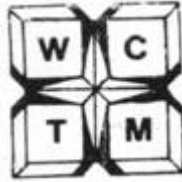


Wolsborn-Drazovich STATE MATHEMATICS 52nd CONTEST, 2008



Test 1

NAME: _____

CLASS 7 & 8 Grade

SCHOOL: _____

SCORING: 20 points for each correct answer, -5 for each wrong answer.

1. The product of the ages of twins and their younger brother is 36. How old are the twins?

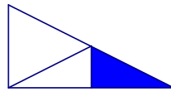
- (A) 2 (B) 3 (C) 6 (D) 9 (E) 12 [1] _____
-

2. The rectangle shown below consists of two squares placed side by side. The perimeter of the rectangle is 60 cm. What is the area of the rectangle in square centimeters?



- (A) 60 (B) 100 (C) 200 (D) 300 (E) 800 [2] _____
-

3. Count all the triangles contained in the figure below. If a triangle is randomly selected from those triangles, what is the probability that at least part of the interior of that triangle is shaded?



- (A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{1}{5}$ (D) $\frac{3}{5}$ (E) $\frac{3}{8}$ [3] _____
-

4. Ashley ran 100 yards in 12 seconds. What was her speed in miles per hour? Round your answer to the nearest hundredth.

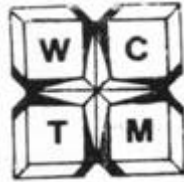
- (A) 0.28 (B) 5.68 (C) 17.05 (D) 60.03 (E) 100.01 [4] _____
-

5. Suppose you purchased a \$60 pair of shoes that is on sale for 40% off and a \$40 shirt that is 20% off. What percent of discount did you get on the total purchase?

- (A) 22% (B) 30% (C) 32% (D) 38% (E) 68% [5] _____
-

Go to back⇒

Wolsborn-Drazovich STATE MATHEMATICS 52nd CONTEST, 2008



Test 2

NAME: _____

CLASS 7 & 8 Grade

SCHOOL: _____

SCORING: 20 points for each correct answer, -5 for each wrong answer.

11. The sequence 2, 3, 5, 6, 7, 10, 11, ... consists of all positive integers that are not squares or cubes. What is the 500th term in the sequence?

- (A) 527 (B) 528 (C) 529 (D) 530 (E) 531 [11] _____

12. Nick used exactly 748 whole square tiles to cover his rectangular kitchen floor. Each tile had a **perimeter** of 24 inches. What is the area of the floor, in square **feet**?

- (A) 31 (B) 187 (C) 748 (D) 2992 (E) 26,928 [12] _____

13. The mean of twelve integers is 12. When a thirteenth integer is included, the mean is zero. What is this thirteenth integer?

- (A) -144 (B) -12 (C) 12 (D) 0 (E) 144 [13] _____

14. A jar contains two red marbles, three blue marbles, and four green marbles. Nikisha draws one marble from the jar. Tom draws from those remaining. What is the probability that Nikisha draws a green marble **and** Tim draws a blue marble?



- (A) $\frac{4}{9}$ (B) $\frac{3}{8}$ (C) $\frac{1}{2}$ (D) $\frac{1}{3}$ (E) $\frac{1}{6}$ [14] _____

15. Alexis read a book with more than 100 and fewer than 200 pages. The sum of the three digits in the number of pages is 10. The second digit is twice the last digit. Find the number of pages in the book. What is the last digit?

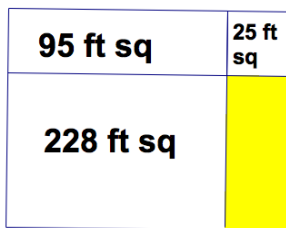
- (A) 2 (B) 3 (C) 4 (D) 5 (E) 6 [15] _____

Go to back \Rightarrow

16. Whitney had to write numbers on tickets for the school play. The ticket numbers ranged from 1 to 325, inclusive. How many digits did she write?

- (A) 325 (B) 844 (C) 867 (D) 875 (E) 975 [16] _____
-

17. A rectangle is divided into four smaller rectangles, with the upper-right corner being a square. Find the area, in square feet, of the shaded rectangle if the three remaining rectangles have areas as given in the diagram.



- (A) 60 (B) 95 (C) 155 (D) 228 (E) 300 [17] _____
-

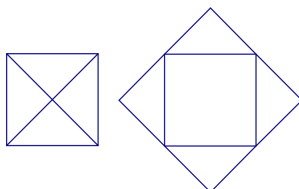
18. The Iron Man Triathlon competition has three events. One contestant swam 6 miles in one hour; rode a bicycle 100 miles, averaging 20 miles per hour; and then ran 24 miles, averaging 10 minutes per mile. What was his average rate for the entire 130 miles, in miles per hour?

- (A) 10 (B) 11.7 (C) 12 (D) 12.4 (E) 13 [18] _____
-

19. A man was born on February 29, 1928. He died January 29, 2004. How many actual birthdays did he get to celebrate during his life (not counting the day he was born as a birthday)? Hint: February has 29 days in years divisible by four.

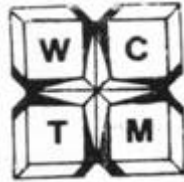
- (A) 18 (B) 19 (C) 36 (D) 75 (E) 76 [19] _____
-

20. The home of Goethe, the great German writer, contains a table whose top is a square consisting of four triangles that fold out to make a larger table. If the original table has a side length of 1 unit, find the length of the side of the new table when the triangles are unfolded.



- (A) $\frac{1}{2}$ (B) 2 (C) $\frac{\sqrt{2}}{2}$ (D) $\sqrt{2}$ (E) $4\sqrt{2}$ [20] _____
-

Wolsborn-Drazovich STATE MATHEMATICS 52nd CONTEST, 2008



Test 3

NAME: _____

CLASS 7 & 8 Grade

SCHOOL: _____

SCORING: 20 points for each correct answer, -5 for each wrong answer.

21. Given that $\frac{2}{3}$ of the committee use $\frac{3}{4}$ of the chairs in the room, what is the least number of members on the committee?

- (A) 8 (B) 9 (C) 12 (D) 16 (E) 18 [21] _____

22. Andy started a rose garden by planting five rose bushes in the fall. Each year thereafter, he expanded his garden planting three more rose bushes in the spring and three in the fall. He now has forty-seven rose bushes. For how many years has he been expanding his rose garden?

- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11 [22] _____

23. A mother drinks eight 8-ounce glasses of filtered water a day, a father drinks five 8-ounce glasses a day, and their child drinks four 8-ounce glasses a day. If they change their filter every 60 gallon, **approximately** how many days will each filter last? You may assume that no one outside the family drinks from this filter. Also know that 1 gallon contains 128 ounces.

- (A) 11 (B) 31 (C) 56 (D) 320 (E) 450 [23] _____

24. If a farmer uses a large tractor, she can plow a field in eight hours. Her sister, using a smaller tractor, can plow the same field in twelve hours. How many hours would it take to plow the field if they worked together?

- (A) $4\frac{4}{5}$ (B) $5\frac{1}{4}$ (C) 8 (D) 10 (E) $10\frac{2}{5}$ [24] _____

25. How many minutes represent ten percent of one full week?

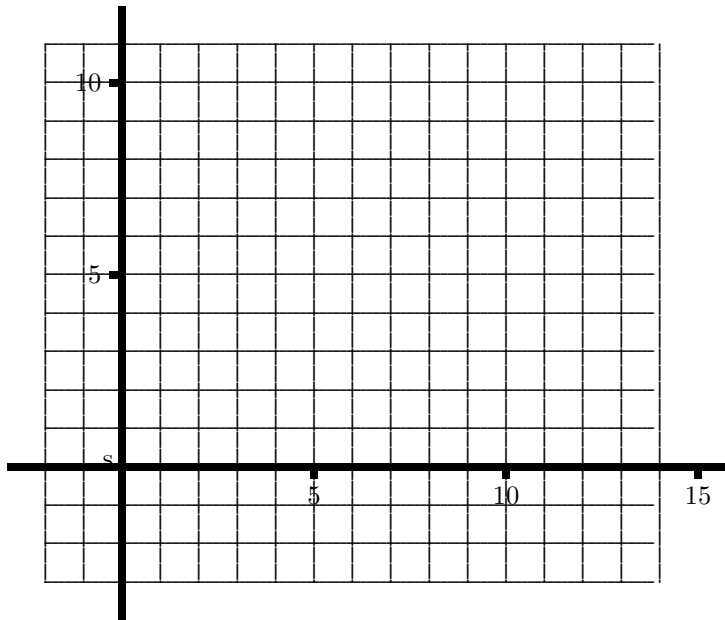
- (A) 144 (B) 168 (C) 252 (D) 504 (E) 1008 [25] _____

26. A random drawing of one ticket is made from a set numbered 1 through 10,000. You have tickets 8775 through 8785. What is the probability of your winning?

- (A) $\frac{1}{10}$ (B) $\frac{1}{1000}$ (C) $\frac{10}{9999}$ (D) $\frac{11}{10,000}$ (E) $\frac{1}{909}$ [26] _____

Go to back⇒

-
27. Find the area, in square units, of a pentagon with vertices at each of the following points: $(8, 10)$, $(0, 6)$, $(0, -2)$, $(12, -2)$, $(12, 6)$.



- (A) 40 (B) 72 (C) 96 (D) 120 (E) 144 [27] _____
-

28. Dates can be abbreviated using two-digit numbers for the day, month, and year. For example, April 25, 2004, can be written as 04-25-04. A date is called a *product date* if the product of the day and the month is equal to the two-digit year. For example, April 3, 2012, which is written as 04-03-12 is a product date since $04 \times 03 = 4 \times 3 = 12$. How many product dates are there for the year 2008?

- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10 [28] _____
-

29. What day would be yesterday if Wednesday were five days before the day after tomorrow?

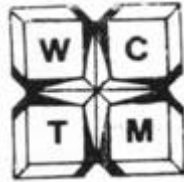


- (A) Sunday (B) Tuesday (C) Wednesday (D) Thursday (E) Friday [29] _____
-

30. Define $a \diamond b = 2a + b$. Find $(2 \diamond 3) \diamond 4$.

- (A) 7 (B) 9 (C) 10 (D) 18 (E) 24 [30] _____
-

Wolsborn-Drazovich STATE MATHEMATICS 52nd CONTEST, 2008



Test 4

NAME: _____

CLASS 7 & 8 Grade

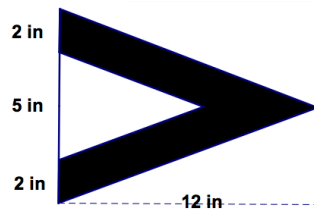
SCHOOL: _____

SCORING: 20 points for each correct answer, -5 for each wrong answer.

31. How many posts are required to support a straight fence that is 100 yards long if a post is placed every 10 yards?

- (A) 9 (B) 10 (C) 11 (D) 15 (E) 20 [31] _____

32. Nautical flags are used to give messages at sea. Substitute flags are used to repeat a letter in a word written with flags. The first substitute flag, shown below, has true colors of blue and yellow but they are shown here as black and white, respectively. Assume that the outside black border of this flag is 2 inches wide, measured along the base — the left-hand edge — of the flag. What is the altitude of the white triangle if the base is 9 inches and the altitude of the flag is 12 inches?

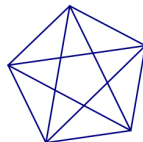


- (A) $6\frac{2}{3}$ (B) $9\frac{1}{3}$ (C) $9\frac{2}{3}$ (D) 10 (E) 11 [32] _____

33. Yolanda's Yummy Ice Cream Shoppe was giving away samples of its new flavors: yum yum mint, choco chips, and nutty nosh. 45 people had mint, 56 had nosh and 63 had chips. 18 people sampled both mint and nosh, 26 tasted both chips and nosh, and 20 had both chips and mint. 8 people sampled all three. How many people tried the new flavors?

- (A) 164 (B) 155 (C) 132 (D) 108 (E) 85 [33] _____

34. How many triangles are in a regular pentagon drawn with its diagonals?



- (A) 11 (B) 25 (C) 30 (D) 35 (E) 36 [34] _____

35. A bicycle tire has a diameter of 66 centimeter. Approximately how many times must the tire rotate to travel 1 kilometer?

- (A) 5 (B) 10 (C) 48 (D) 480 (E) 960 [35] _____

Go to back⇒

36. Three consecutive counting numbers have a sum that is 20% of their product. What is the product of these three numbers?

- (A) 12 (B) 17 (C) 60 (D) 336 (E) 720 [36] _____

37. Consider the following list of data points:

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

What one number should be removed from the list so that the resulting average is 6.1?

- (A) 3 (B) 5 (C) 7 (D) 9 (E) 11 [37] _____

38. Letters have replaced some of the digits in the addition expression below. Given that each digit 1 through 9 appears exactly once in the expression when the digits are revealed, which digit should replace the letter b?

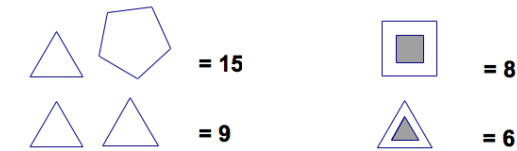
$$\begin{array}{r} a\ 4\ b \\ +\ 2\ c\ 5 \\ \hline d\ 1\ e \end{array}$$

- (A) 3 (B) 6 (C) 7 (D) 8 (E) 9 [38] _____

39. When Jorge took his place in the marching band, he was one person in a rectangular array of musicians. He noticed that he was 10th from the front, 7th from the back, 3rd from the left, and 8th from the right. How many musicians were in the band?

- (A) 110 (B) 160 (C) 170 (D) 176 (E) 187 [39] _____

40. The following examples come from a geometric system of codes.

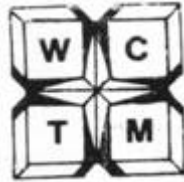


Using their values, find the value of the following symbol.



- (A) 28 (B) 22 (C) 19 (D) 16 (E) 11 [40] _____

Wolsborn-Drazovich STATE MATHEMATICS 52nd CONTEST, 2008



Test 5

NAME: _____

CLASS 7 & 8 Grade

SCHOOL: _____

SCORING: 20 points for each correct answer, -5 for each wrong answer.

41. What day of the week begins a month that has a Friday the 13th?
 (A) Sunday (B) Monday (C) Wednesday (D) Thursday (E) Saturday [41] _____

42. A certain brand of chocolate is packaged in a box that holds only one chocolate, a box that holds five chocolates, or a box that holds twenty-five chocolates. How many boxes are needed to fill an order for 116 chocolates if the least number of boxes are used and each box is filled?



- (A) 5 (B) 7 (C) 8 (D) 12 (E) 13 [42] _____

43. The n th term in a sequence is $2n + 3$ for all counting numbers n . What is the arithmetic mean of the first five terms in the sequence?

- (A) $8\frac{1}{2}$ (B) 9 (C) $9\frac{1}{2}$ (D) 10 (E) $10\frac{1}{2}$ [43] _____

44. You leave for your summer vacation from Seattle, Washington at 4:00 A.M. on Saturday morning, crossing the International Date Line on your way to India. You land in India at 10:00 P.M. Sunday night. Since you're traveling during Daylight Savings Time, Seattle is 7 hours *behind* Greenwich Mean Time, and India is $5\frac{1}{2}$ hours *ahead* of Greenwich Mean Time. Including any layovers, how many hours do you actually spend in transit? Hint: one way to keep things straight is to convert all times to Greenwich Mean Time.

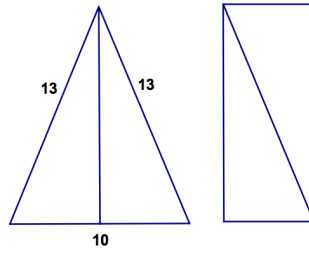
- (A) $27\frac{1}{2}$ (B) $29\frac{1}{2}$ (C) $40\frac{1}{2}$ (D) 42 (E) $54\frac{1}{2}$ [44] _____

45. Initially, three-digit codes were used to identify which long distance phone company you were using. If the initial digit wasn't zero, how many codes were available?

- (A) 720 (B) 729 (C) 810 (D) 900 (E) 1000 [45] _____

Go to back \Rightarrow

46. The isosceles triangle is cut in half and reassembled as the rectangle shown below. What is the perimeter of the rectangle?



- (A) 16.6 (B) 23 (C) 26 (D) 26.6 (E) 34 [46] _____

47. Max has only 20 minutes before he must go to bed, but he wants to play a soccer game that he found on the Internet. The computer downloads at a rate of 58,000 bytes an hour. The game that Max wants to play consists of 8,000 bytes. How much playing time, to the nearest second, does Max have after the game downloads but before he goes to bed?

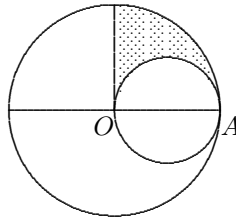
- (A) 8 minutes 16 seconds (B) 8 minutes 17 seconds (C) 10 minutes 43 seconds
 (D) 11 minutes 43 seconds (E) 19 minutes 52 seconds [47] _____

48. Predict the value of x in the table below.

In	0	2	8	10	18
Out	5	11	29	x	59

- (A) 35 (B) 41 (C) 44 (D) 47 (E) 54 [48] _____

49. Approximate the area, in square units, of the shaded region in the diagram below. Let the length of \overline{OA} be 6 units.



- (A) 3.1 (B) 14.1 (C) 21.9 (D) 28.3 (E) 113.1 [49] _____

50. Two positive integers have a sum of 30 and a product of 144. Find the sum of the reciprocals of the two integers.

- (A) $\frac{1}{30}$ (B) $\frac{1}{6}$ (C) $\frac{5}{24}$ (D) $\frac{5}{12}$ (E) $\frac{37}{72}$ [50] _____

Grades 7-8
2008 Math Contest Exam

Exam	T1	T2	T3	T4	T5
P1	c	b	b	c	a
P2	c	b	a	a	c
P3	d	a	c	d	b
P4	c	e	a	d	b
P5	c	b	e	d	d
P6	d	c	d	c	e
P7	a	a	d	b	d
P8	c	e	b	a	a
P9	c	a	e	b	b
P10	c	d	d	a	c