

**UNIVERSITY OF NEW BRUNSWICK**

**UNIVERSITÉ DE MONCTON**

**35<sup>th</sup> NEW BRUNSWICK  
MATHEMATICS COMPETITION**

Friday, May 12<sup>th</sup>, 2017

**GRADE 7**

INSTRUCTIONS TO THE STUDENT:

1. Do not start the examination until you are told to do so.
2. You are permitted to use rough paper. No other aids are necessary.
3. This is a multiple choice test. Each question is followed by five answers marked A, B, C, D, E. Only one is correct. When you have decided on your choice, mark the appropriate letter on your answer sheet using the pencil provided.
4. Problems are worth 3 points each in part A , 4 points each in part B, and 5 points each in part C. The penalty for incorrect answers is one quarter of the points assigned for that question. No penalty is assessed for answers which are left blank.
5. Diagrams are NOT drawn to scale. They are intended as aids only.
6. You have 60 minutes to answer the questions.
7. The use of calculators in the examination room is not allowed.

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**Part A**

1. Which of these numbers is a multiple of 7?

- (A) 31            (B) 32            (C) 33            (D) 34            (E) 35
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2. What is the value of  $5 \times (3 + 3) - 8 \times \frac{1}{2}$ ?

- (A) 5            (B) 11            (C) 14            (D) 26            (E) 44
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3. When you divide 3332 by 9, what is the remainder?

- (A) 0            (B) 2            (C) 4            (D) 6            (E) 8
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4. In the Fibonacci sequence, the first two numbers are 1 and 1, and each number after those is the sum of the two previous numbers. Then, the seventh number is equal to:

- (A) 5            (B) 8            (C) 10            (D) 13            (E) 21
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5. A young boy says "I have the same number of brothers as I have sisters." His sister replies "I have twice as many brothers as sisters." How many children are in this family?

- (A) 3            (B) 4            (C) 5            (D) 6            (E) 7
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6. Suppose that you start with the number 1000 and you add on to that amount following these instructions : add 40, add 1000, add 30 and then again add 1000, add 20, add 1000 again and finally add 10. What is the final result?

- (A) 4100            (B) 4900            (C) 4990            (D) 5000            (E) none of these
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7. You throw three 6-sided dice. If the result written  $(a, b, c)$  means that the first die shows "a", the second die shows "b", and the third die shows "c", then there are 3 ways of getting a sum of 4, namely, (1, 1, 2), (1, 2, 1) and (2, 1, 1). In how many ways can you get a sum of 5?

- (A) 6            (B) 8            (C) 9            (D) 10            (E) 12
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8. In the Mathtown zoo, a lion eats three times as much meat as a wolf. A wolf eats twice as much as a lynx and a lynx eats four times as much as a fox. If the lynx has eaten 1 kilogram of meat, how many kilograms of meat have the lion and four foxes eaten in total?

(A) 5                      (B) 6                      (C) 6.5                      (D) 7                      (E) 7.5

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9. A bag contains some blue marbles, some red marbles and some green marbles. Exactly  $\frac{2}{3}$  of the marbles are not blue and exactly  $\frac{3}{4}$  of the marbles are not red. What fraction of the marbles are not green?

(A)  $\frac{1}{3}$                       (B)  $\frac{5}{12}$                       (C)  $\frac{1}{2}$                       (D)  $\frac{7}{12}$                       (E)  $\frac{2}{3}$

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10. On May 1<sup>st</sup>, a store announces a super smartphone at \$1000. On May 4<sup>th</sup>, the price is reduced by 10%. On May 9<sup>th</sup>, the price is further reduced by 10%. Finally, on May 12<sup>th</sup>, the price is reduced by another 10%. What is the price of this super smartphone on May 12<sup>th</sup>?

(A) \$700                      (B) \$729                      (C) \$800                      (D) \$810                      (E) \$900

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## Part B

11. A radio signal sent from the Earth takes 1.25 seconds to reach the Moon which is at a 375,000 km distance from Earth. When the planet Mars is at its closest to the Earth, a radio signal from Mars reaches the Earth after 4 minutes and 10 seconds. What is the distance, in millions of kilometers, between Mars and the Earth when Mars is at its closest to the Earth?

(A) 50                      (B) 60                      (C) 75                      (D) 80                      (E) 90

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12. In a house there are two clocks. One clock chimes every 25 minutes. The other clock chimes every 30 minutes. If at a given time both clocks chime together for the first time, how many minutes later will the two clocks chime together for the sixth time?

(A) 150                      (B) 300                      (C) 600                      (D) 750                      (E) 900

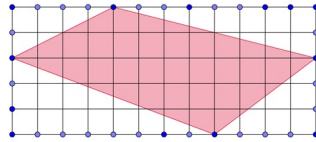
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18. During the last big storm, 30 cm of snow fell on Mathtown, a city that has a rectangular shape, 3 km wide and 30 km long. If all the snow that has fallen on Mathtown during this storm would fill a very large cube of snow, what would be the length of its side in meters?

(A) 30            (B) 100            (C) 300            (D) 1000            (E) 3000

19. In the following diagram, each small square has a side length of 1 cm. What is the area, in square cm, of the shaded quadrilateral?



(A) 24            (B) 28            (C) 30            (D) 32            (E) 36

20. Some friends contribute equally to buy a game. If each friend contributes \$3, they have \$2 more than needed. If each friend contributes \$2, they have \$2 less than needed. How many friends are there?

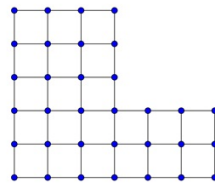
(A) 2            (B) 3            (C) 4            (D) 5            (E) 6

### Part C

21. If the value of  $3 \times 3 \times 3 \times 3 \dots \times 3$  (where the number 3 appears 2017 times in the product) was written out in full, what would be the final digit?

(A) 1            (B) 3            (C) 5            (D) 7            (E) 9

22. How many squares are there in the following diagram?



(A) 31            (B) 33            (C) 34            (D) 35            (E) 37

