

Alabama School of Fine Arts  
Invitational Mathematics Tournament 2009

6<sup>th</sup> Grade

1. Given:  $2^{2009} = 2^{2008} + x$  What is  $x$  in the most simplified form?

- A. 2                      B.  $2^{2007}$                       C.  $2^{2009} - 2^{2008}$                       D.  $2^{2008}$                       E. NOTA

2. Find the sum of the remainder and quotient when 20009 is divided by 7.

- A. 2861                      B. 10                      C. 3                      D. 2858                      E. NOTA

3. Simplify:

$$(2009 + 1 - \left| \frac{(72 + 3 \cdot 12)}{(3 \cdot 12)} \right| + 3^4) - 2008$$

- A. 58                      B. 80                      C. -84                      D. -80                      E. NOTA

4. Cindy and 2 friends ordered a large pizza for \$9.00, 3 large drinks for \$0.99 each, and a salad for \$1.50. If they split these costs evenly, which equation can be used to find  $c$ , the amount in dollars and cents each person should pay, not including tax?

- A.  $c = 9.00 + 0.99 + 1.50 \div 3$   
B.  $c = 9.00 + 3 \cdot 0.99 + (1.50 \div 3)$   
C.  $c = (9.00 + 0.99 + 1.50) \div 2$   
D.  $c = (9.00 + 3 \cdot 0.99 + 1.50) \div 3$   
E. NOTA

5. A horse is tied to the corner of a rectangular barn that is 10 feet long and 5 feet wide by a 100 foot long rope. How many complete rounds can the horse make around the barn while it remains tied to the rope?

- A. 4                      B. 3                      C. 2                      D. 1                      E. NOTA

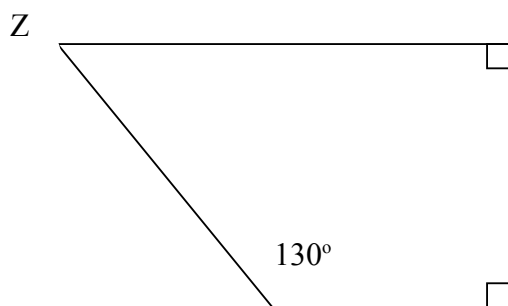
6. Lugi the Lizard lives in a circular garden with the radius 5 feet. Constructors are building a sidewalk circling the garden. The sidewalk has a width of 1 foot. What is the area of the sidewalk?

- A.  $25\pi \text{ ft}^2$       B.  $36\pi \text{ ft}^2$       C.  $11\pi \text{ ft}^2$       D.  $9\pi \text{ ft}^2$       E. N.O.T.A.

7. Simplify:  $\{(8 + 2 \cdot 6 \div 4) \cdot [3 - (7 + 2) \cdot 2 + 6 \cdot 3 + 1]\}$

- A. 105      B. 77      C. 44      D. 15      E. NOTA

8. The drawing below shows a plot of land.



Find  $\angle Z$ .

- A.  $40^\circ$       B.  $50^\circ$       C.  $90^\circ$       D.  $180^\circ$       E. NOTA

9. Kevin went to Crawfish Boil at 7:04pm. He was kidnapped and taken away for ransom. He was found two days, four hours, and 57 minutes later. When he was found, he had been kidnapped for exactly 50 hours and 7 minutes. At what time was he kidnapped?

- A. 9:04pm      B. 10:11pm      C. 10:11am      D. 9:11pm

E. N.O.T.A. (9:54pm)

10. What is the product of the next two terms in the sequence 2, 3, 5, 7, 11, 13, ...?

- A. 255      B. 323      C. 285      D. 315      E. NOTA

11. Alvin believes he is a genius. Clintavius's genius reading says that if Alvin gets more than 25% of the Clintavius's questions right, he can be considered a genius. Alvin gets 7 out of 35 questions right, 28 of which are Clintavius questions. Is Alvin a genius?

- A. Yes      B. No      C. Not enough information      D. Too much information      E. NOTA

12. Ronald Weasley is visiting the candy shop Honeyduke's. The price of a handful of fizzing whizbees is 250% the price of ten sugar quills. If five sugar quills cost 3 knuts, how many knuts does a handful of fizzing whizbees cost?

- A. 7.5      B. 10      C. 12.5      D. 15      E. NOTA

13. The elves of Lothlórien are baking lembas bread for eight visitors. One batch will make 3 half dozen packs of lembas. If the elves make a triple batch, but then two hobbits decide to eat seven packs each, how many packs will each visitor get if the remaining packs are distributed evenly?

- A. 5      B. 9      C. 13      D. 17      E. NOTA

14. Solve for  $x$ :  $4x - 18 = 3 - (x + 1)$

- A.  $x = 2$       B.  $x = 4$       C.  $x = 5$       D.  $x = 10$       E. NOTA

15. Gerard the Leprechaun reaches into his pockets and finds 7 coins, which could be pennies, nickels, dimes, or quarters. Using all 7 coins, which amount of change can Gerard not make?

- A. 38¢      B. 52¢      C. 76¢      D. 32¢      E. NOTA

16. Chakku's Porsche Emporium is having a raffle for a free Porsche. Chakku has 6 red, 11 white, and 7 yellow Porsches. Lafonda won the raffle and now has to draw from a hat to see which car of the 24 she will get. What is the probability that Lafonda will not get a white Porsche?

- A.  $\frac{13}{24}$       B.  $\frac{11}{24}$       C.  $\frac{1}{2}$       D.  $\frac{5}{6}$       E. NOTA

17. The height of a building is  $\frac{3}{4}$  the width, which is  $\frac{1}{2}$  the length, which is 24 feet. What is the volume of the building?

- A. 9 feet<sup>3</sup>      B. 2592 feet<sup>3</sup>      C. 100000 feet<sup>3</sup>      D. 1245 feet<sup>3</sup>      E. NOTA

18. Mark has 32 fruit roll-ups. He eats half of them and gives  $n$  fruit roll ups to Kristen. Then, D'Andre gives him 12 fruit roll-ups. Which expression represents the amount of fruit roll-ups that Mark has now?

- A.  $\frac{1}{2}(32 - n) + 12$       B.  $\frac{1}{2}(32) - n + 12$       C.  $\frac{1}{2}(32 - n + 12)$   
D.  $\frac{1}{2}(32 + 12) - n$       E. NOTA

19. How many seconds are in 40 hours?

- A. 2400                      B. 24000                      C. 14400                      D. 144000                      E. NOTA

20. Which of the following is a prime number?

- A. 91                      B. 291                      C. 1                      D. 201                      E. NOTA

21. 33 is 300% of what number?

- A. 9900                      B. 11                      C.  $1\frac{2}{3}$                       D. 33000                      E. NOTA

22. If:

$$A = \frac{2009}{7^2}$$

$B$  = the number of ways to arrange 2009 pebbles in 2000 boxes, if none of the boxes are empty.

$$C = (2009 + 2008) - (2008 + 2007) + (2007 + 2006) - \dots - (2 + 1)$$

$$D = \frac{\frac{2009 + 2008}{3} - 1000}{3}$$

What is  $C - 2A - 17D$ ?

- A. 2                      B. 3                      C. 4                      D. 5                      E. NOTA

23. Linda bought 2 blouses at a price of \$52 for both, and then she found 3 equally priced dresses. She spent a total of \$162.80 including 10% tax. Find the price of each dress.

- A. 26                      B. 32                      C. 52                      D. 55                      E. NOTA

24. Whitney believes her trumpet has a volume equivalent to that of a 3cm by 5cm by 7 cm rectangular prism. Whitney's trumpet has a volume of  $126\text{cm}^3$ . What is the percentage that Whitney is off?

- A. 23%                      B. 24%                      C. 21%                      D. 20%                      E. NOTA

25. Avo's horse, James, is tied by a rope that is 77 feet long to a stray piece of fence that is attached to nothing. James can go around the fence and wrap his rope tightly around the fence exactly 5 and a half times with no rope left. How long is the piece of fence?

A. 423.5      B. 14      C. 71.5      D. 82.5      E. NOTA

Tie Breaker 1: Find the prime factorization of 240.

Tie Breaker 2: How many "L"s are in question 6? (Include capital and lowercase.)

Tie Breaker 3: There are 3 sisters. Their ages sum to 14. The product of their ages is 72. The eldest is a brunette. What are the ages of the sisters?