

UNIVERSITY OF NEW BRUNSWICK
and
UNIVERSITÉ DE MONCTON

JUNIOR HIGH SCHOOL MATHEMATICS COMPETITION

May 17, 1991

GRADE 7

PART A

1. A runner travels 300 m during the first minute. The distance covered decreases by 20 m during each of the following minutes. What distance will be covered during the 7th minute?

(A) 160 m (B) 180 m (C) 200 m (D) 1800 m (E) 1980 m

2. If I climb a staircase 2 steps at a time, one step is left over. Climbing 3 steps at a time gives 2 steps left over, while climbing 4 at a time gives 3 left over. How many steps are there if there are fewer than 20?

(A) 11 (B) 13 (C) 15 (D) 17 (E) 19

3. A cottage is constructed on a rectangular lot measuring 30 m by 40 m. The cottage has an area of 90 square meters; the rest of the lot is lawn. What is the area of this lawn?

(A) 610 m² (B) 900 m² (C) 1110 m² (D) 1120 m²
(E) none of the previous answers

4. How many days are there in the last six months of the year?

(A) 180 (B) 181 (C) 182 (D) 183 (E) 184

5. A hockey team has won three times as many games as it has lost. If it has won 84, how many has it lost?

(A) 24 (B) 28 (C) 32 (D) 36 (E) none of the previous answers

6. How many animals do I have if all but two are dogs, all but two are cats and all but two are hamsters?

(A) 3 (B) 4 (C) 5 (D) 6 (E) 7

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7. Which number does not belong in the list 2, 3, 5, 7, 9, 11, 13, 17, 19, 23, 29, 31, ...?
- (A) 2 (B) 7 (C) 9 (D) 13 (E) 29
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8. You are given three numbers. The second is 5 more than the first and the third is double the sum of the first two. If the sum of these numbers is 75, find the second number.
- (A) 6 (B) 10 (C) 15 (D) 30 (E) 50
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9. The cost of mailing a package is \$3.00 for the first kilogram and $\frac{1}{5}$ cent for each additional gram. To the nearest cent, what is the cost of mailing a 3500 gram package?
- (A) \$8.00 (B) \$9.60 (C) \$10.00 (D) \$10.50 (E) none of these
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10. There are 28 handshakes at a party where each person greets every other. How many people were there?
- (A) 6 (B) 7 (C) 8 (D) 12 (E) 14
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PART B

11. In the high school auditorium the number of rows of seats is double the number of seats in each row. If there are the same number of seats in each row and 1352 seats in total, how many rows are there?
- (A) 12 (B) 26 (C) 37 (D) 52 (E) none of the previous answers
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12. A box contains 24 identical cubes. How many cubes can be placed in another box each of whose dimensions is double that of the original box?
- (A) 48 (B) 96 (C) 144 (D) 192 (E) not enough information
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13. A mouse takes 12 sec. to run once around a circular track, whereas another mouse takes 16 sec. The two mice leave the starting line at the same time and end their race 1 minute 40 seconds later. How many times after the start do the two mice find themselves simultaneously at the starting line?
- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
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14. The tens digit of a number is one third of the units digit, and the sum of these two digits is 8. What is the number?
- (A) 13 (B) 17 (C) 26 (D) 35 (E) 44
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15. If n is an integer and $2n$ is a multiple of 3, then $5n$ is a multiple of
- (A) 6 (B) $\frac{15}{2}$ (C) 10 (D) 15 (E) none of the previous numbers
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16. On her birthday Chantal received an aquarium of length 48 cm and width 30 cm. She filled the tank with water to height 28 cm. How many fish can Chantal buy if each fish needs 1000 cm^3 of water to live?
- (A) 38 (B) 39 (C) 40 (D) 41 (E) 42
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17. If a number is 16% of its own reciprocal, then that number is
- (A) $\frac{1}{50}$ (B) $\frac{4}{25}$ (C) $\frac{2}{5}$ (D) 2 (E) 4
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18. On an exam with q questions, Marie correctly answered 15 of the first 20 but just $\frac{1}{3}$ of the rest. If her total score was 50%, what was q
- (A) 29 (B) 50 (C) 55 (D) 65 (E) 100
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19. Suppose M is a two digit number and that N is obtained by reversing the digits of M . If $M + N = 132$, how many different values can M have?
- (A) 4 (B) 7 (C) 8 (D) 10 (E) 12
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20. The length of a rectangle is 10% more than the side of a square and its width is 10% less than the side of the square. The ratio of the area of the rectangle to the area of the square is
- (A) 0.90 (B) 0.99 (C) 1.00 (D) 1.01 (E) 1.10
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PART C

21. Find the largest number of points of intersection for 10 lines in a plane.

- (A) 22 (B) 30 (C) 36 (D) 45 (E) 55
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22. In how many years will a 53 year old man be 10 times the age of his son who is now 8 years of age?

- (A) 3 (B) 7 (C) 10 (D) 17 (E) none of the previous answers
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23. What is the next term in the sequence

$$\frac{2}{3}, \frac{4}{9}, \frac{8}{27}, \frac{16}{81}, \frac{32}{243}, \dots$$

- (A) $\frac{48}{324}$ (B) $\frac{64}{729}$ (C) $\frac{64}{486}$ (D) $\frac{48}{486}$ (E) none of the previous numbers
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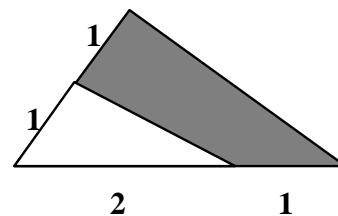
24. A car travels from one town to another at 60 kph. and returns along the same road at 20 kph. What is the average speed for the entire trip?

- (A) 28 kph. (B) 30 kph. (C) 40 kph. (D) 80 kph. (E) not enough information
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25. I have 6 different books, 3 with red covers and 3 with blue covers. In how many different ways can I arrange these books on a shelf so that no two books of the same colour are next to each other?

- (A) 6 (B) 24 (C) 36 (D) 72 (E) 120
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26. What fraction of the area of the large triangle is shaded?



- (A) $\frac{1}{3}$ (B) $\frac{1}{2}$ (C) $\frac{3}{5}$ (D) $\frac{2}{3}$ (E) not enough information
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