UNIVERSITY OF NEW BRUNSWICK
and
UNIVERSITÉ DE MONCTON

JUNIOR HIGH SCHOOL MATHEMATICS COMPETITION

May 24, 1996

GRADE 8

PART A

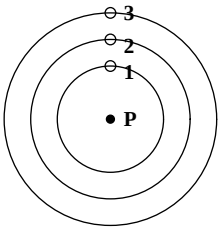
1. What is the value of $\frac{1}{2} + \frac{1}{3} + \frac{1}{2} \times \frac{1}{3}$?

   (A) $\frac{1}{12}$ (B) $\frac{5}{12}$ (C) $\frac{4}{9}$ (D) $\frac{2}{3}$ (E) 1

2. John receives \$300 every week as a salary. If one week out of two weeks he keeps one third of it and the rest of the time he keeps one half of it, how many weeks will it take to save a total of \$1500?

   (A) 5 weeks (B) 6 weeks (C) 10 weeks (D) 12 weeks (E) 15 weeks

3. The planet Pluto has 3 moons. Moon 1 takes 6 days to make a complete revolution around the planet, moon 2 takes 10 days and moon 3 takes 15 days. Starting from the position shown on the diagram, how many days are necessary to return to the original position?



   (A) 30 days (B) 60 days (C) 90 days (D) 150 days (E) 900 days

4. How many two digit numbers are there whose first digit is larger than the second digit?

   (A) 36 (B) 40 (C) 45 (D) 50 (E) None of these

5. You travelled at a speed of 30 km per hour for the first 10 minutes, at a speed of 60 km per hour for the next 20 minutes and at a speed of 90 km per hour for the last 30 minutes. What was your average speed?

   (A) 50 km/h (B) 55 km/h (C) 60 km/h (D) 65 km/h (E) 70 km/h

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6. A three digit number is between 130 and 200. It is divisible by 6 and 8. The tens digit is greater than the ones digit. What is the number?

   (A) 144 (B) 168 (C) 184 (D) 192 (E) 196

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7. A jug of orange juice is made by mixing 1 part frozen concentrate with 3 parts water. If 0.36 liter of concentrate is used, and as many 150 milliliter glasses are filled as possible, how many milliliters of orange juice are left?

   (A) 0 (B) 30 (C) 60 (D) 90 (E) 120

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8. A palindrome is a number which remains the same when its digits are reversed (for example 353, and 2002). My car odometer currently reads 31431 kilometers. What is the shortest distance that I must travel before the number showing on the odometer is a palindrome?

   (A) 18 (B) 82 (C) 100 (D) 592 (E) 992

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9. A rectangular pool is 8m wide and 12m long. A concrete walk of uniform width surrounds the pool. If the total area of the pool and the walk is 320 square meters, how many meters wide is the walk?

   (A) 2 (B) 4 (C) 6 (D) 8 (E) None of these

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10. Parking rates at an airport parking lot are as follows:

0-2 hours	\$1.25
Each additional hour	\$0.50
Maximum for each 24 hour period	\$3.50

    What is the fee for parking from 3:30 p.m. on Friday to 11:00 p.m. on the following Sunday?

    (A) \$10.50 (B) \$11.00 (C) \$12.25 (D) \$13.50 (E) None of these

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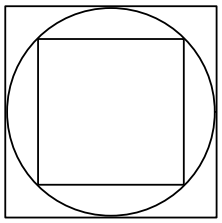
PART B

11. If the radius of the circle is 1, what is the area of the region located between the 2 squares?



(A) 1 (B) $\sqrt{2}$ (C) 2 (D) 4 (E) None of these

12. How many fractions whose denominator is 23 have values between .18 and .82?

(A) 13 (B) 14 (C) 15 (D) 16 (E) 17

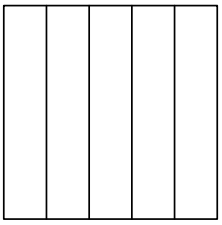
13. A teacher lines up all of the 30 students in the class in a row. It is found that the largest number of boys consecutively is 4. What is the maximum number of boys in the class?

(A) 15 (B) 23 (C) 24 (D) 25 (E) None of these

14. Which number is closest in size to the volume of a standard chicken egg?

(A) 7 cm^3 (B) 70 cm^3 (C) 700 cm^3 (D) .07 m^3 (E) .7 m^3

15. The square is divided into 5 congruent rectangles. If the perimeter of one rectangle is 30 units, what is the perimeter of the square?



(A) 50 (B) 60 (C) 150 (D) 225 (E) Not enough information

16. Find $A + B + C$, if A is 25% of 40, 10 is 25% of B, and 10 is C% of 40.

(A) 50 (B) 65 (C) 70 (D) 75 (E) 80

17. If today is Friday, what day of the week will it be in 44,640 minutes?

(A) Monday (B) Tuesday (C) Wednesday (D) Thursday (E) Friday

18. When the 171st positive even integer is subtracted from the 220th positive odd integer the result is Z. Determine Z.

(A) 48 (B) 49 (C) 97 (D) 99 (E) None of these

19. How many integers between 17 and 2628 are evenly divisible by 11?

(A) 195 (B) 237 (C) 238 (D) 239 (E) 240

20. A dog chases a rabbit which starts 50 meters ahead of the dog. The dog jumps 2 meters every time the rabbit jumps 1.6 meter. In how many leaps will the dog catch the rabbit?

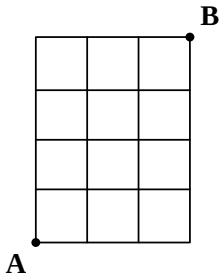
(A) 25 (B) 100 (C) 125 (D) 150 (E) None of these

PART C

21. On the planet Pluto, plouks have 2 heads and 3 legs and zuves have 1 head and 4 legs. A tall plutonian observes 10 heads by looking over a fence. A small plutonian looking under the same fence observes 25 legs. How many plouks are behind the fence?

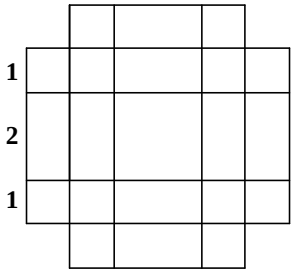
(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

22. If steps are allowed only to the right or up, how many distinct paths are there between **A** and **B**?



(A) 12 (B) 32 (C) 35 (D) 36 (E) 40

23. How many squares are there in the following symmetric diagram?



(A) 12 (B) 17 (C) 21 (D) 22 (E) 26

24. Evaluate: $\sqrt{5^5 + 5^5 + 5^5 + 5^5 + 5^5}$.

(A) $5\sqrt{5}$ (B) 25 (C) $25\sqrt{5}$ (D) 125 (E) 625

25. 3 apples, 2 oranges and 4 bananas costs a total of \$2.19. 4 applies, 3 oranges and 1 banana costs \$2.20. What is the cost of 1 apple and 10 bananas?

(A) \$1.41 (B) \$2.17 (C) \$2.20 (D) \$3.30 (E) Not enough information

26. How many two digit numbers are equal to seven times the sum of their digits?

(A) 0 (B) 1 (C) 2 (D) 3 (E) 4