 PM, we washed cars for 11 hrs. 30 mins. = 11×60 mins. + 30 mins. = 660 mins. + 30 mins. = 690 mins.
A) 330 B) 690 C) 1020 D) 1140



20. $77^2 \times (77 \times 77)^2 = 77^2 \times (77^2)^2 = 77^2 \times 77^4$.
A) 77^5 B) $77^2 \times 77^3$ C) $77^2 \times 77^4$ D) 3×77^4

21. $3 \div 5 \div 7 = (3 \div 5) \div 7 = \frac{3}{5} \div 7 = \frac{3}{35}$. A) $\frac{35}{3}$ B) $\frac{21}{7}$ C) $\frac{7}{15}$ D) $\frac{5}{21}$

22. $\frac{4}{3} + \frac{2}{1} + \frac{4}{3} = \frac{4}{3} = 2$.
A) $\frac{4}{3}$ B) 1 C) $\frac{2}{3}$ D) 2

23. $3 \div \frac{6}{1} = 3 \times 6 = 18$; its reciprocal is $\frac{1}{18} = \frac{3}{1} \times \frac{6}{1}$.
A) $\frac{3}{1} \times \frac{6}{1}$ B) $\frac{3}{1} \times 6$ C) $3 \times \frac{6}{1}$ D) 3×6

24. Since 72 is a multiple of 2, the largest such factor is 72.
A) 2 B) 8 C) 36 D) 72

25. Since \$10 = 100¢ and \$7 = 700¢, I have $1000 \div 5 = 200$ coins, you have $700 \div 10 = 70$ coins, and $200 - 70 = 130$.
A) 30 B) 70 C) 130 D) 140

26. If product of 3 integers is odd, each is odd & sum is odd.
A) odd B) even C) positive D) negative

27. $\sqrt{64} - \sqrt{9} = 8 - 3 = \sqrt{25}$. A) $\sqrt{55}$ B) $\sqrt{45}$ C) $\sqrt{25}$ D) $\sqrt{5}$

28. Since $345 - 54 = 334 - 43$, ♣ could represent subtraction.
A) + B) - C) \times D) \div

