Statistics Competition 2023.

Questionnaire checking

B - Lower secondary

1 - Basic knowledge test

Version: 1   Language: en

1. **George and Mary are playing a game of backgammon. Towards the end of the game, Mary notices that she needs a dice roll with a sum of outcomes more than 7 to win the game. Otherwise, George will win the game. The probability that Maria wins the game is:**

A.   0,42

B.   0,58

C.   0,25

D.   0,5

2.

A school has 450 pupils. Girls constitute 56% of all pupils at the school. From the school records, it is known that $\frac{2}{3}$ of the school's pupils have more than 2 siblings. The number of female pupils who have more than two siblings is 130. A person is selected at random from the pupil population of the school. The probability that the pupil selected is a boy and has more than 2 siblings is:

A.   0,29

B.   0,86

C.   0,67

D.   0,38

3. **A box contains 5 blue balls, numbered from 1 to 5, and 4 yellow balls, numbered from 1 to 4. We take at random 2 balls from the box simultaneously. The probability that both balls are odd-numbered is:**

A. $\frac{5}{18}$

B. $\frac{1}{9}$

C. $\frac{1}{6}$

D. $\frac{5}{9}$

4.

The following table shows the percentage of the population aged 25-64 in Cyprus and the rest of the Euro-countries who know two foreign languages well.

	2007	2011	2016
Rest of Euro-countries	20.1	21.2	23.1
Cyprus	17.9	19.2	20.3

The percentage increase in the percentage of citizens in Cyprus who know two foreign languages between the years 2007 and 2016 is:
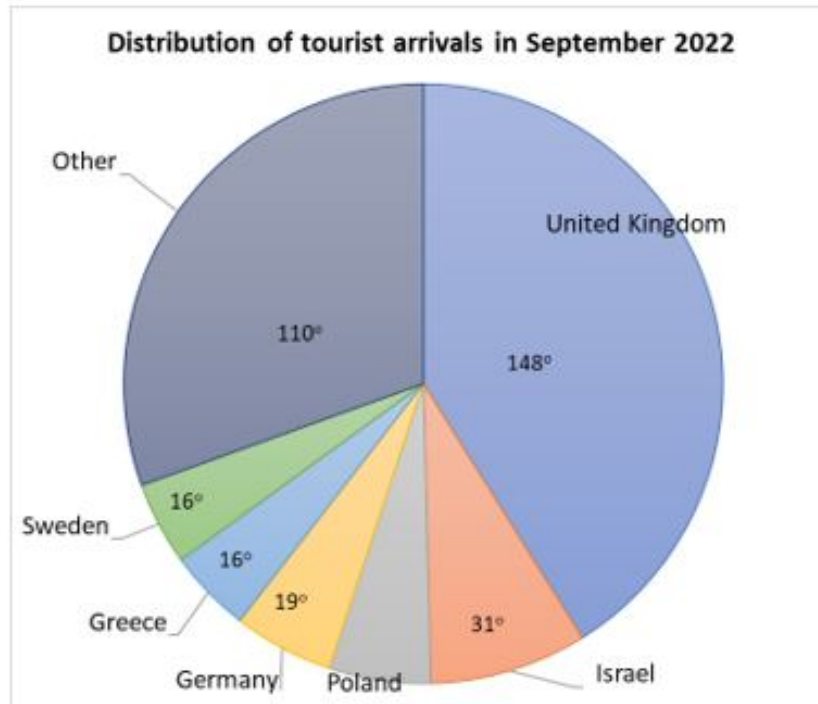
A.   13,41%

B.   5,73%

C.   1,1%

D.   2,4%

5.

The pie chart below shows the distribution of tourist arrivals in Cyprus in September 2022.

Distribution of tourist arrivals in September 2022

The total number of tourists in September was 413382. If we convert the pie chart into a frequency bar chart, the height of the bar corresponding to arrivals from Poland is:

A. 5,5%

B. 82676

C. 22966

D. 82676,4

6. **In a yard, there are 64 white, black and grey rabbits. Blacks are twice as many as whites. The average age of all rabbits is 1,2 years. The average age of white rabbits is 1,1 years. The average age of black rabbits is 0,9 years, and that of grey rabbits is 1,5 years. The population of grey rabbits is:**
A. 24

B. 28

C. 12

D. 27

7. **A survey on the effects on Cypriots from the continuous flow of immigrants to the island is to be carried out using a self-response questionnaire. Recent surveys show that the percentage of those who are not willing to participate in any survey is 30%. Also, 15% of the completed questionnaires are rejected as not being filled in correctly. What should the initial sample be for this survey so that the final number**

of correctly completed questionnaires is 1500?

A. 14286

B. 33333

C. 5882

D. 2521

8.

According to data held by the Cyprus Police, the distribution of severe crimes against property, by type and value of the stolen property, in 2018 was as follows:

TYPE	VALUE OF STOLEN ITEMS			
	Up to €5000	Over €5000	Not declared	Total
Valuables	185	133	20	338
Electronics/Electrical	214	19	6	239
Motorized	57	22	7	86
Amount of money	290	72	39	401
Tools	57	13	1	71
Other	343	100	37	480
Total	1146	359	110	1615

If we choose, at random, a severe property crime case and given that the value of the stolen property was either in the "Not declared" category or in the "Up to 5000" category, what is the probability that this crime belongs to the category "Amount of money"?

A. 0,608

B. 0,262

C. 0,820

D. 0,204

9.

Two numbers are chosen simultaneously, at random, from the set A={1, 2, 3, 4, 5}. What is the probability that the product of these numbers increased by 1 is divisible by 3 and not by 2?

A. $\dfrac{2}{5}$

B. $\dfrac{3}{5}$

C. $\dfrac{1}{5}$

D. $\dfrac{3}{10}$

10.

If the number $\dfrac{x}{4}$ is an even natural number and $x \le 16$, then the median of the observations,

$$4, 6, 10, 12, 8, 14, 16, 18, x, \dfrac{x}{4}$$

for each possible value of x is:

A.   8

B.   9 or 11

C.   10

D.   10 or 12

Statistics Competition 2023.

B - Lower secondary

1 - Basic knowledge test

Version: 2   Language: en

1. **George and Mary are playing a game of backgammon. Towards the end of the game, Mary notices that she needs a dice roll with a sum of outcomes more than 8 to win the game. Otherwise, George will win the game. The probability that Maria wins the game is:**

A.   0,42

B.   0,28

C.   0,17

D.   0,22

2.

A school has 450 pupils. Girls constitute 44% of all pupils at the school. From the school records, it is known that $\frac{2}{3}$ of the school's pupils have more than 2 siblings. The number of female pupils who have more than two siblings is 120. A person is selected at random from the pupil population of the school. The probability that the pupil selected is a boy and has more than 2 siblings is:

A.   0,71

B.   0,4

C.   0,84

D.   0,56

3. **A box contains 5 blue balls, numbered from 1 to 5, and 4 yellow balls, numbered from 1 to 4. We take at random 2 balls from the box simultaneously. The probability that both balls are even-numbered is:**

A. $\frac{4}{9}$

B. $\frac{1}{18}$

C. $\dfrac{1}{6}$

D. $\dfrac{1}{9}$

4.

The following table shows the percentage of the population aged 25-64 in Cyprus and the rest of the Euro-countries who know two foreign languages well.

	2007	2011	2016
Rest of Euro-countries	20.1	21.2	23.1
Cyprus	17.9	19.2	20.3

The percentage increase in the percentage of citizens in Cyprus who know two foreign languages between the years 2011 and 2016 is:
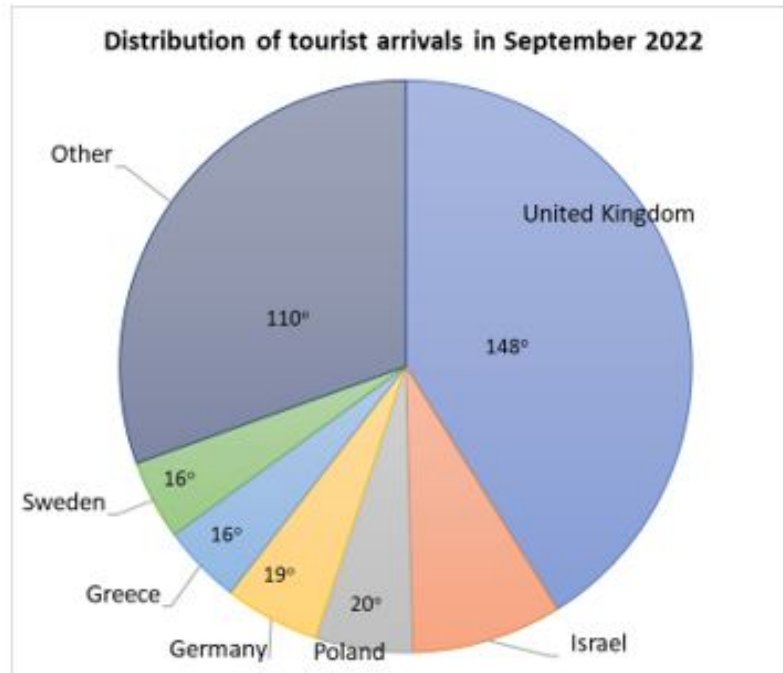
A. 13,41%

B. 5,73%

C. 1,1%

D. 2,4%

5.

The pie chart below shows the distribution of tourist arrivals in Cyprus in September 2022.

Distribution of tourist arrivals in September 2022

The total number of tourists in September was 413382. If we convert the pie chart into a frequency bar chart, the height of the bar corresponding to arrivals from Israel is:

A. 35597

B. 128148

C. 8,5%

D. 128148,4

6. **In a yard, there are 64 white, black and grey rabbits. Blacks are twice as many as whites. The average age of all rabbits is 1,2 years. The average age of white rabbits is 1,1 years. The average age of black rabbits is 0,9 years, and that of grey rabbits is 1,5 years. The population of white rabbits is:**
A. 27

B. 24

C. 28

D. 12

7. **A survey on the effects on Cypriots from the continuous flow of immigrants to the island is to be carried out using a self-response questionnaire. Recent surveys show that the percentage of those who are willing to participate in any survey is 70%. Also, 15% of the completed questionnaires are rejected as not being filled in correctly. What should**

the initial sample be for this survey so that the final number of correctly completed questionnaires is 1500?

A.   14286

B.   33333

C.   2521

D.   5882

8.

According to data held by the Cyprus Police, the distribution of severe crimes against property, by type and value of the stolen property, in 2018 was as follows:

TYPE	VALUE			
	Up to €5000	Over €5000	Not declared	Total
Valuables	185	133	20	338
Electronics/Electrical	214	19	6	239
Motorized	57	22	7	86
Amount of money	290	72	39	401
Tools	57	13	1	71
Other	343	100	37	480
Total	1146	359	110	1615

If we choose, at random, a severe property crime case and given that the value of the stolen property was either in the "Not declared" category or in the "Over 5000" category, what is the probability that this crime belongs to the category "Amount of money"?

A.   0,237

B.   0,277

C.   0,069

D.   0,555

9.

Two numbers are chosen simultaneously, at random, from the set A={1, 2, 3, 4, 5}. What is the probability that the product of these numbers increased by 1 is divisible by 2 and not by 3?

A. $\dfrac{2}{5}$

B. $\dfrac{3}{5}$

C.

$$\frac{1}{5}$$

D. $\dfrac{3}{10}$

10.

If the number $\dfrac{x}{4}$ is an even natural number and $x \le 16$, then the median of the observations,

$$4, 6, 10, 2, 8, 14, 16, 18, x, \frac{x}{4}$$

for each possible value of x is:

A. 8

B. 10

C. 8 or 9

D. 8 or 10

Statistics Competition 2023.

B - Lower secondary

1 - Basic knowledge test

Version: 3   Language: en

1. **George and Mary are playing a game of backgammon. Towards the end of the game, Mary notices that she needs a dice roll with a sum of outcomes more than 6 to win the game. Otherwise, George will win the game. The probability that Maria wins the game is:**

A.   0,33

B.   0,75

C.   0,58

D.   0,67

2.

A school has 450 pupils. Girls constitute 56% of all pupils at the school. From the school records, it is known that $\frac{2}{3}$ of the school's pupils have more than 2 siblings. The number of female pupils who have more than two siblings is 150. A person is selected at random from the pupil population of the school. The probability that the pupil selected is a boy and has more than 2 siblings is:

A.   0,66

B.   0,33

C.   0,76

D.   0,44

3. **A box contains 5 blue balls, numbered from 1 to 5, and 5 yellow balls, numbered from 1 to 5. We take at random 2 balls from the box simultaneously. The probability that both balls are odd-numbered is:**

A. $\dfrac{3}{5}$

B. $\dfrac{2}{15}$

C. $\frac{1}{5}$

D. $\frac{1}{3}$

4.

The following table shows the percentage of the population aged 25-64 in Cyprus and the rest of the Euro-countries who know two foreign languages well.

	2007	2011	2016
Rest of Euro-countries	20.1	21.2	23.1
Cyprus	17.9	19.2	20.3

The percentage increase in the percentage of citizens in the rest of the Euro-countries who know two foreign languages between the years 2007 and 2016 is:
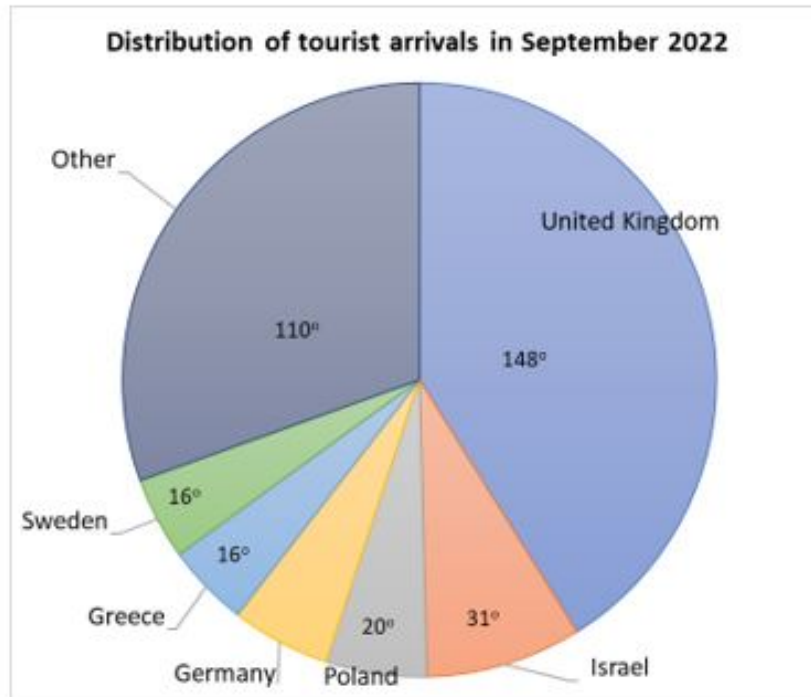
A. 14,93%

B. 8,96%

C. 3,0%

D. 1,9%

5.

The pie chart below shows the distribution of tourist arrivals in Cyprus in September 2022.

Distribution of tourist arrivals in September 2022

The total number of tourists in September was 413382. If we convert the pie chart into a frequency bar chart, the height of the bar corresponding to arrivals from Germany is:

A.   78542,6

B.   78543

C.   5,4%

D.   21817

6.   **In a yard, there are 64 white, black and grey rabbits. Blacks are twice as many as whites. The average age of all rabbits is 1,2 years. The average age of white rabbits is 1,1 years. The average age of black rabbits is 0,9 years, and that of grey rabbits is 1,5 years. The population of black rabbits is:**

A.   28

B.   12

C.   24

D.   27

7.   **A survey on the effects on Cypriots from the continuous flow of immigrants to the island is to be carried out using a self-response questionnaire. Recent surveys show that the percentage of those who are not willing to participate in any survey is 30%. Also, 85% of the completed questionnaires are valid. What should the initial sample be for this survey so that the final number of correctly completed**

questionnaires is 1500?

A. 2521

B. 14286

C. 33333

D. 5882

8.

According to data held by the Cyprus Police, the distribution of severe crimes against property, by type and value of the stolen property, in 2018 was as follows:

TYPE	VALUE			
	Up to €5000	Over €5000	Not declared	Total
Valuables	185	133	20	338
Electronics/Electrical	214	19	6	239
Motorized	57	22	7	86
Amount of money	290	72	39	401
Tools	57	13	1	71
Other	343	100	37	480
Total	1146	359	110	1615

If we choose, at random, a severe property crime case and given that the value of the stolen property was either in the "Not declared" category or in the "Over 5000" category, what is the probability that this crime belongs to the category "Valuables"?

A. 0,453

B. 0,095

C. 0,326

D. 0,552

9. **Two numbers are chosen simultaneously, at random, from the set A={1, 2, 3, 4, 5}. What is the probability that the product of these numbers multiplied by 2 is divisible by 2 and not by 3?**

A. $\frac{2}{5}$

B. $\frac{1}{2}$

C.

$$\frac{1}{5}$$

D. $$\frac{7}{10}$$

10.

If the number $\frac{x}{4}$ is an even natural number and x ≤ 16, then the median of the observations,

$$4,\ 10,\ 6,\ 12,\ 18,\ 14,\ 16,\ 12,\ x,\ \frac{x}{4}$$

for each possible value of x is:

A.   11 or 12

B.   10

C.   12

D.   10 or 12