2013 Grissom Math Tournament
Pre-Algebra Test

1. **Find the value of:** $\frac{3}{5}$ x $6\frac{2}{3}$ + $2\frac{1}{2}$ - $3\frac{1}{8}$. **Write your answer as a simplified improper fraction.**

   A. $\frac{7}{4}$ **B.** $\frac{27}{8}$ **C.** $\frac{63}{8}$ **D.** $\frac{63}{40}$ **E.** $\frac{231}{40}$

2. **Solve for *x*:** $2x + 2 + 23 = 5x$.

   A. $\frac{25}{7}$ **B. 9** **C. 5** **D.** $\frac{27}{7}$ **E.** $\frac{25}{3}$

3. **If 15 blips are equal to 7 bloops, 5 blumps are equal to 7 blatts, 4 bloops are equal to 10 blatts, then how many blips are equal to 30 blumps?**

   A. 8 **B. 12** **C. 18** **D. 24** **E. 36**

4. **Simplify by combining like terms:** $3\,8x + 7y - 4\,5x + 2y + y$.

   A. $2x + 5y$ **B.** $4x + 10y$ **C.** $4x + 14y$ **D.** $4x + 24y$ **E.** $12x + 14y$

5. **Find the value of one half of two-thirds of four-sevenths of three-eighths of 280?**

   A. 10 **B. 14** **C. 20** **D. 28** **E. 35**

6. **What is the largest prime number that divides evenly into 2013?**

   A. 7 **B. 11** **C. 17** **D. 41** **E. 61**

7. **James buys a car that regularly costs $12,000 but is on sale for 20% off. If he buys it at the sale price, and is charged 4% sales tax, how much does he spend?**

   A. $9,204.00 **B. $9,568.00** **C. $9,600.00** **D. $9,684.00** **E. $9,984.00**

8. **Solve for a:** $5a - 4 + 7 < 3a - 1$.

   A. $a < 5$ **B.** $a < \frac{3}{8}$ **C.** $a < \frac{5}{4}$ **D.** $a > 2$ **E.** $a < -2$

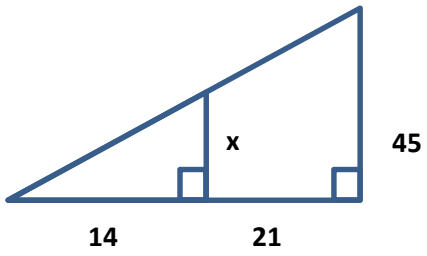
9. **Evaluate:** $8 - 5\,7 + 3 - 6 + 8 - -4^{2}$

   A. **-157** **B. -9** **C. 16** **D. 23** **E. 28**

10. **Which of these represents the greatest amount of time?**

A. 3 years B. 35 months C. 158 weeks D. 1096 days E. 26,200 hours

11. **Find x in the given figure:**



A. 18 B. 21 C. 24 D. 27 E. 30

12. **Find the value of:** $\frac{6\times 10^5 \quad 7\times 10^3}{2\times 10^4}$ **, and write the answer in scientific notation.**

A. **2.1 x** 10^3 **B. 2.1 x** 10^5 **C. 2.1 x** 10^8 **D. 2.1 x** 10^{12} **E. 2.1 x** 10^{11}

13. **What is the area of a circle with circumference = 62.8? (Use 3.14 as an approximation of** π **)**

A. 31.4 B. 62.8 C. 125.6 D. 314 E. 628

14. **Two are traveling to the same place 240 miles away. One car is traveling at 60 mph and the other is traveling at 80 mph. How many minutes apart will the two cars arrive?**

A. 50 B. 60 C. 70 D. 80 E. 90

15. **If** $n!$ = $n\ n-1\ \ n-2\ \cdots\cdots 3\cdot 2\cdot 1$**, then evaluate:** $\frac{12!}{8!4!}$

A. **450 B. 455 C. 490 D. 495 E. None of these**

16. If a fair, six sided die is rolled twice, what is the probability the result on the first throw is less than three and the result on the second throw is even?

A. $\frac{1}{6}$ **B.** $\frac{1}{4}$ **C.** $\frac{1}{3}$ **D.** $\frac{2}{3}$ **E.** $\frac{5}{6}$

17. In 7th grade at our middle school, all the students like either math, science, or art or a combination of those classes. If 8 students like all three class, 18 like math and art, 27 like math and science, 14 like science and art, 48 like math, 35 like art, and 40 like science, how many total students are in 7th grade?

A. 62 B. 64 C. 66 D. 68 E. 72

18. Given the following set of integers(in increasing numerical order): 2, 4, *x*, 8, 10, 14, 18, and 24 which has no mode, find the minimum positive difference between the median and the mean of the set.

A. $1\frac{1}{2}$ **B.** $1\frac{5}{8}$ **C.** $1\frac{3}{4}$ **D.** $1\frac{7}{8}$ **E.** 2

19. A rectangular box has a length = 8, width = 6, and surface area equal to 236. Find the volume of the box.

A. 240 B. 288 C. 300 D. 312 E. 336

20. At Saving-R-Us Bank, customers earn 4% interest compounded quarterly. If $800 is deposited at the beginning of the year, and no money is withdrawn during the year, how much money is in the account at the end of the year? (Round to the nearest cent.)

A. $804.00 B. $824.24 C. $832.00 D. $832.48 E. $832.96

21. If the three digit number, 2a5 is added to 3b1, the resulting three digit number is 5c6 is divisible by 36, and 2a5 and 3b1 are divisible by 3, find the maximum value of a – b.

A. 2 **B. 3** **C. 4** **D. 5** **E. 6**

22. The sum of three consecutive odd integers is 2013. Find the largest of these three numbers.

A. 667 **B. 669** **C. 671** **D. 673** **E. 675**

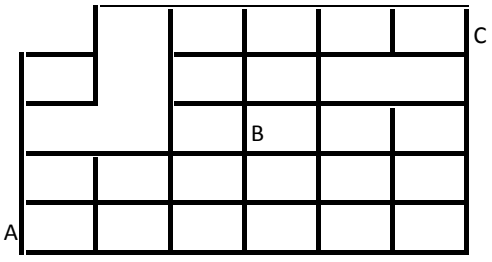
23. If the triangle with vertices at (1,1), (16,1) and (7,5) is rotated about the line y = 1, find the volume of the figure that will be created.

A. 80π **B. 120π** **C. 160π** **D. 180π** **E. 240π**

24. Let N be the smallest positive integer that has a remainder of 4 when divided by 5, 5 when divided by 6, and 6 when divided by 7. Find the sum of the digits of N.

A. 4 **B. 5** **C. 7** **D. 9** **E. 11**

25. How many paths are there from point A to point C through point B moving only up or right along gridlines?



A. 24 **B. 54** **C. 84** **D. 120** **E. 140**

Tiebreakers:

TB1: How many integers lie between $\sqrt{11}$ and $\sqrt{1800}$?

TB2: Find the sum of the positive prime numbers that divide evenly into 2013.

TB3: How many distinct arrangements are there of the letters in the word GENIUS?