## JUNIOR HIGH SCHOOL MATHEMATICS COMPETITION

May 12, 1995

# GRADE 7

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# PART A

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1. What is the value of $\dfrac{1}{3} + \dfrac{2}{5}$?

   (A) $\dfrac{2}{15}$     (B) $\dfrac{3}{8}$     (C) $\dfrac{1}{2}$     (D) $\dfrac{11}{15}$     (E) 1

2. Jean buys a calculator whose price is marked as \$8.80. If the tax on the purchase is 5%, what will the total price be for the calculator?

   (A) \$0.44     (B) \$8.36     (C) \$9.20     (D) \$9.24     (E) \$13.20

3. What is the sum of a third of 10 and a half of a third of 20?

   (A) 5     (B) $\dfrac{20}{3}$     (C) 10     (D) $\dfrac{40}{3}$     (E) None of these

4. Two men play a card game for which the stakes are \$0.10 a game. At the end, one has won 3 games and the other has won \$0.30. How many games did they play?

   (A) 6     (B) 7     (C) 8     (D) 9     (E) Not enough information

5. A grocer trades 162 barrels of flour valued at \$6.00 a barrel for 54 barrels of sugar. What is the value of a barrel of sugar?

   (A) \$2.00     (B) \$9.00     (C) \$15.00     (D) \$18.00     (E) \$27.00

6. Starting at 777 and counting backwards by 7s, a student counts 777, 770, 763, etc. A number that will be counted is:

   (A) 41     (B) 42     (C) 43     (D) 44     (E) 45

7. Of the 50 000 inhabitants of Wenza, 5% of the population is one-legged and half of the others do not wear footwear. How many shoes are worn in the village?

   (A) 47 500     (B) 50 000     (C) 50 025     (D) 52 500     (E) None of these

8. Adam lived a quarter of his life as a boy, a fifth as a young man, a third in middle-age and 13 years in retirement. How old was he when he died?

   (A) 42     (B) 56     (C) 60     (D) 120     (E) None of these

9. Five apples and three bananas cost $2.47. If the price of apples and bananas was exchanged, the same amount of fruit would cost $3.13. How much would six apples and six bananas cost?

   (A) $4.20     (B) $4.24     (C) $4.40     (D) $4.80     (E) None of these

10. At a banquet, every 2 guests shared one dish for rice, every 3 guests shared one dish for soup and every 4 guests shared one dish for meat. How many guests were present if there were 65 dishes altogether?

   (A) 42     (B) 56     (C) 60     (D) 120     (E) None of these

# PART B

11. One hundred marbles are placed in three bowls. The first and second bowl contain a total of 56 marbles, and the second and third bowl a total of 70 marbles. How many marbles are in the third bowl?

    (A) 24     (B) 30     (C) 36     (D) 44     (E) Not enough information

12. Calculate: $1 - \dfrac{1}{1 + \frac{1}{2 - \frac{1}{3}}}$.

    (A) $-\dfrac{1}{2}$     (B) $-\dfrac{3}{5}$     (C) $\dfrac{1}{2}$     (D) $\dfrac{3}{8}$     (E) $\dfrac{5}{8}$

13. All birds fly.
    Some birds are cardinals.
    All robins sing.
    Some cardinals sing.
    All cardinals and robins are birds.

    Assuming these statements are true, which of the following must be true?

    (A) All flying birds are robins.
    (B) All flying cardinals sing.
    (C) Some cardinals do not sing.
    (D) Birds that do not sing are not robins.
    (E) All cardinals do not fly.

14. A class of 20 students achieves an average of 66% on an exam. A second class of 30 students achieves an average grade of 56% on the same exam. The average for the combined classes is:

    (A) 58     (B) 59     (C) 61     (D) 62     (E) None of these

15. A circle of radius 2 rolls completely around the inside perimeter of a square of side 10. What distance is covered by the centre of the circle?
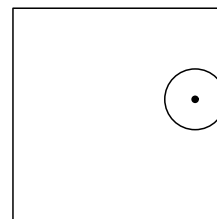
    

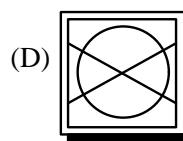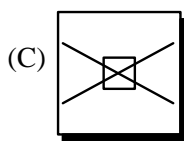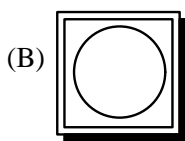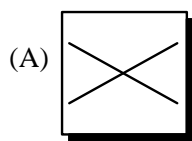    (A) 16     (B) 24     (C) 32     (D) 40     (E) None of these
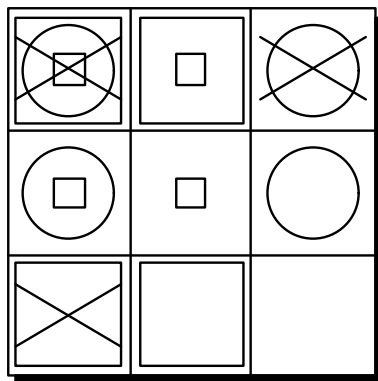
16. Define $a^*b$ to be the larger of $2a$ and $a + b$. Then $(2^*3)^*(3^*2)$ is equal to

    (A) 9     (B) 10     (C) 11     (D) 12     (E) None of these

17. Of the following numbers, which cannot be expressed in the form $11A + 19B$ where $A$ and $B$ are positive integers?
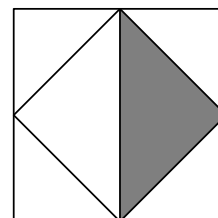
    (A) 30      (B) 68      (C) 123      (D) 211      (E) None of these

18. Which of the squares $A$, $B$, $C$ or $D$ should logically occupy the missing place in the figure below?



    (A)       (B)       (C)       (D) 

    (E) Not enough information

19. The midpoints of the sides of a square are joined together and part of the resulting square is shaded. The shaded area represents what proportion of the original square?



    (A) $\dfrac{1}{8}$      (B) $\dfrac{1}{6}$      (C) $\dfrac{1}{4}$      (D) $\dfrac{1}{3}$      (E) $\dfrac{1}{2}$

20. The women in a club outnumber the men by 16. 7 times the number of women exceeds 9 times the number of men by 32. Find the number of men.

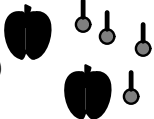    (A) 4      (B) 24      (C) 32      (D) 42      (E) None of these

# PART C

21. If the sum of the first 100 integers: $1 + 2 + 3 + \ldots + 99 + 100 = 5050$, then the sum of the first 50 odd integers: $1 + 3 + 5 + \ldots + 99 =$?

    (A) 2500    (B) 2524    (C) 2525    (D) 2550    (E) None of these

22. Apples, cherries, and grapes are arranged on a platter in the following fashion: opposite sectors contain fruit which is of equal value. To equal the value of two bunches of grapes, how much fruit must be placed in the empty sector?
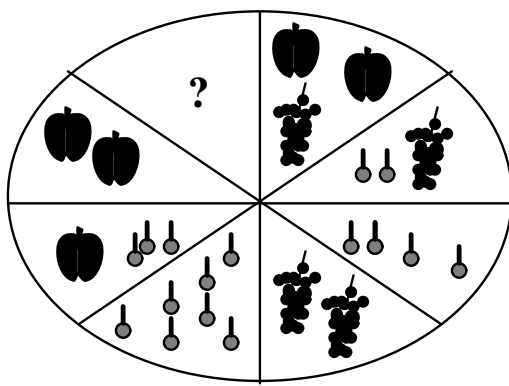


(A)    (B)    (C)    (D) 

(E) Not enough information

23. A sequence of numbers is obtained by multiplying each previous value by 2 and adding a number $a$ to the result. If the 6th number is 70 and the 9th number is 609, what is the value of $a$?

    (A) 1    (B) 3    (C) 7    (D) 49    (E) None of these

24. Assume that a ball dropped from any height rises half the distance on the rebound. If a ball is dropped from 100 m, what distance will the ball have covered by the time it hits the ground the 4th time?

    (A) 137.5m    (B) 187.5m    (C) 275m    (D) 375m    (E) Not enough information

25. A rectangular grid is coloured with the two colours Red and Green so that each colour occurs twice in each column and twice in each row. What colours must the squares labelled $A$ and $B$ be coloured?

| R |   |   | G |
|---|---|---|---|
|   |   | G |   |
|   | R |   | B |
|   | A |   | R |

(A) $A = R$
    $B = R$

(B) $A = R$
    $B = G$

(C) $A = G$
    $B = R$

(D) $A = G$
    $B = G$

(E) Not enough information

26. The arrows of each of the wheels shown below are randomly spun. The chance of obtaining a total on the two wheels less than 5 is:
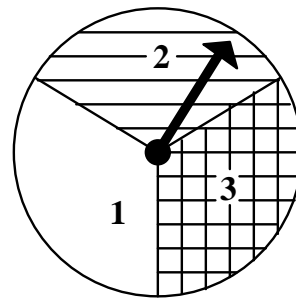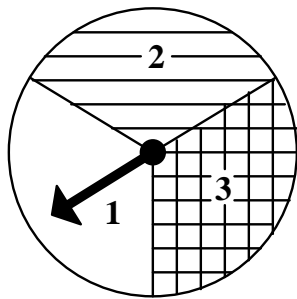


(A) $\dfrac{1}{3}$    (B) $\dfrac{3}{5}$    (C) $\dfrac{5}{9}$    (D) $\dfrac{2}{3}$    (E) Not enough information