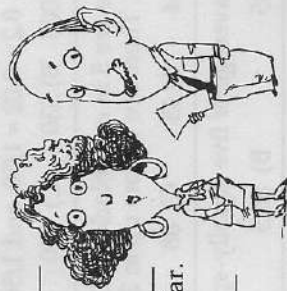


28. Each number is added 3 times and subtracted once, so B is correct.
A) $(8+10+12)$ B) $2 \times (8+10+12)$ C) $3 \times (8+10+12)$ D) $4 \times (8+10+12)$
29. The number 123 is a whole number between 100 and 999 that has three different non-zero digits; the sum of its digits is $1 + 2 + 3 = 6$.
A) 7 B) 6 C) 4 D) 3
30. Ed is $31 - 20 = 11$, and Di is $35 - 20 = 15$. The sum of their ages is $11 + 15 = 26$.
A) 26 B) 46 C) 86 D) 106
31. Since $1000 \div 12$ has R4, it's 4 months after Mar.
A) March B) May C) June D) July
32. Multiply the ones digits: $3 \times 6 \times 9 = 162$.
A) 1 B) 2 C) 3 D) 4
33. The value of one of each coin is $(1+5+10)\text{¢} = 16\text{¢}$. Since $\$2.40 \div 16\text{¢} = 15$, there are 15 of each coin. The value of 15 nickels is $15 \times 5\text{¢} = 75\text{¢}$.
A) 15¢ B) 50¢ C) 75¢ D) 95¢
34. Each difference is 5. There are $2010 \div 5$ fives = 402 fives = 5^{402} .
A) 5^{402} B) 5^{401} C) 5×402 D) 5×401
35. Two equilateral triangles share sides with a square as shown. The figure has 6 sides of length 4, so the perimeter is $6 \times 4 = 24$.
A) 48 B) 40 C) 32 D) 24
36. There are 420 students in my school. The ratio of boys to girls in my school *cannot* be 11:14 since $11 + 14 = 25$ is not a factor of 420.
A) $3:7 = 126:294$ B) $5:9 = 150:270$ C) $11:14$ D) $17:18 = 204:216$
37. $3 \times 300 = 900$, and $900 \div 3000 = 0.3 = 30\%$.
A) 10 B) 25 C) 30 D) 50
38. See choices. One of each brick weighs 10 kg. Subtract 10 repeatedly from each choice until the difference is 0 or divisible by 3 or 7.
A) 21 kg B) $27 \text{ kg} = 2 \times 3 + 3 \times 7$
C) $30 \text{ kg} = 3 \times 3 + 3 \times 7$ D) $39 \text{ kg} = 6 \times 3 + 3 \times 7$
39. If $(1 \times 2 \times 3 \times \dots \times 30) + 1$ is divided by 2 or 3 or 5 or ... or 29, the remainder is always 1.
A) less than 10 B) between 10 & 20
C) between 20 & 30 D) greater than 30
40. Each block, 1-99, 100-199, 200-299, 400-500, has 10 such numbers. From 300 to 399, there are $100 - 10 = 90$ numbers. In all, there are $40 + 90 = 130$ numbers.
A) 130 B) 140 C) 150 D) 160



The end of the contest

Visit our Web site at <http://www.mathleague.com>

Steven R. Conrad, Daniel Flegler, and Adam Raichel, contest authors

Information & Solutions

2009-2010 Annual 6th Grade Contest

Tuesday, February 23 (alternate date: February 16), 2010

Directions for Grading

- Security and Solutions** Do not look at these solutions until after the contest. Detailed solutions appear in each question box, and letter answers are in the *Answers* columns on the right. You may copy this solution key and give a copy to every student who took this contest.
- Urgent Questions?** For appeals or answers to urgent questions, write to comments@mathleague.com or call 1-201-568-6328 or 1-516-365-5656.
- Scores** Please remember that *this is a contest, and not a test* — there is no “passing” or “failing” score. Few students score as high as 30 points (75% correct). Students with half that, 15 points, should be commended.
- Awards & Results** The original contest package contained 5 *Certificates of Merit* — 1 each for the highest scoring student on each grade level, plus extras for ties. **Do you need more Certificates of Merit?** If so, include your name, school, and school mailing address in a letter to: **Math Certificates, P.O. Box 17, Tenafly, NJ 07670-0017**, and include a self-addressed, stamped envelope (**three 1st Class stamps req'd.**) large enough to hold certificates. Only scores submitted to our Internet Score Report Center by Tues., March 9, 2010 can be used in our *Summary of Contest Results newsletter*, which will be posted online no later than Fri., April 16, 2010.
- Return of Student Papers** *Originals* of contest papers with scores of 30 or more *must* be held until June 1. *Copies* of these papers, and originals of all other papers, should be returned to students after grading. Students scoring 30 points or more must confirm an *understanding* of the contest rules by signing the *Selected Math League Rules* (on the colored sheet of information and rules that accompanied the contests). Keep this signed sheet with the original contests until June 1. Please do not mail these to the League unless we ask you to do so.

Fifteen books of past contests, *Grades 4, 5, & 6 (Vols. 1, 2, 3, 4, 5)*, *Grades 7 & 8 (Vols. 1, 2, 3, 4, 5)*, and *High School (Vols. 1, 2, 3, 4, 5)*, are available, for \$12.95 per volume (\$15.95 Canadian), from Math League Press, P.O. Box 17, Tenafly, NJ 07670-0017.

1. The 3 spiders have $3 \times 8 = 24$ legs. The 3 tortoises have $3 \times 4 = 12$ legs. That's 36 legs all together.



- A) 14 B) 17 C) 36 D) 42
2. Only 2010's digit sum is a multiple of 3.

- A) 2009 B) 2010 C) 2011 D) 2012
3. One factor is 0, so the product is 0.

- A) 6400 B) 64 C) 12 D) 0

4. The perimeter of a square is $4 \times$ length of a side $= 4 \times 5 = 20$.

- A) 10 B) 20 C) 25 D) 50

5. A sum does not change when the addends are regrouped.

- A) $(13 + 15) + 17$ B) $(13 + 15) + (13 + 17)$
C) $(13 \times 15) + (13 \times 17)$ D) $13 \times (15 + 17)$

6. The cost of 5 rides on the Ferris wheel is $5 \times 50¢ = \$2.50$. The cost of 10 rides on the roller coaster is $10 \times \$1.25 = \12.50 . The total cost is \$15.

- A) \$13 B) \$14 C) \$15 D) \$16

7. $\frac{1}{8} + \frac{2}{8} + \frac{3}{8} = \frac{1+2+3}{8} = \frac{6}{8} = \frac{3}{4}$.

- A) $\frac{3}{4}$ B) $\frac{3}{8}$ C) $\frac{3}{16}$ D) $\frac{5}{24}$

8. From 8 AM yesterday until 8 AM today is 24 hours. From 8 AM till noon is 4 hours, and from noon till 3 PM is 3 hours. In all, it's $24 + 4 + 3 = 31$ hours.

- A) 7 B) 19 C) 31 D) 35

9. $2008 + 2009 + 2010 + 2011 + 2012 = 5 \times 2010$.

- A) 10050 B) 10051 C) 10052 D) 10053

10. Since $42 = 2 \times 3 \times 7$, 42 has 3 prime factors.

- A) 1 B) 2 C) 3 D) 4

11. The sum of the degree-measures in *any* triangle is 180. Half of 180 is 90.

- A) 45 B) 90 C) 180 D) 360

12. As shown below, all choices except 200 are perfect squares.

- A) $100 = 10^2$ B) $144 = 12^2$ C) $196 = 14^2$ D) 200

13. The only common factor of any two consecutive whole numbers is 1.

- A) 20 B) 12 C) 2 D) 1

14. The number of factors of 6 equals the exponent of 6, so we get 6^5 .

- A) 6×5 B) 5^6 C) 6^5 D) 4^6

15. Amy's age is three times her little sister Bo's age, so Bo is $18 \div 3 = 6$. Since Charles' age is three times the sum of Amy's and Bo's ages, Charles' age is $3 \times (18 + 6) = 3 \times 24 = 72$.

- A) 54 B) 60 C) 66 D) 72

16. $0.1 \times 0.2 = 0.02 = 1/50$, and $1/50 \times 250 = 5$.

- A) 1000 B) 530 C) 500 D) 250

17. There are 5 in each block of 10 up to 2091. There are 4 more up to 2099.

- A) 44 B) 45 C) 88 D) 89

18. The average of five equally-spaced numbers is the middle number.

- A) 85 B) 85.5 C) 86 D) 86.5

19. If 6 students are wearing jeans, then $18 - 6 = 12$ are not. The ratio of students wearing jeans to students *not* wearing jeans is $6:12 = 1:2$.

- A) 1:2 B) 1:3 C) 2:3 D) 2:1

20. The sum of 2 numbers is 12, and their product is 35. The numbers are 5 and 7. The larger of the two numbers is 7.

- A) 8 B) 7 C) 6 D) 5

21. Since 123 is divisible by 3, and $(8+9+10+11) = 38$ is even, 3×2 is a factor.

- A) 9 B) 8 C) 7 D) 6

22. Since twice the perimeter of a square, tripled, is 72, the perimeter is $(72 \div 3) \div 2 = 12$. One side's length is $12 \div 4 = 3$, so the square's area is 9.

- A) 3 B) 9 C) 12 D) 16

23. Choice C is correct as shown below.

- A) $1^5 = 1$ B) $2^4 = 16$ C) $3^3 = 27$ D) $4^2 = 16$

24. May has 16 odd-numbered and 15 even-numbered days. Dave ran 16 times for 15 min. and 15 times for 44 min. That's a total of $(15 \times 16) + (15 \times 44) = 15 \times (16 + 44)$ min. = 15 hours.

- A) 15 B) 30 C) 60 D) 900

25. $5 \times \sqrt{5} \times 5 \times \sqrt{5} = 5 \times 5 \times \sqrt{5} \times \sqrt{5} = 5 \times 5 \times 5$.

- A) $5 \times 5 \times 25$ B) $5 \times 5 \times 5$
C) $5 \times 5 \times 2$ D) 5×5

26. The product of two whole numbers is 30.

- If the numbers are 5 and 6, their sum is $5 + 6 = 11$.

- A) 10 B) 11 C) 13 D) 31

27. $222 \times 66 = (2 \times 111) \times (2 \times 3 \times 11) = (3 \times 111) \times (2 \times 2 \times 11) = 333 \times 44$.

- A) 1 B) 2 C) 3 D) 4

