NEW BRUNSWICK MATHEMATICS COMPETITION

May 22, 1998

GRADE 7

PART A

---

1. The number of minutes from 10:52 p.m. until 1:48 a.m. on the next day is

   (A) 124   (B) 176   (C) 270   (D) 904   (E) 1200

2. The square of $2\frac{1}{2}$ is

   (A) 4.25   (B) 5.00   (C) 5.50   (D) 6.25   (E) None of these

3. The Shirt Shoppe sells shirts for $5 each during the morning hours. Their sales of the shirts for the morning total $300. At noon, the price for each shirt is lowered to $4 and the Shoppe sells twice as many. The total slaes for the day is

   (A) $540   (B) $580   (C) $780   (D) $840   (E) $1080

4. At an average speed of 40 km/hr a car takes $1\frac{1}{2}$ hours to travel a certain distance. How long will it take to travel the same distance at 60 km/hr?

   (A) 2/3 hr   (B) 3/4 hr   (C) 1 hr   (D) $2\frac{1}{4}$ hr   (E) 3 hr

5. Using 5 squares each of which has sides of length 1 cm, the following figures can be made. Which of these has the smallest perimeter?

(A)   (B)   (C)   (D)   (E)
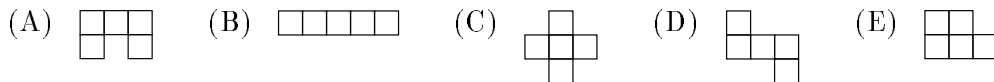
6. What percentage of the integers from 2 to 21 (both included) are exact multiples of 4?

(A) 20   (B) 21   (C) 24   (D) 25   (E) 26

7. Persons A, B and C each take 2 vitamin tablets a day while person D takes only 1 tablet a day. A full bottle of tablets lasts 24 days for all 4 of them. How many days will a full bottle last if D also takes 2 tablets a day?

(A) 16   (B) 18   (C) 20   (D) 21   (E) 22

8. If he works 8 hours per day, Paul can paint his house in 12 days. If he only works 6 hours per day, how many days will he need to paint his house?

(A) 9   (B) 16   (C) 24   (D) 48   (E) 72

9. If Michael Jordan has an average of 29 points per game after 100 games, how many points does he need in the remaining 50 games so that he finishes the season with an average of 30 points per game?

(A) 1000   (B) 1500   (C) 1600   (D) 3000   (E) None of these

10. A square table can seat one person at each side. If 20 of these tables are pushed together end-to-end to make one long narrow table, how many persons can be seated?
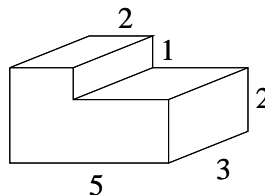
(A) 22   (B) 40   (C) 42   (D) 88   (E) None of these

PART B

11. The volume of the solid figure shown is

(A) 12   (B) 30   (C) 35   (D) 36   (E) 40

---

12. Five merchants sell grapes at different prices. Which is the best buy?

(A) 2.5 kg for \$1   (B) 5 kg for \$2.30   (C) 1 kg for \$0.44   (D) 10 kg for \$4.20

(E) 7.5 kg for \$3.10

---

13. How many 3 digit numbers are there which contain exactly one zero?

(A) 81   (B) 100   (C) 162   (D) 200   (E) None of these

---

14. Evaluate the following expression.

$$\frac{\frac{1}{2} \times \frac{1}{3} \times \frac{6}{2} \times \frac{4}{3} \times \frac{2}{1} \times \frac{3}{2} \times \frac{4}{3} \times \frac{3}{4} \times \frac{4}{5} \times \frac{5}{6}}{\frac{2}{3} \times \frac{4}{6} \times \frac{6}{2} \times \frac{2}{3} \times \frac{3}{6} \times \frac{2}{3} \times \frac{4}{3}} + 1$$

(A) $\frac{8}{35}$ (B) $\frac{35}{27}$ (C) $\frac{2}{3}$ (D) $\frac{35}{8}$ (E) None of these

---

15. A, B, C, D, E are 5 consecutive integers. If $B + C + D = 63$, then $A + B + C + D + E$ equals

(A) 70   (B) 84   (C) 105   (D) 120   (E) Not enough information

16. If y is a positive number and $x = -y$, which one of the following is false?

   (A) $x^2 y > 0$ (B) $x + y = 0$ (C) $xy < 0$ (D) $\dfrac{1}{x} - \dfrac{1}{y} = 0$ (E) $1 + \dfrac{x}{y} = 0$

17. A rectangle is 150 cm by 50 cm. The area in square meters is

   (A) .75   (B) 7.5   (C) 75   (D) 750   (E) 7500

18. The fuel consumption rate of automobiles is usually given as the number of litres of gasoline required to travel 100 km. If an automobile can travel 12.5 km on one litre of gas, the consumption rate for the automobile is

   (A) 5   (B) 7   (C) 8   (D) 10   (E) 12.5

19. There are 15 Blue Jays and 14 Orioles perched in 3 trees. Each tree has at least 4 Blue Jays and 2 Orioles. If no tree has more Orioles than Blue Jays, then the largest number of birds that can be in one tree is

   (A) 11   (B) 12   (C) 13   (D) 14   (E) 15

20. The angle ABD, in degrees, is
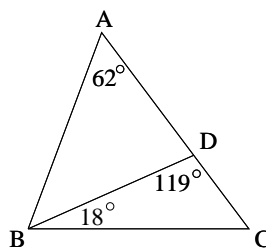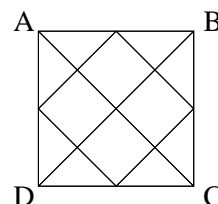

   (A) 47   (B) 57   (C) 80   (D) 110   (E) 137

PART C

21. A ball bounces 2/3 of the distance through which it falls. If the second rebound is 72 cm, the height, in cm, through which the ball originally dropped was

    (A) 32   (B) 48   (C) 108   (D) 162   (E) None of these

22. ABCD is a square. The number of triangles in the diagram is

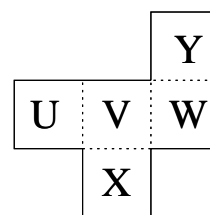   (A) 8   (B) 12   (C) 16   (D) 20   (E) None of these

23. In a class, 2/5 of the boys wear glasses and 1/3 of the girls wear glasses. What fraction of the class wear glasses?

    (A) 3/68   (B) 2/15   (C) 11/30   (D) 11/15   (E) Not enough information

24. The sheet shown is folded along the dotted lines to form an open box with the opening on top. Which letter is on the bottom?

    (A) U   (B) V   (C) W   (D) X   (E) Y

25. Mr. Martin bought two balls which he then resold at $1.20 each. Based on the cost of the balls (the price he payed), Mr. Martin made a profit of 20% on one of the balls and encountered a loss of 20% on the other. Overall, both sales have led to

    (A) no net profit   (B) a loss of 4 cents   (C) a profit of 4 cents   (D) a loss of 10 cents

    (E) a profit of 10 cents

26. At the moment when its altitude is 300 m, a plane is flying with a horizontal speed of 200 km/hr and an unknown vertical speed. What is the minimum average vertical speed, in km/hr, required to avoid a 500 m tall mountain situated at a horizontal distance of 1 km away from the plane?

(A) 30   (B) 40   (C) 100   (D) 200   (E) None of these