Information & Solutions

2009-2010 Annual 6th Grade Contest

Tuesday, February 16 or 23, 2010

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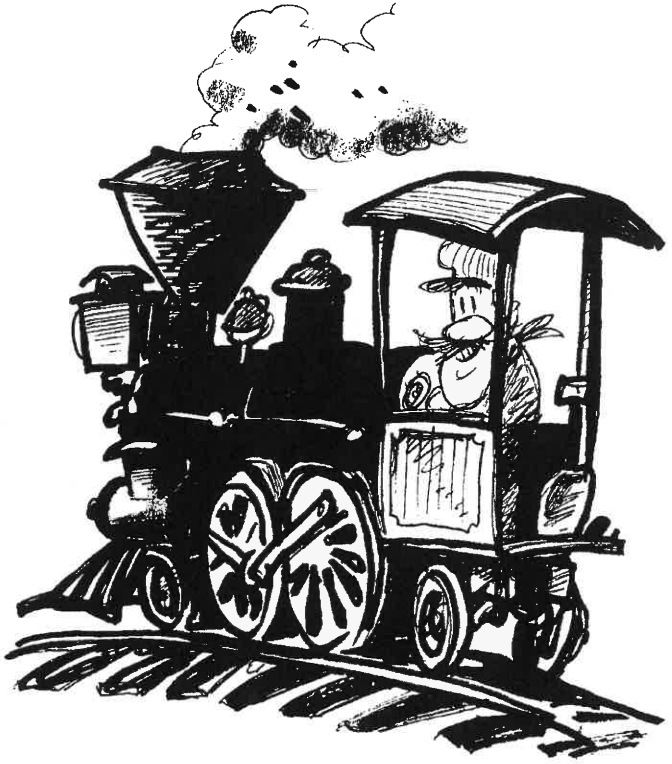
Contest Information

- **Solutions** Turn the page for detailed contest solutions (written in the question boxes) and letter answers (written in the *Answer Column* to the right of each question).
- **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, *deserve commendation!*
- **Answers and Rating Scales** Turn to page 151 for the letter answers to each question and the rating scale for this contest.



	Answers
28. Each number is added 3 times and subtracted once, so B is correct. A) (8+10+12) B) 2 × (8+10+12) C) 3 × (8+10+12) D) 4 × (8+10+12)	28. B
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	29. B
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	30. A
31. Since 1000 ÷ 12 has R4, it's 4 months after Mar. A) March B) May C) June D) July	31. D
32. Multiply the ones digits: 3 × 6 × 9 = 162. A) 1 B) 2 C) 3 D) 4	32. B
33. The value of one of each coin is (1+5+10)¢ = 16¢. Since \$2.40÷16¢ = 15, there are 15 of each coin. The value of 15 nickels is 15 × 5¢ = 75¢. A) 15¢ B) 50¢ C) 75¢ D) 95¢	33. C
34. Each difference is 5. There are 2010÷5 fives = 402 fives = 5^{402}. A) 5^{402} B) 5^{401} C) 5 × 402 D) 5 × 401	34. A
35. Two equilateral triangles share sides with a square as shown. The figure has 6 sides of length 4, so the perimeter is 6 × 4 = 24. A) 48 B) 40 C) 32 D) 24	35. D
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	36. C
37. 3×300 = 900, and 900÷3000 = 0.3 = 30%. A) 10 B) 25 C) 30 D) 50	37. C
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 kg = 2×3+3×7 C) 30 kg = 3×3+3×7 D) 39 kg = 6×3 + 3×7	38. A
39. If (1×2×3×…×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	39. D
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	40. A

The end of the contest **6**

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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

Answer: 1. C

2. Only 2010's digit sum is a multiple of 3.
A) 2009 B) 2010 C) 2011 D) 2012

Answer: 2. B

3. One factor is 0, so the product is 0.
A) 6400 B) 64 C) 12 D) 0

Answer: 3. D

4. The perimeter of a square is 4 × length of a side = $4 \times 5 = 20$.
A) 10 B) 20 C) 25 D) 50

Answer: 4. B

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) $13 \times (15 + 17)$

Answer: 5. A

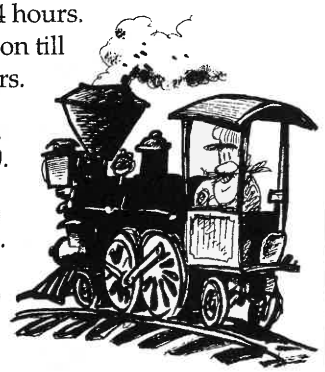
6. The cost of 5 rides on the Ferris wheel is $5 \times 50¢ = \$2.50$. The cost of 10 rides on the roller coaster is $10 \times \$1.25 = \$12.50$. The total cost is \$15.
A) \$13 B) \$14 C) \$15 D) \$16

Answer: 6. C

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) $\frac{5}{24}$

Answer: 7. A

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



Answer: 8. C

9. $2008 + 2009 + 2010 + 2011 + 2012 = 5 \times 2010$.
A) 10050 B) 10051 C) 10052 D) 10053

Answer: 9. A

10. Since $42 = 2 \times 3 \times 7$, 42 has 3 prime factors.
A) 1 B) 2 C) 3 D) 4

Answer: 10. C

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

Answer: 11. B

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

Answer: 12. D

13. The only common factor of any two consecutive whole numbers is 1.
A) 20 B) 12 C) 2 D) 1

Answer: 13. D

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

Answer: 14. C

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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

Answer: 15. D

16. $0.1 \times 0.2 = 0.02 = 1/50$, and $1/50 \times 250 = 5$.
A) 1000 B) 530 C) 500 D) 250

Answer: 16. D

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

Answer: 17. A

18. The average of five equally-spaced numbers is the middle number.
A) 85 B) 85.5 C) 86 D) 86.5

Answer: 18. C

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

Answer: 19. A

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

Answer: 20. B

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

Answer: 21. D

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

Answer: 22. B

23. Choice C is correct as shown below.
A) $1^5 = 1$ B) $2^4 = 16$ C) $3^3 = 27$ D) $4^2 = 16$

Answer: 23. C

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

Answer: 24. A

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

Answer: 25. B

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

Answer: 26. B

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

Answer: 27. A

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