

30. How many of the first 1000 positive integers are multiples of all four of the numbers 2, 3, 4, and 5?

- A) 8      B) 9      C) 16      D) 17

31. If the sum of 2 integers is 20, their product could equal any of the following *except*

- A) -125      B) -21      C) 19      D) 60

32. What is the ratio of the number of seconds in 45 minutes to the number of seconds in one hour?

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

33.  $\frac{?}{?}$  of 50 = 50% + 50%

- A) 1%      B) 2%      C) 50%      D) 100%

34. The absolute value of the difference between a number and its reciprocal can be as small as  $\frac{?}{?}$ , but no smaller.

- A) 0      B)  $\frac{1}{5}$       C)  $\frac{7}{12}$       D)  $\frac{3}{2}$

35. If 40% of the number of people shipwrecked on my island equals 50% of the number shipwrecked on yours, then the number of people shipwrecked on my island is  $\frac{?}{?}$  of the number shipwrecked on yours.

- A) 80%      B) 90%      C) 120%      D) 125%

36. On a math test, twelve 8th graders averaged 80.00, while twenty 7th graders averaged 70.00. For all 32 students, the average was

- A) 72.25      B) 73.75      C) 74.75      D) 75.00

37.  $(\sqrt{\sqrt{x}})^4 =$

- A)  $\sqrt{x}$       B)  $x$       C)  $x^2$       D)  $x^4$

38. In a rectangle with area 72 cm<sup>2</sup> and perimeter 34 cm, the length of the longer side exceeds that of the shorter side by

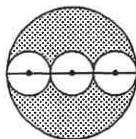
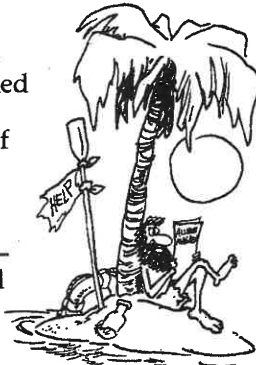
- A) 1 cm      B) 6 cm      C) 18 cm      D) 38 cm

39. Three small congruent circles, surrounded by a large circle, have their centers on a diameter of the large circle, as shown. If the area of the shaded region is  $24\pi$ , what is the area of one small circle?

- A)  $12\pi$       B)  $9\pi$       C)  $4\pi$       D)  $\pi$

40.  $\frac{1}{2^1} + \frac{1}{2^2} + \frac{1}{2^3} + \dots + \frac{1}{2^{50}} = \frac{(2^{49} + 2^{48} + 2^{47} + \dots + 2^1) + ?}{2^{50}}$

- A) 0      B) 1      C)  $2^{50}$       D)  $1 + 2^{50}$



2001-2002 Annual 8th Grade Contest

Tuesday, February 19 or 26, 2002

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Instructions

- **Time** You will have only 30 minutes working time for this contest. You might be *unable* to finish all 40 questions in the time allowed.
- **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, *should be commended!*
- **Format and Point Value** This is a multiple-choice contest. Each answer is an A, B, C, or D. Write each answer in the *Answers* column to the right of each question. A correct answer is worth 1 point. Unanswered questions get no credit. You **may** use a calculator.



The end of the contest 8

1.	$201 + 401 + 601 = 101 + 301 + 501 + \frac{1}{2}$ A) 100 B) 200 C) 300 D) 600
2.	My father got upset when he saw my test grade. My grade was a product of two consecutive integers. My test grade could have been A) 45 B) 48 C) 54 D) 56
3.	Of the following, which number is greatest? A) 0.011 B) 0.0111 C) 0.0101 D) 0.01
4.	How many pennies equal one-tenth of ten dollars? A) 1 B) 10 C) 100 D) 1000
5.	On the average, it rains 125 days each year in New York City. To the nearest 1%, it rains $\frac{1}{2}$ % of the days in New York City. A) 34 B) 33 C) 13 D) 3
6.	Each of the following is a factor of 444 444 444 except A) 4 B) 11 C) 111 D) 444
7.	If 2003 is the largest of 3 consecutive integers, the smallest is A) 1999 B) 2000 C) 2001 D) 2005
8.	$0.77 \times 111 = 77 \times 1.11 \times \frac{1}{2}$ A) 0.01 B) 0.1 C) 1 D) 10
9.	The reciprocal of a positive prime number is always A) odd B) even C) prime D) positive
10.	Which of the following is a whole number? A) $\frac{7}{135}$ B) $\frac{9}{145}$ C) $\frac{11}{155}$ D) $\frac{7}{175}$
11.	What is the side-length of a square that has the same perimeter as an equilateral triangle with side-length 12? A) 3 B) 9 C) 16 D) 36
12.	$1 + 2 \times 3 + 4 = 1 + 2 \times (3 + \frac{1}{2})$ A) 2 B) 4 C) 5 D) 7
13.	Gumballs cost 1¢ each, and gumdrops cost 2¢ each. How much more will it cost to buy 100 gumdrops than 50 gumballs? A) \$1.00 B) \$1.50 C) \$2.00 D) \$3.50
14.	$\frac{7+8}{(7 \times 7) + (7 \times 8)} = \frac{7}{1} + \frac{1}{2}$ A) 0 B) $\frac{7}{1}$ C) $\frac{8}{1}$ D) 1
15.	$16 \times 25 \times 36 = (\frac{1}{2})^2$ A) 15 B) 25 C) 77 D) 120



16.	What is the average measure of the angles in an acute triangle? A) 30° B) 45° C) 60° D) 90°
17.	How many digits are in the product $99\,999 \times 99\,999$ ? A) 11 B) 10 C) 8 D) 5
18.	$9 \times 9 + 9 \div 9 - 9 =$ A) 73 B) 45 C) 9 D) 1
19.	$\frac{1}{2}$ is twice as many days after Sunday as it is before Tuesday. A) Mon. B) Wed. C) Thurs. D) Sat.
20.	$0.2\%$ of $2\%$ of 20 = A) 0.0008 B) 0.008 C) 0.08 D) 8.0
21.	If the product of two numbers is positive, their sum cannot be A) positive B) negative C) 0 D) a fraction
22.	What is the remainder when $3^9$ is divided by $9^3$ ? A) 3 - 3 B) $3 \times 3$ C) $3 + 9$ D) $3 \times 9$
23.	The number 33 uses 2 non-zero digits. Altogether, the 50 whole numbers from 1 through 50 use $\frac{1}{2}$ non-zero digits. A) 90 B) 86 C) 50 D) 45
24.	If 3 out of 4 people are into hot soup, then $\frac{1}{2}$ out of 700 are into hot soup. A) 475 B) 500 C) 525 D) 550
25.	Reversing the digits of $\frac{1}{2}$ decreases its value by close to 50%. A) 2991 B) 3002 C) 4008 D) 6003
26.	Which of the following numbers is less than $\frac{1}{4}$ ? A) $\sqrt{\frac{1}{4}}$ B) $\frac{1}{4} \div \frac{1}{4}$ C) $(\frac{1}{4})^2$ D) $1 \div \frac{1}{4}$
27.	If $a \star b = a \times b + b^2$ , what is the value of $8 \star 6$ ? A) 100 B) 84 C) 54 D) 48
28.	The product of a positive number and its additive inverse is A) greater than 1 B) 1 C) 0 D) less than 0
29.	If one person stands at each vertex of a regular hexagon, what is the fewest number of people who must move so that all will be standing in a straight line? A) 5 B) 4 C) 3 D) 2

