



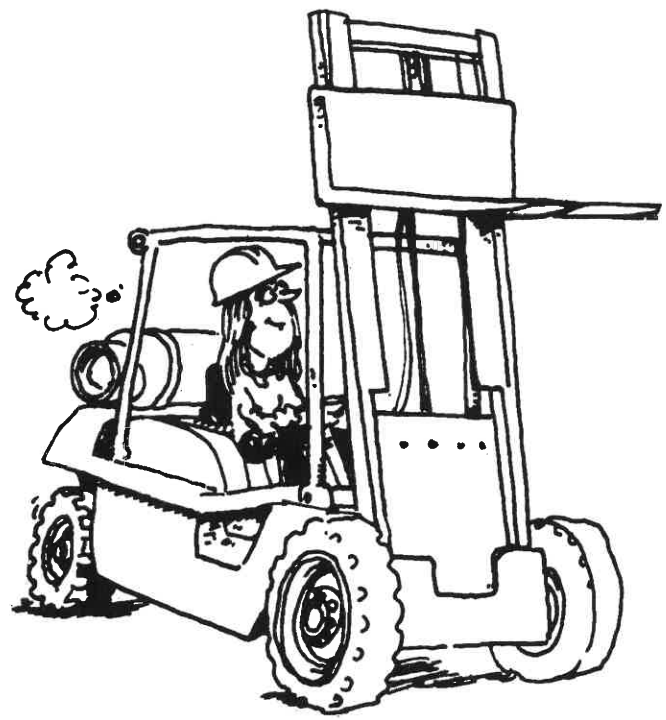
Information & Solutions

Tuesday, February 19 or 26, 2013

6

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 28 points (80% correct); students with half that, 14 points, *deserve commendation!*
- **Answers and Rating Scales** Turn to page 149 for the letter answers to each question and the rating scale for this contest.



26. There was sunny weather on 12 of 30 days last month; then on 18 days the weather was not sunny. Since $18 \div 30 = 0.6$, that's 60%.



- A) 36% B) 40% C) 60% D) 64%

26.
C

27. Since $\$24 \div \$0.80 = 30$ and $\$24 \div \$1.20 = 20$, I bought 50 magnets for \$48. Thus, the average cost per magnet was $\$48 \div 50 = \0.96 .

- A) \$0.92 B) \$0.96 C) \$1.00 D) \$1.04

27.
B

28. The average of 1.75 and 7.25 is equidistant from them. The average is $(1.75 + 7.25) \div 2 = 4.5$.

- A) 2.75 B) 3.25 C) 3.75 D) 4.5

28.
D

29. $2^3 \times 3^4 \times 4^5 \times 6^7 \times 9^{10} = 2^3 \times 3^4 \times 2^{10} \times (2^7 \times 3^7) \times 3^{20} = 2^{3+10+7} \times 3^{4+7+20}$.

- A) $2^{15} \times 3^{21}$ B) $2^{20} \times 3^{31}$ C) $2^{15} \times 3^{40}$ D) $2^{105} \times 3^{280}$

29.
B

30. The ratio of red cars to black cars is $8:5 = 24:15$; the ratio of black cars to white cars is $3:4 = 15:20$. The minimum number of cars is $24 + 15 + 20 = 59$.

- A) 20 B) 59 C) 74 D) 91

30.
B

31. The sum is $25 + 26 + \dots + 30 = 165$. Since $165 \div 10 = 16.5$, the middle numbers are 16 and 17. The sum is $12 + 13 + \dots + 16 + 17 + \dots + 20 + 21$.

- A) 17 B) 18 C) 21 D) 26

31.
C

32. A radius of a circle with area $36\pi \text{ cm}^2$ is 6 cm. The width of the rectangle is 6 cm. A diameter of the circle is 12 cm, so the length of the rectangle is 24 cm. The perimeter of the rectangle is $2 \times (6 + 24) = 60 \text{ cm}$.

- A) 60 cm B) 90 cm C) 144 cm D) 172 cm

32.
A

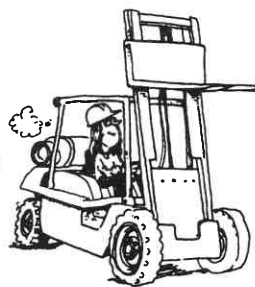
33. For every 3 numbers left, one multiple of 4 was removed. Since $2345 \div 3 = 781 \text{ R}2$, 781 multiples of 4 were removed. Since there is a remainder of 2, the last number in the list was $4 \times 781 + 2 = 3126$.

- A) 3126 B) 3127 C) 3129 D) 3130

33.
A

34. Each day I loaded 90 boxes instead of 120, I was 30 boxes short. If I were on schedule, I would need to load 720 boxes the last 6 days. I had to load 480 extra boxes. Since $480 \div 30 = 16$, I had $16 + 6 = 22$ days to finish this temporary job.

- A) 10 B) 16 C) 22 D) 26



34.
C

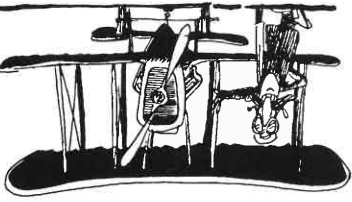
35. Working backwards, I counted $\frac{2}{3}$ the number of leaves on each previous day. So on Sunday, I counted $(\frac{2}{3})^5 \times 2430 = 320$ leaves.

- A) 160 B) 240 C) 280 D) 320

35.
D

The end of the contest 6

1.	A	If 21 of his flights were at night, then $28 - 21 = 7$ flights were not at night.
2.	A	The sum $12 + 34 + 56$ equals each of the following <i>except</i> choice D. A) $46 + 56$ B) $12 + 90$ C) $34 + 68$ D) $46 + 68$
3.	A	If I double the number of pens in my backpack and add 5, I get 23. Subtract 5 and divide by 2 to get $(23 - 5) \div 2 = 9$. A) 9 B) 14 C) 36 D) 56
4.	C	Distribute subtraction over addition: $65 - (43 + 21) = (65 - 43) - 21$. A) 1 B) 12 C) 21 D) 34
5.	B	One dime and quarter are worth 35¢. One dime less than 5¢ is 90¢. Since $90¢ - 35¢ = 55¢$, the coins in my pocket are worth 55¢. A) 45¢ B) 55¢ C) 65¢ D) 75¢
6.	A	Five days before Wednesday is Friday. A) Friday B) Sunday C) Monday D) Tuesday
7.	D	Since each choice is odd, 2 must be one of the addends. A) $11 = 2 + 9$ B) $17 = 2 + 15$ C) $23 = 2 + 21$ D) $31 = 2 + 29$
8.	D	Each of my shoes weighs the same. If 2 of my shoes weigh 12 kg together, then the total weight of 12 of my shoes is $6 \times 12 \text{ kg} = 72 \text{ kg}$. A) 2 kg B) 24 kg C) 36 kg D) 72 kg
9.	D	$9.25 \times 25 = 5 \times 5 \times 25$. A) 2 B) 5 C) 10 D) 25
10.	B	$10. (6 \times 12) + (12 \times 2) = 96 = 32 \times 3$. A) 48 B) 32 C) 24 D) 12
11.	A	Since 31 divided by 4 has a remainder of 3, Giggles the Clown could have a total of 31 dots on his costume. A) 31 B) 32 C) 33 D) 34
12.	C	420 minutes = 7 hrs.; 7 hrs. before 4 P.M. is 9 A.M. A) 4:00 A.M. B) 7:00 A.M. C) 9:00 A.M. D) 11:40 A.M.
13.	C	$13. (10 \times 100) + (10 \times 10) + 10 = 1110$. A) 111 B) 1101 C) 1110 D) 101010



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14.	B	Professor Quack had 7 more students this year than he had last year. Subtract 7 from each choice and then add the result to that choice to see if you get 43: $(25 - 7) + 25 = 43$. A) 18 B) 25 C) 32 D) 36
15.	D	In all, 27 trapezoids have 4×27 sides = 108 sides = 3×36 sides, the same number as in 36 triangles. A) 16 B) 18 C) 27 D) 36
16.	D	There are 6 roses for every 5 daisies in my garden, so $6/(6 + 5) = 6/11$ of the 66 flowers I have are roses. Thus, $6/11 \times 66 = 36$ are roses. A) 11 B) 22 C) 30 D) 36
17.	A	The sum of two different odd numbers and an even number must be even. A) 52 B) 61 C) 65 D) 77
18.	C	On a Sunday I put two rabbits in a cage. If the number of rabbits in the cage doubled every day, then I had 4 rabbits, 8 rabbits, 16 rabbits, 32 rabbits, 64 rabbits, 128 rabbits, ... A) Thursday B) Friday C) Saturday D) Sunday
19.	C	A pomegranate costs as much as 4 pawpaws. If 1 pomegranate costs 50¢ more than 2 pawpaws, then 2 pawpaws cost 50¢ and 4 cost \$1. A) 50¢ B) 75¢ C) \$1 D) \$1.50
20.	B	Work backwards: $6 \times 18 = 108$; $108 \div 3 = 36$. A) 9 B) 36 C) 72 D) 108
21.	C	The given sum = $11 + (12 + 10) + (13 + 20) + (14 + 30) + (15 + 40) + (16 + 50) - 150$. A) 50 B) 100 C) 150 D) 200
22.	A	Add 15 to each choice, divide by 3, and add 3 jumps. If the result is the same as the choice, then it's correct. Since $(12 + 15) \div 3 + 3 = 12$, choice A is correct. A) 12 B) 18 C) 21 D) 24
23.	D	The value of 10 nickels and 9 dimes is \$1.40. The value of 5 quarters is \$1.25, and \$1.40 - \$1.25 = 15¢. A) 4 B) 5 C) 14 D) 15
24.	B	Any odd multiple of 5 has a ones digit of 5. The numbers are 5, 15, 25, ..., 85, 95. There are 10. A) 9 B) 10 C) 11 D) 19
25.	C	The remainders are 3, 4, and 1; their sum is 8. A) 3 B) 6 C) 8 D) 12



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