

## 7. Probability and statistics

### Task 7.01. (0-2) (2015 – task 13)

From the set of numbers  $\{1, 2, 3, \dots, 8\}$ , a single number is randomly drawn two times, without replacement. Complete the following sentences.

- Event  $A$  – the product of the two randomly drawn numbers is divisible by 5. This means that one of the randomly drawn numbers must be .....
- The probability of event  $A$  is equal to .....

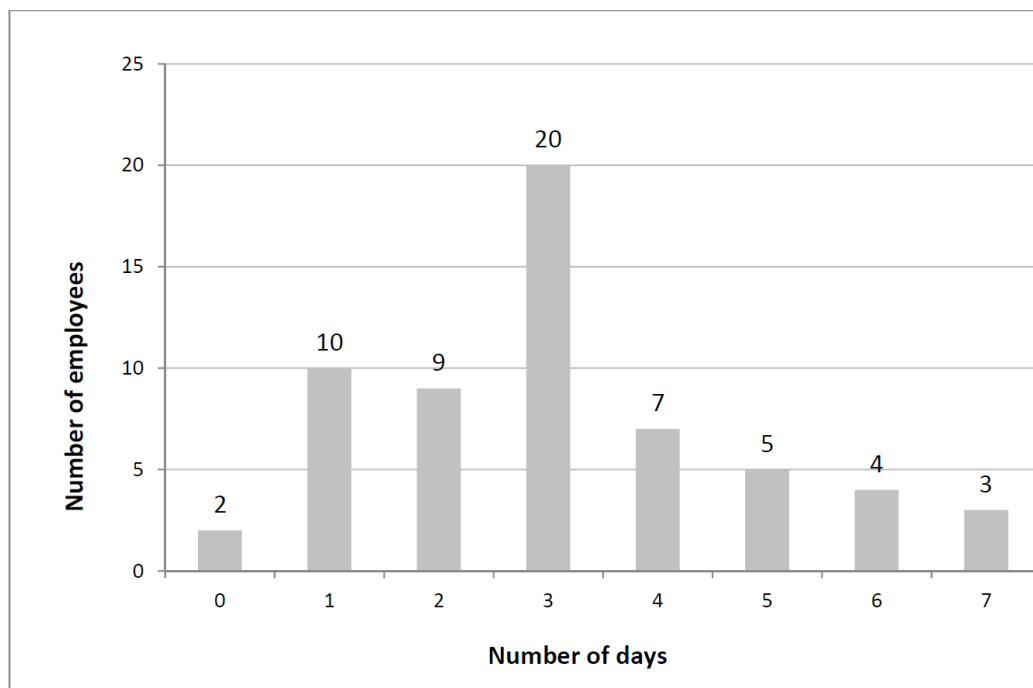
### Task 7.02. (0-1) (2016 – task 12)

Five different points are located on one plane, and any three of these points are non-colinear. The number of line segments which have their endpoints at any two of these five points is

- A. 5                      B. 10                      C. 20                      D. 15

### Task 7.03. (0-2) (2016 – task 14)

Each of the 60 employees of a company was asked to give the number of days on which they went grocery shopping in the previous week. The survey results are presented in the chart below.



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Complete the following sentences using the chart.

- (a) The percentage of the employees who shopped for groceries on more than four days in the previous week is .....
- (b) The median number of days when the employees shopped for groceries equals .....

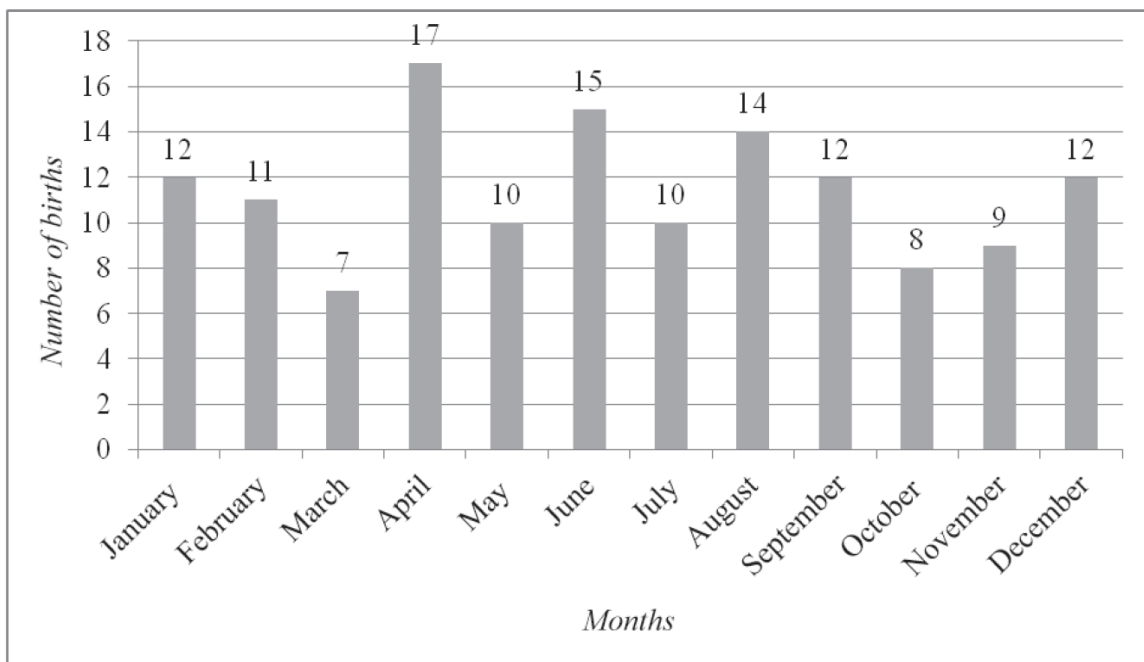
### Task 7.04. (0-1) (2017 – task 13)

The set of numbers  $\langle 1, 200 \rangle$  contains exactly  $k$  natural even numbers which are not divisible by 3. Therefore:

- A.**  $k = 67$                       **B.**  $k = 66$                       **C.**  $k = 34$                       **D.**  $k = 33$

### Task 7.05. (0-2) (2017 – task 16)

The diagram below shows the number of births in individual months of 2016 in X, an urban-rural municipality.



Complete the following sentences.

- (a) The median of the dataset which contains the monthly numbers of births in 2016 in municipality X equals .....

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- (b) In 2016, the birth of the hundredth new born baby in municipality X took place in the month of .....

### Task 7.06. (0-2) (2017 – task 18)

A random experiment consists in a simultaneous toss of two coins and a cubic dice. The result of tossing a coin may be heads or tails. Each of the six faces of the dice contains a different number of dots. The number of the dots belongs to the set  $\{1, 2, 3, 4, 5, 6\}$ . Complete the following sentences.

- (a) The probability of an event the result of which is two tails and a face with six dots is .....
- (b) The probability of an event whose result is two tails and a face with an even number of dots is .....

### Task 7.07. (0-2) (2018 – task 15)

Two fair, six-sided dice are thrown.  $A$  is an event in which the sum of the numbers thrown is a prime number. Complete the following sentences.

- (a) The sample space consists of ..... elements.
- (b) The probability of the event  $A$  is .....

### Task 7.08 (0-1) (2019 – task 11)

One person is randomly selected from a class of 32 students, 18 of whom are girls. The probability that none of the girls will be selected equals:

A.  $\frac{7}{9}$

B.  $\frac{1}{32}$

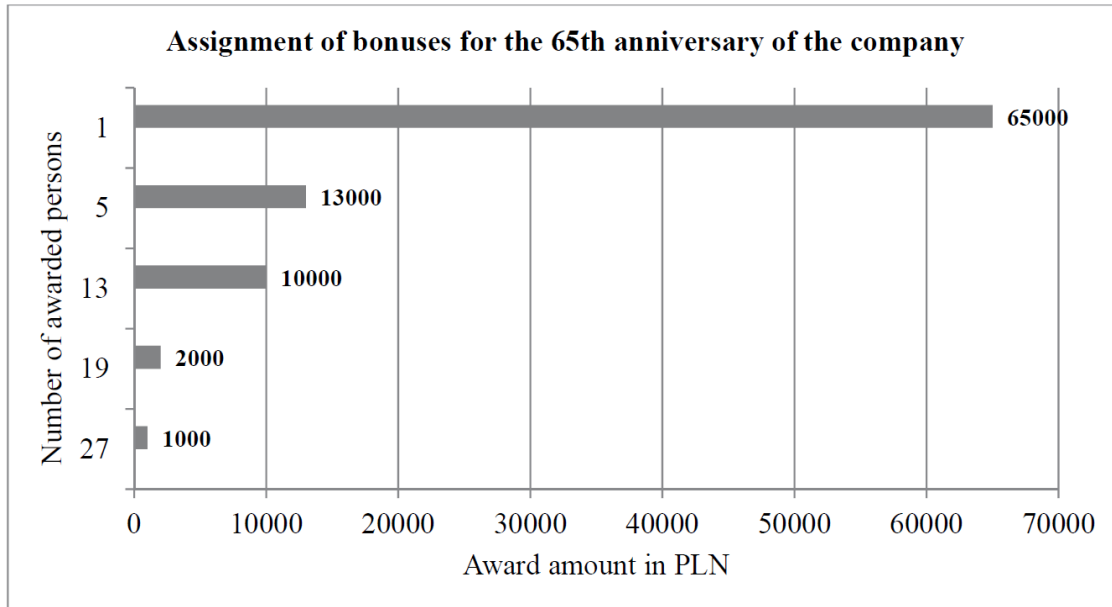
C.  $\frac{1}{14}$

D.  $\frac{7}{16}$

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### Task 7.09. (0-4) (2019 – task 14)

To celebrate its 65th anniversary, a company decided to award bonuses to 65 of its employees. The assignment of bonuses is illustrated in the diagram below.



Complete the following sentences with the correct numbers.

- The greatest number of employees were awarded the bonus worth PLN .....
- The mean of the bonuses is PLN .....
- The median of the awarded bonuses equals PLN .....
- The person who was awarded the highest bonus received .....% of the total amount allocated for all bonuses to celebrate the 65th anniversary of the company.

### Task 7.10. (0-3) (2019 – task 17)

From the set of numbers {11,12,13,14,15,16,17,18,19, 20} two numbers are randomly drawn without replacement.

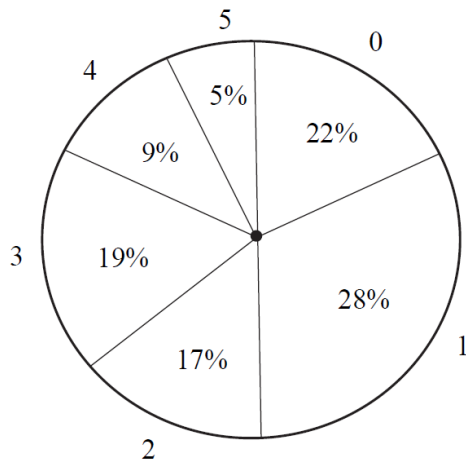
Complete the following sentences with the correct numbers.

- The probability of drawing two numbers whose product is an odd number equals .....
- The probability of drawing two even numbers equals .....
- The probability of drawing two numbers whose difference is an odd number equals .....

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**Task 7.11** (0-1)

(2020 – task 16)



The pie chart on the left shows a summary of responses given by a group of people to the question:

*How many books did you read last month?*

The median of the responses is:

- A. 1                      B. 1.5                      C. 2                      D. 2.5

**Task 7.12** (0-3)

(2020 – task 19)

Two numbers are randomly drawn without replacement from the set  $\{2, 3, 5, 7, 11, 13\}$ .

Complete the following sentences.

- (a) The probability of event  $A$  in which the sum of two numbers drawn is divisible by 9 equals .....
- (b) The probability of event  $B$  in which two odd numbers are drawn equals .....
- (c) The probability of event  $C$  in which the product of two numbers drawn is less than 30 equals .....

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**Task 7.13.** (0-3) (2021– task 15)

The number of all natural divisors of the second power of the number 2020 is equal to

- A. 4                      B. 8                      C. 44                      D. 45

**Task 7.14.** (0-2) (2021– task 19)

In a random experiment, two fair, distinguishable cubic dice are thrown. Let  $A$  denote an event in which the product of the values obtained is an odd number.

Complete the sentences a–b below by writing the correct numeric values in the blanks.

- (a) The sample space for the experiment has  
..... outcomes.
- (b) The probability of the event  $A$  is equal to .....