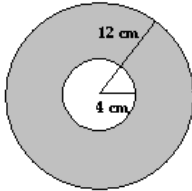


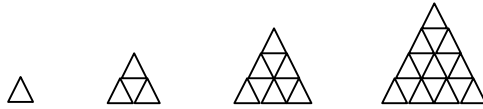
2004 SCSU MATH CONTEST  
7<sup>th</sup> and 8<sup>th</sup> Grade Test

DIRECTIONS: Select the one best response from among those given.

- Janet ran 88 feet in 6 seconds. What is her rate in miles per hour?  
A. 7.5 mph      B. 8 mph      C. 9.5 mph      D. 10 mph      E. 11 mph
- Suppose you made 60 ounces of dough for breadsticks. Each breadstick is made of  $\frac{5}{4}$  ounces of dough. How many breadsticks can you make?  
A. 48      B. 50      C. 52      D. 60      E. 75
- In the given figure, the radius of the small circle is 4 cm and the radius of the large circle is 12 cm. Find the area of the shaded region in square centimeters?  
A.  $122\pi$   
B.  $124\pi$   
C.  $126\pi$   
D.  $128\pi$   
E.  $130\pi$   

- For her school newspaper, the editor has a rectangular photo that has a height of 4 inches and a width of 6 inches. She needs to enlarge the picture proportionally to fit a space with a height of 7 inches. What will the new width be?  
A. 17 inches      B.  $14\frac{1}{2}$  inches      C.  $11\frac{2}{3}$  inches      D.  $10\frac{1}{2}$  inches      E. 9 inches
- The angles of a triangle have measures  $70^\circ$ ,  $56^\circ$ , and  $(x-5)^\circ$ . Find the value of  $x$ .  
A.  $83^\circ$       B.  $59^\circ$       C.  $54^\circ$       D.  $49^\circ$       E.  $14^\circ$
- Scores in golf can be positive or negative integers. For example, a score of 5 *over* par can be represented by +5 and a score of 2 *under* par can be represented by -2. If Donna had scores of 4 over par, 7 under par, and 8 under par for three games of golf, what was her total score?  
A. 19 over par      B. 11 under par      C. 19 under par      D. 11 over par      E. 3 over par
- From a survey of 100 college students, a marketing research company found that 55 students own a car, 60 own a bike and 45 own both a car and a bike. How many do not own either a car or a bike?  
A. 10      B. 15      C. 30      D. 45      E. 80
- Calculate the surface area of a cube that measures 1.5 cm on each side.  
A.  $3.375 \text{ cm}^2$       B.  $4.5 \text{ cm}^2$       C.  $6.75 \text{ cm}^2$       D.  $9 \text{ cm}^2$       E.  $13.5 \text{ cm}^2$
- At a fishing tournament, contestants are awarded \$1 for each fish weighing 2 pounds or over and are assessed \$2 for each fish weighing less than 2 pounds. Noah caught 12 fish, but he neither lost nor made money. How many of Noah's fish weighed less than 2 pounds?  
A. 0      B. 4      C. 6      D. 8      E. 12
- Mike has a dental appointment at 10:30 a.m., and he wants to be there 10 minutes early. He needs 25 minutes to drive to the dentist's office and wants to allow another 5 minutes to find a parking space. At what time should Mike leave for his appointment?  
A. 9:50 a.m.      B. 9:45 a.m.      C. 9:30 a.m.      D. 9:15 a.m.      E. 9:00 a.m.

11. Becky and Cathy work at the same place, started their jobs on the same day, and get together with their families every time they have the same weekend off. Becky has every fourth weekend off while Cathy has every sixth weekend off. How often do the two women and their families get together?
- A. every sixth weekend
  - B. every eighth weekend
  - C. every tenth weekend
  - D. every twelfth weekend
  - E. every twenty-fourth weekend

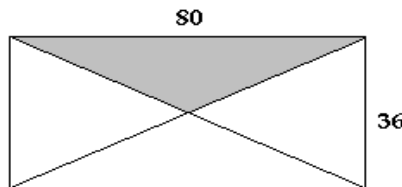
12. How many small triangles ( $\triangle$ ) are there in the ninth figure in the following patterns of triangles?



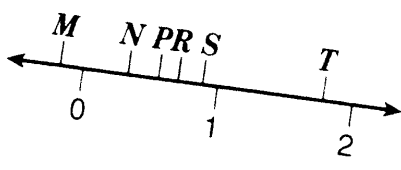
- A. 81
  - B. 75
  - C. 70
  - D. 64
  - E. 60
13. Abe, Betty, Carl, Dan, and Ellen each have a different favorite number. The numbers are 3, 4, 5, 11, and 16. Betty's favorite number is less than Dan's favorite number. Carl's favorite number is a prime number. Dan's favorite number is one less than Abe's favorite number. What is Ellen's favorite number?
- A. 3
  - B. 4
  - C. 5
  - D. 11
  - E. 16
14. Five more than 17 times a number is 23. What is 5 more than 34 times the same number?
- A. 31
  - B. 36
  - C. 41
  - D. 43
  - E. 51
15. At the hardware store last week, 100-watt bulbs were priced at 5 bulbs for \$6.00. This week the same bulbs are on sale for 6 bulbs for \$5.00. The percent decrease in the price per bulb is closest to:
- A. 11%
  - B. 20%
  - C. 31%
  - D. 35%
  - E. 44%

16. What percent of the region is shaded?

- A. 15%
- B. 20%
- C. 25%
- D. 30%
- E. 35%



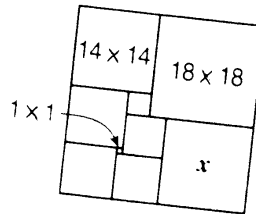
17. Two fair six-sided dice (one red and one green) are rolled. Find the probability of rolling a sum of 10.
- A.  $\frac{5}{18}$
  - B.  $\frac{1}{18}$
  - C.  $\frac{1}{12}$
  - D.  $\frac{1}{11}$
  - E. None of these
18. A deep-sea diver dives from the surface to 92 feet below the surface. She then dives down 22 more feet and then comes up 5 feet. Find the diver's depth below the surface.
- A. 65 feet
  - B. 70 feet
  - C. 75 feet
  - D. 109 feet
  - E. 119 feet
19. A store marks all of its items up by 30%, but all items are 10% off on Mondays. What would the actual percent increase of the price of the items on Mondays?
- A. 12%
  - B. 17%
  - C. 20%
  - D. 27%
  - E. 40%

20. 1 hour and 31 minutes before 2 hours and 59 minutes after 1:41 PM would be:
- A. 3:09 PM      B. 3:19 PM      C. 12:19 PM      D. 12:09 PM      E. 2:09 PM
21. If  $2 \leq x < 3$  and  $2 \leq y < 5$ , then which is *not* a possible value of  $xy$ .
- A. 4      B. 5      C. 7.5      D. 10      E. 15
22. The average of 9 numbers is 5. When a tenth number is added, the average becomes 6. What was the added tenth number?
- A. 0      B. 1      C. 4      D. 15      E. 36
23. An airplane flying at an altitude of 32,000 feet descends at a rate of  $21\frac{2}{3}$  feet per second. After the plane descends for 15 minutes, what is its altitude in feet?
- A. 10,000 ft      B. 12,500 ft      C. 19,000 ft      D. 19,500 ft      E. 30,200 ft
24. Luke wants to buy a CD player that costs \$56 including tax. He gets \$10 a week for his allowance. He spends \$3.50 a week and saves the rest. How many weeks will it take him to save enough money to buy the CD player?
- A. 6 weeks      B. 7 weeks      C. 8 weeks      D. 9 weeks      E. 10 weeks
25. What is the sum of the largest and smallest prime factors of 5445?
- A. 6      B. 14      C. 124      D. 1092      E. 5446
26. You weigh your four pet potbellied piglets in pairs. Together Oinker and Squeaker weighed 110 pounds; Squeaker and Curley weighed 103 pounds, and Curley and Porker weighed 108 pounds. How many pounds will Oinker and Porker weigh together?
- A. 104 pounds      B. 105.5 pounds      C. 107 pounds      D. 109 pounds      E. 115 pounds
27. When a whole number is divided by 15, the remainder is 7. Find the sum of the remainders when the same whole number is divided by 3 and by 5.
- A. 3      B. 4      C. 7      D. 8      E. 14
28. If the fractions represented by the points **P** and **R** are multiplied, what point on the number line best represents their product?
- A. **M**  
B. **N**  
C. **P**  
D. **S**  
E. **T**
- 
- The number line shows a horizontal line with arrows at both ends. It is marked with 0, 1, and 2. Point M is at 0. Point N is between 0 and 1. Points P, R, and S are clustered between 0 and 1, with P being the leftmost and S the rightmost. Point T is at 2.
29. Amy earns \$12.50 per hour for a 40-hour week. She earns double for overtime. Amy earned \$625 last week. How many hours did she work?
- A. 41      B. 42      C. 43      D. 44      E. 45
30. At each stage of a baseball tournament, a team that loses drops out. How many teams compete in the tournament if the winning team plays six games?
- A. 16      B. 32      C. 64      D. 80      E. 128

31. Find the largest counting number such that when I multiply its square by 2, I get a 2-digit number.
- A. 7                      B. 8                      C. 9                      D. 81                      E. 98
32. If all of the digits must be different, how many 3-digit odd numbers greater than 700 can be formed using only the digits 1, 2, 3, 4, 5, 6 and 7?
- A. 30                      B. 12                      C. 7                      D. 6                      E. None of these
33. A ball rebounds half the height from which it drops. It is dropped from a height of 20 feet. How many feet off the ground is the ball when it has traveled a total of 47 feet?
- A. 3                      B. 4                      C. 5                      D. 6                      E. 7
34. A large shipment of grapefruit arrived containing the following proportions of types: 10% pink seedless, 20% white seedless, 30% pink with seeds, 40% white with seeds. All of the grapefruit are the same size and shape. A grapefruit is randomly selected. It is pink. What is the probability that it is seedless?
- A. 10%                      B. 25%                      C. 40%                      D. 70%                      E. None of these

35. The rectangle is dissected into unequal squares. What is the area of the square marked  $x$ ?

- A. 144 square units  
 B. 169 square units  
 C. 196 square units  
 D. 225 square units  
 E. 256 square units



36. I “let my fingers do the walking” when I dial my phone, which has the following arrangement of keys:

1 2 3  
 4 5 6  
 7 8 9

If the distance from 1 to 2 or from 1 to 4 is 1 unit, then how many units do my fingers “walk” when I dial my phone number 654-9873?

- A.  $3 + 2\sqrt{2} + \sqrt{5}$     B.  $3 + 3\sqrt{2} + \sqrt{5}$     C.  $4 + 2\sqrt{2} + \sqrt{5}$     D.  $3 + \sqrt{2} + 2\sqrt{5}$     E.  $4 + \sqrt{2} + 2\sqrt{5}$