GRISSOM HIGH SCHOOL MATH TOURNAMENT
Pre-Algebra
April 11, 2009

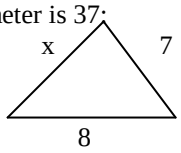
1. Solve for x: $2x - 3 = 11 + 3x$

A. 7 B. 14 C. 14/5 D. 5 E. N.O.T.A.

2. What is the remainder when 2069 is divided by 24?

A. 5 B. 9 C. 13 D. 22 E. N.O.T.A.

3. BAD QUESTION Find x if the perimeter is 37:

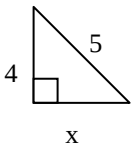


A. 12 B. 37 C. 15 D. 22 E. N.O.T.A.

4. Solve for x: $2(5x + 7x - 3x) - 3x(5) = 21$

A. 5 B. 6 C. 7 D. 8 E. 9

5. Find the sum of all possible values of x:



A. 12 B. 9 C. $\sqrt{41}$ D. 3 E. 4

6. The length and width of a rectangle are 6 and 4. What is the length of the diagonal?

A. $3\sqrt{3}$ B. $4\sqrt{13}$ C. $2\sqrt{13}$ D. $5\sqrt{3}$ E. N.O.T.A.

7. If 9 times a number is 2, then 100 times the reciprocal of the number is:

A. 140 B. 160 C. 250 D. 200 E. N.O.T.A.

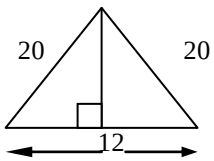
8. Find the difference between the median and the mean of this set of numbers: 100, 41, 60, 23, 30.

A. 42.5 B. 10 C. 9.8 D. 8.8 E. N.O.T.A.

9. Choose the best choices for describing the number 7.5:
I. Real II. Integer III. Rational IV. Irrational

A. I and II B. I and III C. I, II, and III D. I E. N.O.T.A.

10. Find the area of the triangle:



A. 52 B. 48 C. 96 D. 120 E. 400

11. Find the sum of all the common factors of 72 and 36.

A. 55 B. 90 C. 91 D. 93 E. 195

12. The sum of 5 consecutive numbers is 330. Find one half of the largest integer.

A. 76 B. 34 C. 68 D. 84 E. N.O.T.A.

13. Find the value of F if C = 40: . $\frac{5}{9}(F-32)=C$

A. 114 B. 104 C. 20/3 D. 16 E. N.O.T.A.

14. Bob likes to walk his dog, Bill, but Bill won't walk unless fed 2.5 pound of steak per mile. Given that steak costs 5 dollars per pound and that Bob wants to walk 5 miles, how much must Bob spend in order to bring his dog along?

A. 6.25 B. 12.50 C. 25.00 D. 62.50 E. 125.00

15. The ratio of two numbers is 2 to 3. The sum of the numbers is 350. If x is the smaller number, find x.

A. 140 B. 160 C. 250 D. 200 E. N.O.T.A.

16. Find the measure of the largest angles in a triangle, if the angles are in the ratio of 1:3:5.

A. 20 B. 40 C. 60 D. 100 E. N.O.T.A.

17. If 8 is 12.5% of x, then x is what percent of 4096. Round the answer to the nearest whole number.

A. 2 B. 26 C. 40 D. 50 E. 70

18. What is the probability of rolling a sum that is divisible by 3 on a pair of fair six-sided dice?

A. 1/2 B. 1/3 C. ¼ D. 2/3 E. N.O.T.A.

19. $f(x)=2x^2-3x+4$; find $f(-4)$.

A. 12 B. -36 C. 24 D. 48 E. N.O.T.A.

20. Solve for x in terms of a and b: 3x – 6a = 9b

A. 4b – 3a B. 2a C. 2a + 3b D. 2a – 3b E. N.O.T.A.

21. What is the sum of all numbers between 1 and 100 that are divisible by 6.

A. 800 B. 600 C. 618 E. 718 E. N.O.T.A.

22. A triangle has the sides of 5, 3, and 7. A similar triangle has the length of 10 for the shortest side. What is the sum of the other two sides?

A. 40 B. 50/3 C. 70/3 D. 90 E. N.O.T.A.

23. If a + b = 7 and a – b = 5, find $a^2 - b^2$.

A. 4 B. 244 C. 33 D. 144 E. N.O.T.A.

24. A fraction is equivalent to 3/7. If the numerator is increased by 6 and the denominator is increased by 2 and then doubled, the result equals 3/8. Which of the following is the denominator of the original fraction?

A. 2 B. 6 C. 7 D. 14 E. 28

25.Given two numbers, a and b, that are chosen from the set {1, 2, 3, . . . , 9, 10}, find the number of distinct ordered pairs (a, b) such that: $\frac{a}{b}+\frac{b}{a}>4.$

A. 9 B. 10 C. 18 D. 19 E. 20

TB1: ☼ (n) is defined as the number of positive integral divisors of n.
♣(n) is defined as the sum of the positive integral divisors of n.
Find the value of ☼(12) + ♣(12).

TB2: If 14 boys pick 294 crates of apples in 7 hours, how many boys does it take to pick 513 boxes in 3 hours working at the same rate?

T B3: Solve for x: $x+\sqrt{3x-2}=4.$ (If there is more than one solution, find the largest.)