



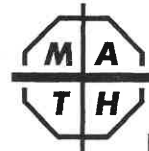


30. The area of each square is 16. Since $2000 \div 16 = 125$, we can fit at most 125 non-overlapping squares inside.
A) 121 B) 125 C) 250 D) 500
31. A 3-hour concert lasts 180 minutes; 18 minutes is 10% of 180 minutes.
A) 6% B) 10% C) 21% D) 30%
32. The perimeter of an equilateral \triangle with integer sides is divisible by 3.
A) 915 B) 615 C) 315 D) 115
33. The 8 factors of 2006 are 1, 2, 17, 34, 59, 118, 1003, and 2006.
A) 4 B) 6 C) 8 D) 9
34. 10 like both, so $20 - 10 = 10$ like only math, and $30 - 10 = 20$ like only art. That's $10 + 10 + 20 = 40$ students, so $60 - 40 = 20$ like neither.
A) 0 B) 10 C) 20 D) 30
35. $(1+1)+(1+3)+(1+5)+\dots+(1+99) = 50+(1+3+5+\dots+99) = 2550$.
A) 2550 B) 2599 C) 2600 D) 5000
36. Bob got 2, 5, 8, 11, 14, 17, . . . , and Ann got 3, 5, 7, 9, 11, 13, Bob's 3rd, 4th, 5th, . . . , 100th numbers are, respectively, 1, 2, 3, . . . , 98 more than Ann's.
A) 97 B) 98 C) 99 D) 100
37. The number of leaves must be a multiple of 20.
A) 399 leaves B) 400 leaves
C) 401 leaves D) 410 leaves
38. Make 1 cut through 1 thickness to get 2 pieces, 2 cuts \Rightarrow 3 pieces, 3 cuts \Rightarrow 4 pieces, 4 cuts \Rightarrow 5 pieces, . . . , 49 cuts \Rightarrow 50 pieces. At most, I made $49 + (4 \times 50) = 249$ cuts.
A) 249 B) 250 C) 299 D) 300
39. Each cube needs a top and a bottom. Choice A has 2 bottoms.
A)  B)  C)  D) 
40. If 4 flips = 3 flops, and 3 flops = 6 flaps, then 4 flips = 6 flaps.
A) 2 B) 3 C) 4 D) 6



Information & Solutions


Tuesday, February 20 or 27, 2007

Contest Information

6

- **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 148 for the letter answers to each question and the rating scale for this contest.



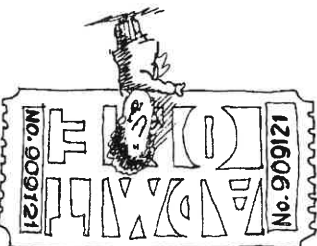
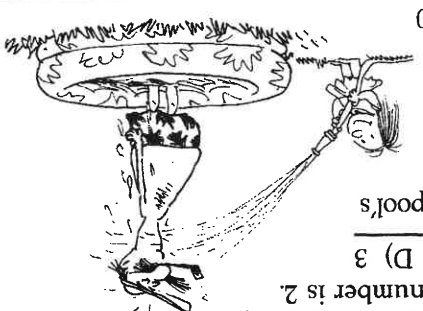
The end of the contest  6

1. $(24 + 36 + 48 + 60) \div 12 = 2 + 3 + 4 + 5 = 14$.
 A) 7 B) 9 C) 10 D) 14
2. At a quarter each, 40 gumballs will cost $40 \times 25¢ = 1000¢ = \$10.00 = \$10$.
 A) \$100 B) \$65 C) \$10 D) \$1
3. $45 \div 3 = 15 = 3 \times 5$.
 A) 3 B) 5 C) 9 D) 15
4. $1.25125 \times \frac{4}{5} = 1.25125 \times \frac{1}{1} = 1.25125 \times 1.25$.
 A) 1.20 B) 1.25 C) 1.40 D) 1.75
5. Each square's area is 9, so a side of a square is 3. The figure's perimeter is $3 + 9 + 3 + 9 = 24$.
 A) 18 B) 24 C) 27 D) 36
6. Of the following quotients, choice D is greatest.
 A) $64 \div 4 = 16$ B) $112 \div 7 = 16$ C) $144 \div 9 = 16$ D) $194 \div 12 > 16$
7. $450 \text{ cm} = \text{twice my height} = 2 \times 225 \text{ cm}$, and $225 \text{ cm} \div 5 = 45 \text{ cm}$.
 A) 180 cm B) 135 cm C) 90 cm D) 45 cm
8. $20 \times 40 \times 60 = 20 \times (20 \times 2) \times (20 \times 3) = 20^3 \times 6$.
 A) 20^1 B) 20^3 C) 20^6 D) 20^{2400}
9. 3 slices in 20 minutes $\leftrightarrow 3 \times 3 = 9$ slices in 3×20 minutes = 1 hour.
 A) 9 B) 12 C) 15 D) 45
10. $(100 - 1) \times 99 = (100 \times 99) - (1 \times 99)$.
 A) 199×99 B) 198×99 C) 100×100 D) 100×99
11. Since $45 = 3 \times 3 \times 5$, choice C is correct. (Note: 1 is NOT a prime.)
 A) $25 = 5 \times 5$ B) $35 = 5 \times 7$ C) $45 = 3 \times 3 \times 5$ D) $55 = 5 \times 11$
12. 200% of 6 = $2 \times 6 = 3 \times 4 = 300\%$ of 4.
 A) 2 B) 3 C) 4 D) 12
13. Of 132 clowns, 66 are redheads. Of the other 66, half are blonde, so 33 are blonde. The ratio of blonde clowns to redheaded clowns is $33:66$.
 A) 33:66 B) 44:66 C) 66:66 D) 55:77
14. "Midway" = average = $(2 + 12) / 2 = 14 / 2 = 7$.
 A) 5 B) 6 C) 7 D) 8
15. $30\,000 + 4000 + 500 + 600 + 70 = 35\,170$.
 A) 345 670 B) 35 170 C) 34 170 D) 34 567



6 Go on to the next page

16. The rounded value for each choice is shown below.
 A) 4454 B) 4450 C) 4500 D) 4000
17. $3:45$ to $6:35 = 2$ hrs. 50 mins. Add half that, 1 hr 25 mins., to $3:45$.
 A) 4:50 P.M. B) 4:55 P.M. C) 5:05 P.M. D) 5:10 P.M.
18. For 24 683 579: hundreds' digit = 5; ten-thousands' digit = 8.
 A) 56 B) 40 C) 30 D) 10
19. The average price is $(12 \times \$4 + 4 \times \$12) \div (12 + 4) = \$96 \div 16 = \6 .
 A) \$4 B) \$6 C) \$8 D) \$12
20. $2 \times 4 \times 6 = 8 \times 6$ is a factor in D.
 A) $2 \times 3 \times 4 \times 5$ B) $3 \times 4 \times 5 \times 6$ C) $4 \times 5 \times 6 \times 7$ D) $5 \times 6 \times 7 \times 8$
21. Add until you get close: $1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 = 511$.
 On the 9th day of May, I put down 256 grains of sand. On that day, the total number of grains put down so far that month was 511.
 A) May 9 B) May 10 C) May 25 D) June 19
22. $888 \div 77 = 11 \text{ r } 41$, and $41 \div 6 = 6 \text{ r } 5$. The new remainder is 5.
 A) 0 B) 1 C) 3 D) 5
23. 101 dimes + 101 cents = \$11.11. Adding 1 cent ruins the balance.
 A) \$10.01 B) \$11.00 C) \$11.11 D) \$11.12
24. $100\,001^2 - 100\,000^2 = 10\,000\,200\,001 - 10\,000\,000\,000 = 200\,001$.
 A) 200 001 B) 100 001 C) $200\,001 \times 10^6$ D) $100\,001 \times 10^6$
25. Since $1 + (\text{a number}) > 1 \times (\text{a number})$, the smallest such number isn't 1. Next, $2 + 2 = 2 \times 2$, but $2 + 3 < 2 \times 3$, so the smallest such whole number is 2.
 A) 0 B) 1 C) 2 D) 3
26. Since its diameter is 2 m, the pool's circumference is $\pi \times 2$ m.
 A) π m B) 2π m C) 4π m D) 5π m
27. $\sqrt{40 \times 90} = \sqrt{3600} = 60$.
 A) 36 B) 50 C) 60 D) 120
28. \div by 2 repeatedly. If you get an odd #, there's a prime factor > 2 .
 A) $2222 = 2 \times 1111$ B) $2468 = 2^2 \times 617$ C) $4848 = 2^4 \times 303$ D) $8192 = 2^{13}$
29. The l.c.m. of 8 and 10 is 40. That's the g.c.f. of 80 and 120.
 A) 160 B) 120 C) 100 D) 80



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