

# Abel Mathematics Contest

## Up to Grade 5

### May 2019



"It appears to me that if one wishes to make progress in mathematics,  
one should study the masters and not the pupils."

**Niels Henrik Abel**

1802-1829

#### **Instructions:**

1. Calculators may be used.
2. Select the best answer.
3. Transfer your answers to the Answer Form.
4. Diagrams are not always drawn to scale.
5. The time limit for the Niels Henrik Abel Mathematics Contest is one hour.

1. Alice has forgotten the pin number of her credit card. She remembers that

- It is a 4 digit number.
- There are no repeated digits.
- It is an even number.
- It is the birthday of her dog (DD/MM)

Which of the following could be her pin number?

- A) 3102      B) 2321      C) 2082      D) 1604      E) 1514

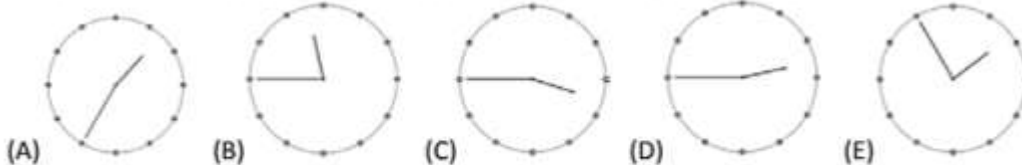
2. Nicu chooses a number, adds 1 to it, then subtracts 2 from the result, then multiplies the new result by 3, then divides the outcome by 4 and finally obtains 6. What was the number chosen at the beginning?

- A) 1      B) 3      C) 6      D) 8      E) 9

3. Bart is getting a hair cut. In the mirror, the clock behind them looks like this:



What would he have seen if he had looked in the mirror ten minutes earlier?



4. Samira plants twelve trees every thirty minutes. If she continues planting at the same rate, how long will it take her to plant 240 trees?

- A) 3 h      B) 8 h      C) 10 h      D) 12 h      E) 20 h

5. Wei paid for 5 treats with a \$20 bill and got \$4 in change. How much did each treat cost?

- A) \$2.20      B) \$2.80      C) \$3.20      D) \$3.80      E) \$5.00

6. A square piece of paper has a perimeter of 20 cm. What is the area of a square piece of paper with twice that perimeter?

- A)  $40 \text{ cm}^2$     B)  $50 \text{ cm}^2$     C)  $80 \text{ cm}^2$     D)  $100 \text{ cm}^2$     E)  $120 \text{ cm}^2$

7. Jennifer bought enough cat food for her four cats to last for 12 days. On her way home, she brought back two more stray cats. If she gives the cats the same amount of food every day, how many days will the cat food last now?

- A) 8    B) 7    C) 6    D) 5    E) 4

8. Juan has to take a pill every 15 minutes. He took the first pill at 11:05. At what time did he take the fourth pill?

- A) 11:35    B) 11:50    C) 11:55    D) 12:00    E) 12:05

9. How many pairs of two-digit natural numbers have a difference equal to 50?

- A) 60    B) 50    C) 40    D) 30    E) 20

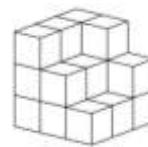
10. What is the value of the ? in this equation?

4 two-dollar coins (toonies) = \_\_\_?\_\_\_ quarters + 40 dimes

- A) 4    B) 8    C) 10    D) 12    E) 16

11. How many blocks are there in the pile at right?

- A) 13    B) 15    C) 16    D) 19    E) 20

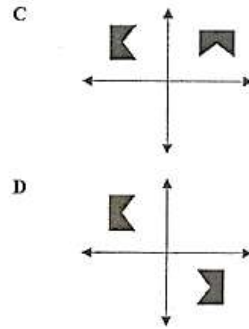
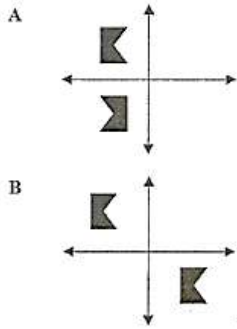
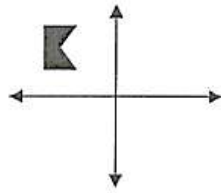


---

12. A bag contains 8 red balls, 2 green balls, and 2 yellow balls. If you randomly choose one of these balls, what is the probability that the ball chosen is yellow?

- A)  $1/6$     B)  $2/6$     C)  $2/8$     D)  $2/10$     E)  $1/2$

13. Which represents a translation of the figure?



14. There are about 585 million people in North America, and there are about 35 million people in Canada. What percent of the North American population is in Canada?

- A) 0.006 %    B) 0.06 %    C) 0.6%    D) 6.0 %    E) 60%

15. What is the value of X in the equation:

$$876 = 3X + 12$$

- A) 292    B) 296    C) 73    D) 288    E) 188

16. What fraction of the figure at right is shaded?

- A) 3/5    B) 1/2    C) 1/3    D) 5/3    E) 3/8



17. These shapes are drawn on square sheets of paper as shown. How many of these shapes have the same perimeter as the sheet of paper itself?



- A) 1      B) 2      C) 3      D) 4      E) 5

18. At most how many students can sit in a row of 25 chairs, if seated students must be separated by at least two empty chairs?



- A) 8      B) 9      C) 10      D) 11      E) 12

19. The date 01/03/05 (March 1, 2005) was the first of the 21st Century in which the date contains three consecutive odd numbers in ascending (increasing) order. How many such dates are there in the 21st century (in the form DD/MM/YY)?

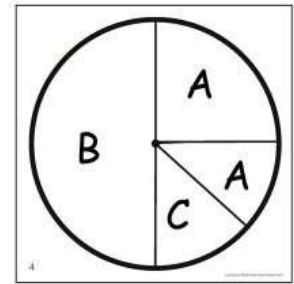
- A) 3      B) 5      C) 7      D) 9      E) 16

20. A school has two types of rooms: rooms for smaller classes with 2 windows and rooms for bigger classes with 3 windows. There are 58 windows in the school, and 25 rooms. How many rooms are for smaller classes?

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

21. What is the probability of getting an A on this spinner?

- A)  $\frac{2}{4}$     B)  $\frac{1}{3}$     C)  $\frac{3}{8}$     D)  $\frac{1}{2}$     E)  $\frac{1}{4}$



22. Which set is in order from least to greatest?

A)  $\frac{9}{10}$ , 0.9991, 1.111..., 1.12

B)  $\frac{1}{2}$ , .499999...,  $\frac{1}{3}$ , 0.1112

C)  $\frac{4}{5}$ , 0.80001,  $\frac{5}{6}$ , 0.79

D)  $\frac{5}{100}$ , 0.5, 0.049, 1.0

E)  $\frac{7}{8}$ ,  $\frac{5}{6}$ , 0.825,  $\frac{3}{4}$

23. Which fraction is greatest?

A)  $\frac{2}{3}$

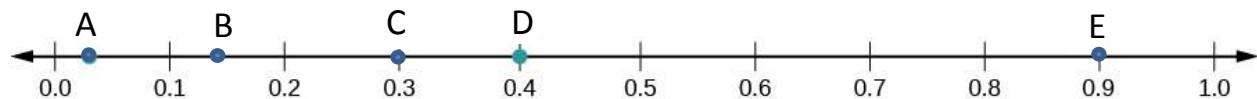
B)  $\frac{6}{7}$

C)  $\frac{3}{4}$

D)  $\frac{8}{10}$

E)  $\frac{3}{5}$

24. Which letter represents the decimal 0.14?



25. When Pinocchio lies, his nose gets 8 cm longer. When he tells the truth, his nose gets 3 cm shorter. When his nose was 7 cm long, he said five sentences. After that, his nose was 25 cm long. How many of his sentences were true?

A) 1

B) 2

C) 3

D) 4

E) 5