

<p>26. Clark got <math>1/3 = 3/9</math> of the coins. Lois got <math>1/3</math> of <math>2/3 = 2/9</math> of the coins. That is <math>3/9 + 2/9 = 5/9</math>, so Lex had <math>4/9</math> left. Since <math>4/9</math> of the coins is 144, <math>2/9</math> of the coins is 72. A) 72    B) 48    C) 36    D) 32</p>	<p>26. A</p>
<p>27. The ones digit of a 4th power can be 0, 1, 5, or 6. It can never be 3. A) 1    B) 3    C) 5    D) 6</p>	<p>27. B</p>
<p>28. Continue subtracting 4¢ from 2458¢ until the difference is a multiple of 9. This happens when the difference is 2430¢ which is <math>270 \times 9</math>¢. A) 273    B) 272    C) 271    D) 270</p>	<p>28. D</p>
<p>29. I scored a total of 720 on all 8 tests. The total of 435 on the first 5 tests leaves a total of 285 for the last 3 tests, so the average is <math>285 \div 3 = 95</math>. A) 96    B) 95    C) 94    D) 93</p>	<p>29. B</p>
<p>30. The cost of the calculus book is \$21. The cost of my geometry book is <math>\\$21 \times (4/3) = \\$28</math>. My algebra book costs <math>\\$28 \times 2 = \\$56</math>. All 3 books cost <math>\\$21 + \\$28 + \\$56 = \\$105</math> in total. A) \$28    B) \$56    C) \$84    D) \$105</p>	<p>30. D</p>
<p>31. A multiple of 3, 4, and 5 is a multiple of 60, and <math>16 \times 60 &lt; 1000 &lt; 17 \times 60</math>. A) 14    B) 15    C) 16    D) 17</p>	<p>31. C</p>
<p>32. Each number in the second sum is 18 greater than the corresponding number in the first sum. Thus the second sum is <math>1935 + 18 \times 9 = 2097</math>. A) 2015    B) 2017    C) 2097    D) 2099</p>	<p>32. C</p>
<p>33. <math>3^{336} \times 9^{336} \times 27^{336} = 3^{336} \times 3^{672} \times 3^{1008} = 3^{336+672+1008} = 3^{2016}</math>. A) <math>3^{1008}</math>    B) <math>3^{1344}</math>    C) <math>3^{1680}</math>    D) <math>3^{2016}</math></p>	<p>33. D</p>
<p>34. A unit circle's area is <math>\pi</math>. A circle with <math>r = 1.5</math> has area <math>2.25\pi = \pi + 1.25\pi</math>. A) 50    B) 100    C) 125    D) 150</p>	<p>34. C</p>
<p>35. By the Counting Principle, there are a total of <math>26 \times 26 = 676</math> possible initials. If each possibility were assigned to 2 people, there would be <math>676 \times 2 = 1352</math> people. The next person would be the 3rd person to share a possibility. A) 1353    B) 1352    C) 677    D) 676</p>	<p>35. A</p>



# Information & Solutions

Tuesday, February 16 or 23, 2016

6

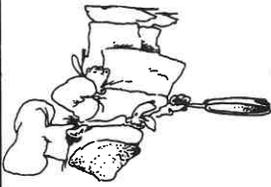
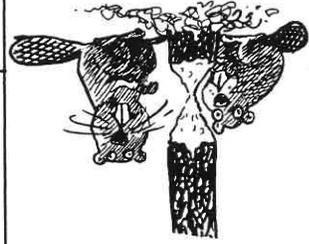
## Contest Information

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



The end of the contest 16

1.	A) 504 B) 508 C) 1008 D) 8064	1. $2 \times 2016 = 2 \times (4 \times 504) = (2 \times 4) \times 504 = 8 \times 504$ .
2.	A) \$277.78 B) \$277.88 C) \$55.56 D) \$55.66	2. Bert Sampson sold his 2 beavers for a total of \$444.44. Mho gave him \$500 for them. The change is $\$500.00 - \$444.44 = \$55.56$ .
3.	D	3. The sum of the measures of the angles in a trapezoid is always $360^\circ$ .
4.	B	4. $10 \times 20 \times 30 \times 40 = (1 \times 2 \times 3 \times 4) \times 10^4 = 24 \times 10^4$ .
5.	C	5. This is $(1 + 999) + (2 + 998) + (3 + 997) + (4 + 996) = 4000$ .
6.	A	6. $2016 = 7 \times 288 = 8 \times 252 = 9 \times 224$ .
7.	C	7. The tenths digit is 6 and the hundredths digit is 7. Their sum is 13.
8.	C	8. 5 out of 6 of the 2016 lightbulbs are not defective. Thus $2016 \times 5/6 = 1680$ lightbulbs are not defective.
9.	D	9. Divide $12012 \div 24$ to get remainder 12. 12 hours after 7 A.M. is 7 P.M.
10.	B	10. For any 2 such primes, the factors are 1, the primes, and their product.
11.	B	11. Adam ate $5/20$ of the pancakes, Jerry ate $7/20$ , and Steve ate $6/20$ , for a total of $18/20$ . That means Dan ate $(20 - 18)/20 = 2/20$ of them.
12.	D	12. The greatest common factors of the 4 pairs of numbers are 2, 5, 3, and 1, respectively.



13.	B	13. I donate a total of $\$100 + 2 \times \$50 + 3 \times \$20 + 4 \times \$10 + 5 \times \$5 = \$325$ . Each person receives $\$325 \div 5 = \$65$ .
14.	C	14. Paul begins 24 m behind Peter. The distance between them decreases by 3 m per second. Paul needs $24 \div 3 = 8$ seconds to catch Peter.
15.	B	15. The product of two different nonzero integers can never be 0.
16.	D	16. The largest two-digit factor is $3^2 \times 11 = 99$ .
17.	C	17. The number of hours in 10 days is 240; 240 minutes is $240 \div 60 = 4$ hours.
18.	A	18. The sum of any multiple of 100 and 84 is divisible by 4.
19.	B	19. Each pair has 2 intersection points. The 6 pairs have 12 such points.
20.	D	20. $50/20 = 2.5 = 2.5 \times 100\% = 250\%$ .
21.	A	21. The sum of any even number of odd integers is always even.
22.	A	22. Divide 180 into $1 + 3 + 6 = 10$ equal parts. One angle measures $18^\circ$ , and the other angles measure $3 \times 18^\circ = 54^\circ$ and $6 \times 18^\circ = 108^\circ$ .
23.	D	23. Suppose the side-length is 1. (Choose any length.) The perimeter is 4 and its square is 16. The area of the square is 1. The quotient is $16 \div 1 = 16$ .
24.	C	24. $1000 \text{ m/s} = 1 \text{ km/s} = 3600 \text{ km/hr}$ .
25.	D	25. Since $C = 2\pi r$ and $r = \pi$ , $C = 2\pi \times \pi = 2\pi^2$ .

