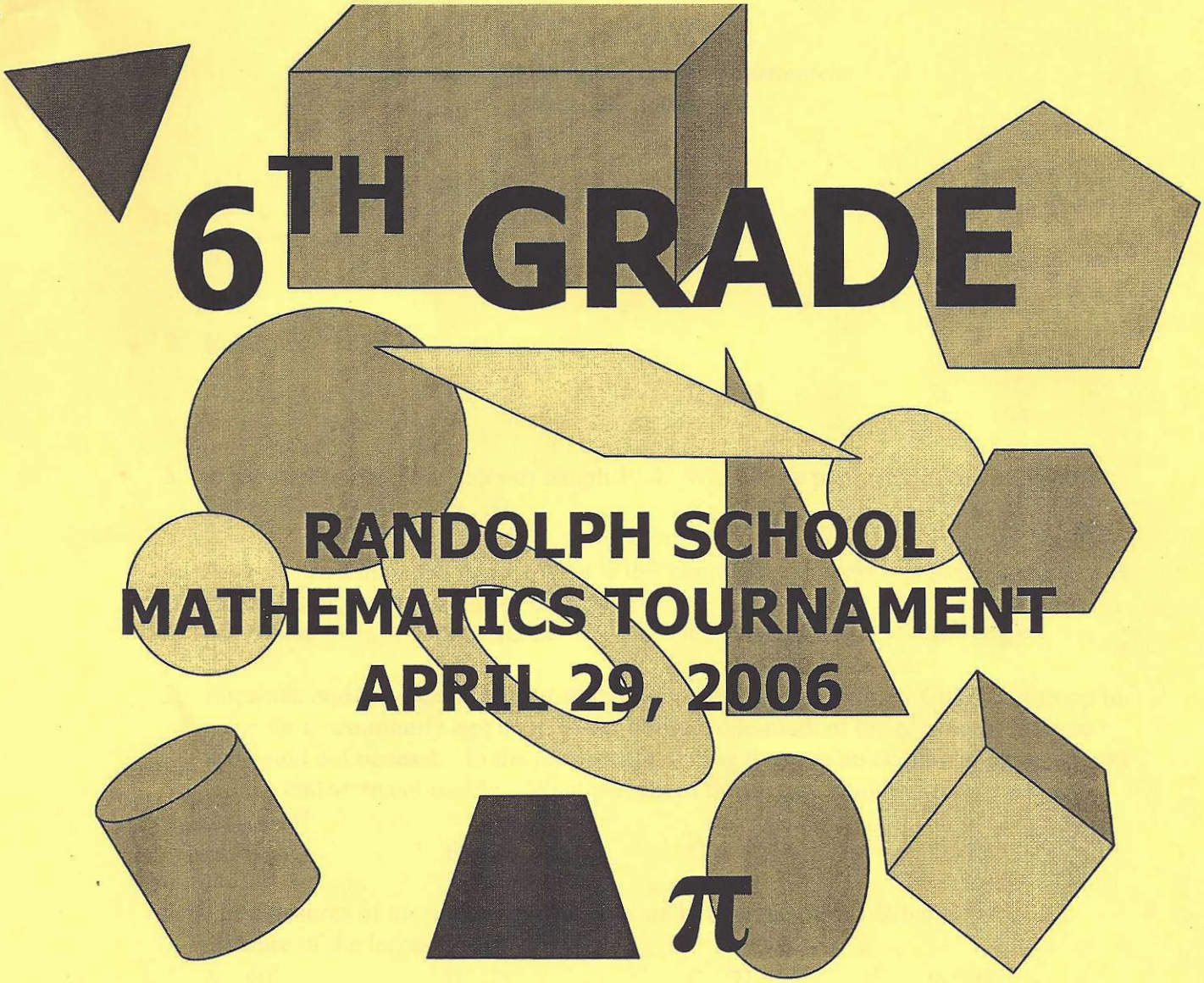


# 6TH GRADE

# RANDOLPH SCHOOL MATHEMATICS TOURNAMENT APRIL 29, 2006

**There are 30 multiple-choice questions and three tiebreakers on this test. Mark your answers on the scantron sheet. If none of the answers is correct, choose E. No aids such as calculators, notes, books, etc., may be used in completing the test. You may write on the test and use scratch paper provided.**

**Your score on this examination will be computed as FOUR TIMES THE NUMBER CORRECT MINUS THE NUMBER INCORRECT. Blanks are not counted as correct or incorrect in computing the score.**

**The tiebreakers count one-tenth of one point. Work on the tiebreakers only after you have completed all the multiple-choice questions. Write the answers to the tiebreakers in the designated spaces on the scantron sheet.**

**The time limit on the test is *one hour*. If you finish before time is called, you may leave the room but must also leave the testing area.**

# 6th Grade Test

***Randolph School Mathematics Tournament***

***April 29, 2006***

1. If $3x - \frac{3}{8} = 2\frac{5}{8}$, what is x?

   A. $\frac{3}{4}$ B. 1 C. $\frac{3}{8}$ D. 3

2. Evaluate: $3^2 - 6^2 \div 2^2 + 10^2$

   A. 100 B. $-\frac{1}{4}$ C. 103 D. $-\frac{27}{104}$

3. A regular hexagon has sides of length 12.4. What is the perimeter of the polygon?

   A. 49.6 B. 62 C. 74.4 D. 99.2

4. A circle has a diameter of 32. What is the sum of the numbers representing the circumference and the area of the circle?

   A. $1088\pi$ B. $1056\pi$ C. $320\pi$ D. $288\pi$

5. Elizabeth and her friends bought seventy-five dozen eggs for their Girl Scout troop to color for a community egg hunt. After boiling, one-ninth of the eggs were cracked and could not be used. In the process of coloring the eggs an additional 35 eggs were broken and were not usable. What percent of the original number of eggs were unusable?

   A. 15 B. 26 C. 74 D. 85

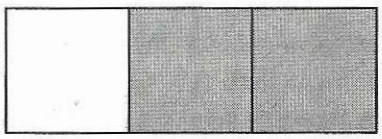
6. The measures of the angles of a triangle are in the ratio 4:5:6. What is the measure of the largest angle?

   A. 90° B. 75° C. 72° D. 48°

7. From 5:30 A.M. to 4:30 P.M. the temperature rose at a constant rate from 31° F to 75° F. What was the temperature at noon?

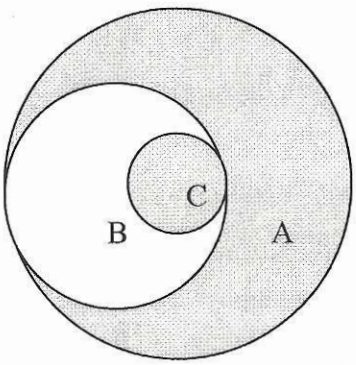
   A. 56° B. 57° C. 59° D. 61°

8. A rectangle is divided into three congruent squares. If the perimeter of the original rectangle is 48 cm, how many square centimeters are in the shaded region?



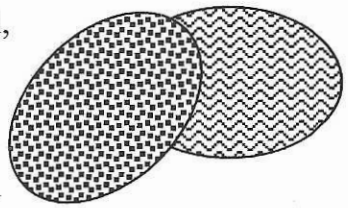
   A. 32 B. 36 C. 64 D. 72

9. Circle B is internally tangent to circle A and circle C is internally tangent to circle B, as shown. The radii of circles A, B, and C are 6, 4 and 2 inches respectively. What is the area in square inches of the shaded region?




   A. $6\pi$ B. $12\pi$ C. $24\pi$ D. $42\pi$

10. In a community egg hunt, $\frac{1}{4}$ of the eggs were found by Jamal, $\frac{1}{6}$ were found by Nitish, $\frac{1}{6}$ were found by Anoosha, and $\frac{1}{8}$ were found by Harish. If Logan and Harrison found the remaining 49 eggs, how many eggs were hidden for the hunt?



A. 144 B. 168 C. 210 D. 350

11. Convert 37½ % to a fraction in lowest terms.

A. $\frac{75}{2}$ B. $\frac{2}{75}$ C. $\frac{3}{8}$ D. $\frac{8}{3}$

12. Find the sum of the next three integers in the sequence of numbers.

2, 5, 7, 12, 19, ____, ____, ____

A. 81 B. 109 C. 119 D. 162

13. A snail traveled 84 feet in 40 minutes. What was his average speed in feet per hour?

A. 252 B. 126 C. 4.2 D. 2.1

14. If $p \Updownarrow q = \frac{p^2q - pq^2}{2}$, find the value of $6 \Updownarrow 3$.

A. 27 B. 36 C. 45 D. 54

15. Pencils cost 59 cents each and notebooks cost $1.59 each. What is the greatest number of notebooks you can buy with $12.50 if you have to buy at least 3 pencils?

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

16. Find 12% of 5% of 3% of 20,000.

A. 360 B. 36 C. 3.6 D. 0.36

17. If $90{,}909 + 3x = 99{,}999$, then $90{,}909 - 30x =$

A. 0 B. 9 C. 909 D. 9090

18. How many different arrangements are there of the letters in the word "PRIME"?

A. 20 B. 25 C. 60 D. 120

19. What is the measure of each interior angle of a regular pentagon?

A. 120 B. 108 C. 72 D. 60

20. For what value of x is the following statement true? $2^6 = 8^x$

A. 2 B. 3 C. 4 D. 5

21. A school has 640 students. On a particular day in February $\frac{5}{8}$% of the students were absent. How many students were in school that day?

A. 4 B. 240 C. 400 D. 636

22. The number of losses for this year's basketball team was one-third of the number of wins. What fraction of the total number of games were wins?

A. $\frac{2}{3}$ B. $\frac{7}{10}$ C. $\frac{3}{4}$ D. $\frac{4}{5}$

23. Compute: $\sqrt{\frac{1}{16}+\frac{9}{25}}$

A. $\frac{17}{20}$ B. $\frac{13}{20}$ C. $\frac{\sqrt{10}}{20}$ D. $\frac{1}{5}$

24. Which number has the same value as $6500\times10^{-5}$ ?

A. $6.5\times10^{-3}$ B. $65\times10^{-4}$ C. $650\times10^{-3}$ D. $0.65\times10^{-1}$

25. If $4x-5y=10$, what is the value of $\frac{x}{5}-\frac{y}{4}$ ?

A. $\frac{1}{2}$ B. 1 C. 2 D. 10

26. Compute: $\left(\frac{5}{8}\div\frac{3}{4}\right)\div\frac{5}{16}$

A. $\frac{25}{96}$ B. $\frac{3}{8}$ C. $\frac{3}{2}$ D. $\frac{8}{3}$

27. What is the value of $\left(4^3+4^3+4^3+4^3\right)^2$ ?

A. $4^{24}$ B. $2^{16}$ C. $4^{12}$ D. $2^{12}$

28. At 11:50 AM two trains pass each other on parallel tracks traveling in opposite directions. The northbound train averages 57 mph and the southbound train averages 60 mph. How many miles apart are the trains at 2:10 PM on the same day?

A. 156 B. 234.5 C. 270.5 D. 273

29. Two standard six-sided dice are tossed. What is the probability that the sum of the top faces is 10?

A. $\frac{1}{12}$ B. $\frac{1}{9}$ C. $\frac{1}{6}$ D. $\frac{1}{4}$

30. Solve for x: $\frac{x}{1+\frac{2}{3+4}}=3+\frac{8}{4+5}$

A. $\frac{210}{81}$ B. 5 C. 7 D. $\frac{11}{7}$

TIE BREAKERS:

1. Evaluate: $\sqrt{5!\ +\ 4!}$

2. What is the perimeter of a semi-circular flowerbed with a radius of 12? Give your answer in terms of $\pi$.

3. A wooden cube is painted red and then cut into 125 unit cubes. The unit cubes are placed in a bag. If Bette reaches into the bag and selects one of the cubes, what is the probability that it will have at least two faces painted red? Write your answer as a fraction in lowest terms.