7. Probability

Task 7.1. (T 13.2015, 0 – 2 pts)

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

a) 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 ..... .

b) The probability of event A is equal to ..... .

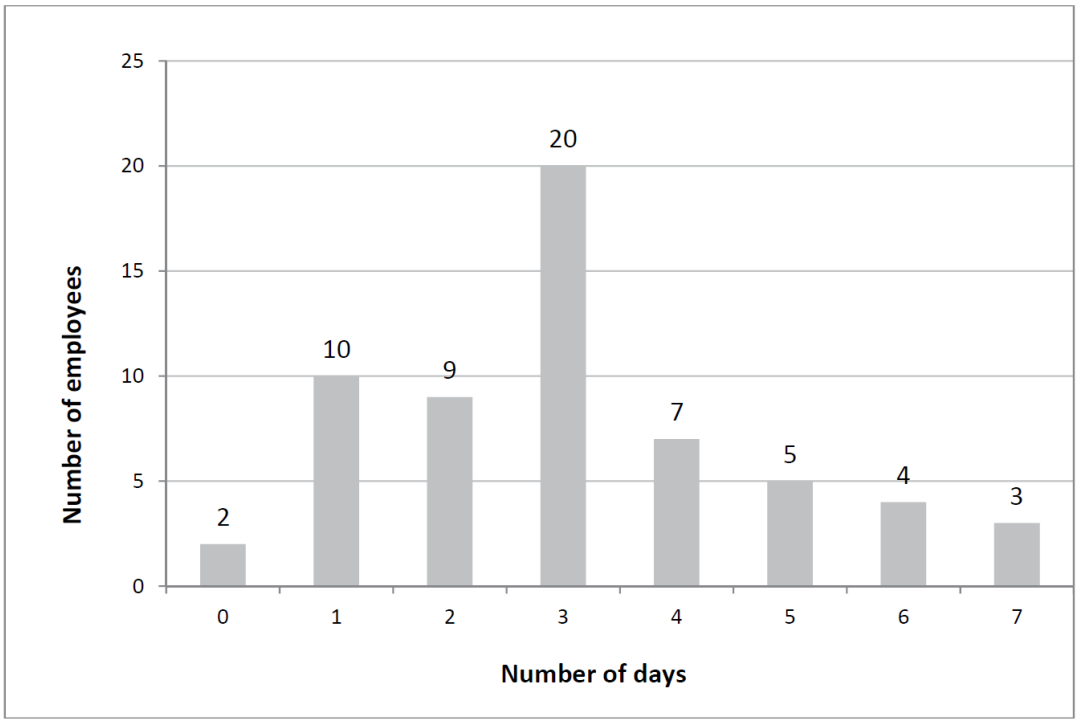
Task 7.2. (T 12.2016)

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 7.3. (T 14.2016, 0 – 2 pts)

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.



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 ..... .

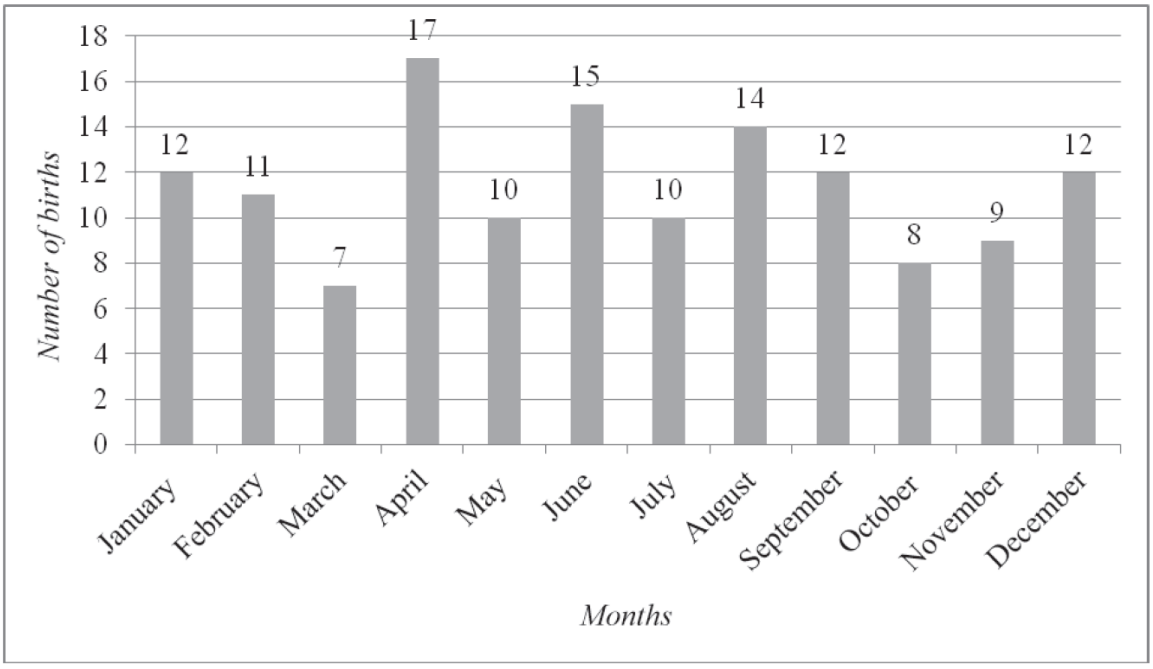
Task 7.4. (T 13.2017)

The set of numbers $\langle 1, 200)$ 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 7.5. (T 16.2017, 0 – 2 pts)

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 ..... .

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

Task 7.6. (T 18.2017, 0 – 2 pts)

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 7.7. (T 15.2018, 0 – 2 pts)

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 …… .

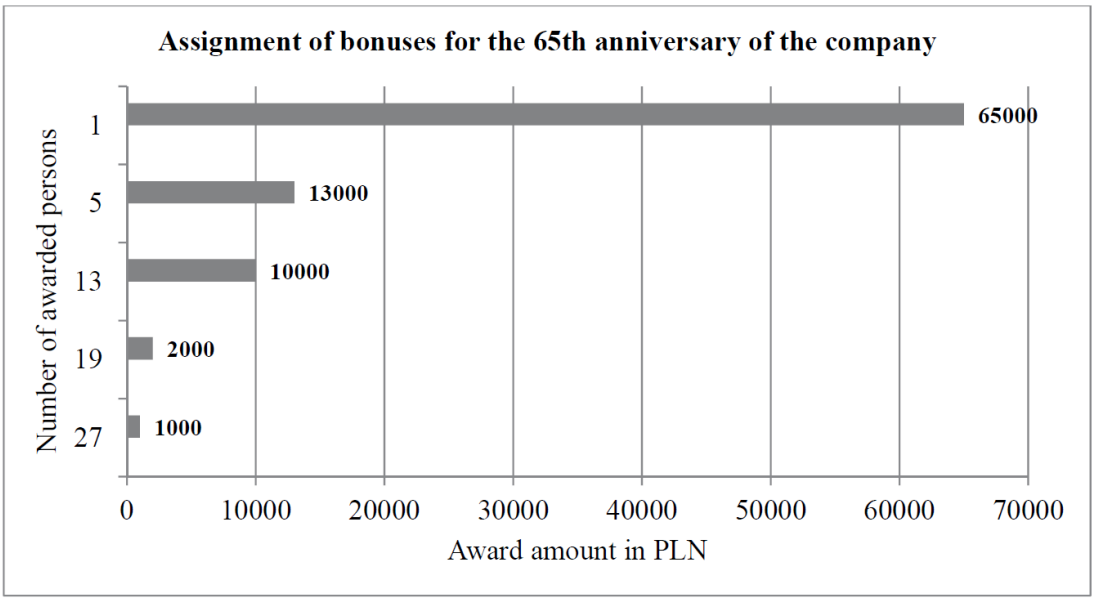
Task 7.8 (T 11.2019)

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

Task 7.9 (T 14.2019)

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.

a) The greatest number of employees were awarded the bonus worth PLN .....
b) The mean of the bonuses is PLN ..... .
c) The median of the awarded bonuses equals PLN ..... .
d) 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 (T 17, 0 – 3 pts)

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

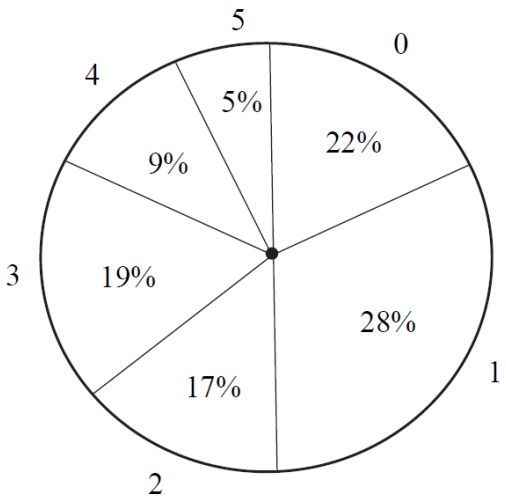
Complete the following sentences with the correct numbers.

a) The probability of drawing two numbers whose product is an odd number equals ..... .
b) The probability of drawing two even numbers equals ..... .
c) The probability of drawing two numbers whose difference is an odd number equals ..... .

Task 7.11 (T 16.2020)

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 (T 19.2020, 0 – 3 pts)

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 …… .

Task 7.13 (T 15.2021)

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 (T 19.2021, 0 – 2 pts)

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 ..... .

Task 7.15 (T 15.2023)

Let A be a set of all natural two-digit even numbers in whose decimal notation there are two different digits from among: 1, 2, 3, 4, 5, 6.

Complete the sentence. Select the correct answer from the options given below.

The number of elements of the set A is equal to

A. 11 **B.** 12 **C.** 15 **D.** 20

Task 7.16 (T 16.2023, 0-2 pts)

In a random experiment, two fair cubical dice are thrown. Each of the dice has a different number of pips on each side: from 1 to 6. Let A denote an event in which the numbers of pips thrown differ by 1.

Complete the following sentences so that they are true.

1. The sample space of the described random experiment has ..... elements.

2. The probability of the event A is equal to ..... .

Task 7.17 (T 17.2023, 0-2 pts)

The table shows the number of books that students in a certain class read last month.

Number of books read	1	2	3	4	5	10
Number of students	4	3	7	2	7	3

Complete the following sentences so that they are true.

1. The arithmetic mean of the books read by students in this class is equal to ..... .

2. The median number of books read by students in this class is equal to ..... .

Task 7.18 (T 13.2024)

Let A be a set of all natural numbers that have a two-digit decimal notation consisting of two different digits from among: 0, 1, 2, 3, 4, 5.

Complete the sentence. Choose the correct answer from the options given below.

The number of elements of the set A is equal to

A. 20 **B.** 25 **C.** 30 **D.** 36

Task 7.19 (T 14.2024, 0-2 pts)

In a random experiment, four fair coins are thrown. Let A denote an event in which more heads than tails appear.

Complete the following sentences so that they are true. Write the correct numbers in the blanks.

1. The sample space of the random experiment described above has ..... elements.

2. The probability of the event A is equal to ..... .

Task 7.20 (T 15.2024, 0-2 pts)

The table presents a set of semester grades in mathematics of all students in class IV A.

Grade	1	2	3	4	5	6
Number of grades	1	5	8	6	6	2

Complete the sentences so that they are true. Write the correct numbers in the blanks.

1. The mode of the semester grades in maths of these students is equal to ..... .

2. The median of the semester grades in maths of these students is equal to ..... .