CHAPTER 1
EXERCISES – BASIC NOTIONS AND CONCEPTS, RATIOS

Decide whether the following statements are true (T) or false (F).

… The statistical population is always of flow type, since data collecting cannot be executed in a moment of time.
… The examination of infinitely large populations is not subject to statistical analysis.
… Not all the elements of a population are necessarily subject to observation.
… Flow population is always interpreted on a period of time.
… Each variable cannot be measured on each measuring scale.
… A population can be monitored according to more variables at the same time.
… Statistical operations are only subtraction and division.
… Every table containing data is a statistical table.
… Only statistical tables include statistical rows.
… If any data in the statistical table is unknown, then 0 must be written in the cell.
… Simple tables do not contain a total cell.
… The only rule of statistical table construction is to give a title to the table.
… The distribution ratio characterises the structure of the population.
… Coordination ratio can be calculated from descriptive rows.
… Dynamic index numbers are to characterise social-economic phenomena.
… Statistical ratios can directly be calculated only from original data.
… Base and chain index numbers can be calculated from each other and not only directly from the original data.
… We cannot change bases without knowing the original data.
… Dynamic ratios can be calculated from descriptive rows.
… Intensity ratios are always of coefficient or percentage form.
… Intensity ratios always rise with the phenomenon.
… Intensity ratios can be calculated from grouped data.
**Test questions** *(There is only one right answer to each question)*

1. Student name is a ……….. variable.
   A. qualitative
   B. quantitative
   C. geographical

2. Student age is a ….. quantitative variable.
   A. continuous
   B. discrete

3. Students’ scholastic results are measured on a ………..measuring scale.
   A. nominal
   B. ordinal
   C. interval

4. Which variable is a quantitative one?
   A. position
   B. sex
   C. gross earnings
   D. place of birth

5. Which notion is **NOT** a measuring scale?
   A. simple
   B. nominal
   C. ratio

6. Which is **NOT** a qualitative variable?
   A. the number of rooms of a real estate
   B. the comfort level of a real estate
   C. the type of a real estate (holiday house/dwelling-house)

7. Descriptive statistical rows ……….. contain grouping.
   A. never
   B. always
   C. regularly

8. Grouping tables contain (a) ………….. grouping row.
   A. no
   B. one directional
   C. all directional

9. Which is **NOT** a statistical table?
   A. descriptive
   B. comparing
   C. combined /contingency

10. The quantity of rain in *mm* is
    A. a distribution ratio.
    B. an intensity ratio.
    C. a statistical datum and not a ratio.
11. The unit of measurement of distribution ratios cannot be in ……… form.
   A. percentage  
   B. natural  
   C. coefficient

12. The quantity of rain per one sqm is a(n)
   A. statistical datum  
   B. intensity ratio  
   C. statistical population  
   D. dynamic ratio.

13. Which one is NOT an intensity ratio?
   A. GDP per capita  
   B. live birth rate  
   C. time assigned to one end product  
   D. the number of characters written on a page

14. If the population in Vas county grows more than the population of Hungary, then it means that …………
   A. Most people move there.  
   B. the rate of the population of Vas grows.  
   C. the number of doctors per 1000 inhabitants grow.

15. Which is NOT a type of ratio?
   A. dynamic  
   B. grouping  
   C. comparative

16. Which is a distributional ratio?
   A. the number of men per 1000 women  
   B. inflation  
   C. the rate of students passing an exam

17. Which is THE coordination ratio?
   A. profitability rate  
   B. the rate of blue-collar workers per 100 white-collar workers at a firm  
   C. the number of teachers per 100 students of a college

18. Which is a dynamic ratio?
   A. the rate of inflation  
   B. the wholesaler’s mark-up within the price of a product  
   C. the Monetary Council decreased the existing 6.75 % interest rate by 50 base points to 6.25%, well beyond the expectations of its Monday meeting.

19. If Hungary’s population continuously decreases from 10 790 thousand in 1980 to 10 086 thousand by May 2005, then it is true that ……
   A. there was such a year when population grew.  
   B. the base index calculated for 2005 is smaller than 1 (100%).  
   C. there was such a year when population dropped by 704 thousand.
20. In the year 2005 in Hungary there were 9.4 live births and 14.3 mortalities per 1000 inhabitants. These indicators are .............. ratios.
   A. distribution
   B. coordination
   C. intensity

21. If the production of a firm in the first five months of a year changed up to 1; 1.9; 1.1; 0.9; 1.09-times, then it is true that
   A. production continuously grew.
   B. production grew up to $1+1.9+1.1+0.9+1.09=5.99$-times.
   C. production grew up to $1\cdot1.9\cdot1.1\cdot0.9\cdot1.09=2.05$-times.
Exercises

Exercise 1
Being enthusiastic about the success of the Island Festival, the mayor of a capital district would like to organise a similar event.

Questions:

a) List some data and index-numbers that would be of value before starting the organisation of the festival.

b) Define the variables and the population (items, data providers) necessary to receive the data and index-numbers.

c) Design a questionnaire to register and receive the necessary data.

Exercise 2
Determine the type of the following populations and represent them with a point or interval of time.

a) The population of Hungary grouped in age and sex

b) The traffic on Veres Péter road

c) The value of the assets and resources of Villám-láss Ltd in thousands of forint

d) The turnover of the Budapest Stock Exchange

e) The external trade turnover of Hungary

f) The change of the Nasdaq index

g) The order of rank of the world’s leading financial institutions according to the bottom of the balance sheet

Exercise 3
The passengers traveling on the metro between the South Railway Station and “Őrs vezér” Square between 7 and 9 am on 9 September 20... were observed.

Questions:

a) Define the population and its type.

b) What must be considered before examining the population? Give some different features based on which the population can be examined.

c) List the common and distinctive variables.

d) Construct appropriate statistical rows based on c).

e) Construct some different statistical tables using the statistical rows in d).

Exercise 4
Which measuring scale would you use for the following variables?

a) Age

b) Height

c) Sex

d) Exam marks

e) License plate number

f) Lottery winning numbers

g) The net sales revenues of a firm

h) Places at a swimming competition
**Exercise 5**
Characterise yourself.

*Questions:*

a) Which variables have you listed?
b) Which measuring scale do you use to measure each variable?
c) Give some possible outcomes of the variables given in a).

**Exercise 6**
The cars on sale in the Wallis saloon in Vaci street have been monitored according to demand.

*Questions:*

a) Define the population.
b) List the common and distinctive variables.
c) Fill in the table based on b).

d) Construct some distinctive statistical rows.

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Outcomes</td>
</tr>
<tr>
<td>Measuring scale</td>
</tr>
</tbody>
</table>

**Exercise 7**
Fill in the following table.

<table>
<thead>
<tr>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>item</td>
</tr>
<tr>
<td>type</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students at BBS FIMB in the academic year 2004/2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>The petycash at a firm on 23 March 2005.</td>
</tr>
<tr>
<td>A visitor of the HM Duna Plaza cinema</td>
</tr>
<tr>
<td>Tins produced by the .. tinning factory in 2005</td>
</tr>
<tr>
<td>A staying guest at Hotel Lido in the main season of 2005</td>
</tr>
<tr>
<td>An employee of the .. Insurance company on 1 January 2005</td>
</tr>
</tbody>
</table>
Exercise 8
Group the following variables according to their types, i.e. quantitative or qualitative, and differentiate the discrete and continuous quantitative variables. Put the result in a table.

   a) The football teams in BL
   b) Earnings of the employees of a higher educational institution
   c) The students of a higher educational institution grouped according to their first language studies
   d) The filling weight of pie-tins
   e) The real estate investment funds
   f) The available colours of a … type of car
   g) The number of nights spent by foreign tourists in Hungary in 2005
   h) The types of official cars used by a bank
   i) The height of people applying for military service

Exercise 9
The population observed is the second-year students of the Academic year 2005/2006 at the College of Environment Protection.

Questions:
   a) Type of the population: ………………………
   b) An item of the population: ………………………
   c) Fill in the table according to the relevant variables of the population’s units:

<table>
<thead>
<tr>
<th>Variable name</th>
<th>type</th>
<th>possible outcomes</th>
<th>measuring scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise 10
The population observed is comprised of the members participating in the 3462 SD type holiday organised by La Grotta Travelling Agency.

Questions:
   d) Type of the population: ………………………
   e) An item of the population: ………………………
   f) Fill in the table according to the relevant variables of the population’s units:

<table>
<thead>
<tr>
<th>Variable name</th>
<th>type</th>
<th>possible outcomes</th>
<th>measuring scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Exercise 11**
The participants in EFOTT were observed regarding the following aspects:

<table>
<thead>
<tr>
<th>Aspects</th>
<th>Variable</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many times he/she participated in the EFOTT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which college he/she studies at</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which foreign language he/she speaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of birth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Question:* Fill in the table above.

**Exercise 12**
Construct a statistical table (without numerical data) which shows how average salaries in the different counties of Hungary went in the last five years.

*Questions:*
- a) Name the type of the statistical table and its dimension.
- b) Describe the statistical rows in the table.

**Exercise 13**
The students took three different forms of a test (A, B and C groups) on 18 January 2005. The three tests were taken by 52, 58 and 55 students, respectively. The average score totalled 87, 80 and 84, respectively.

*Questions:*
- a) Define the statistical population.
- b) Construct a statistical table using the above data.

**Exercise 14**
Group the following information under the following headings: population, statistical data and observation unit. Put them into a table.

a) The number of Hungarians flying abroad in 2005  
b) The fleet of the Budapest Public Transport plc on 1 January 2005.  
c) A sold technical product in a department store in 20...  
d) Hungarians flying abroad in 2005  
e) The number of students at the Faculty of International Management and Business in the academic year ......  
f) The sales revenue of the LIBRI chain in 2005  
g) A Hungarian flying abroad in 2005.
Exercise 15
Correct where necessary the definition of the following statistical populations.
   a) The number of economic organisations in Hungary on 31 December 2004.
   b) Hungary’s monthly external trade turnovers in the years 2000-2005.
   c) In 2004, real estate buildings per 1000 persons, the average size of the newly built houses and the number of rooms.
   d) The changes in the number of live birth in Hungary
   e) The guest flow at commercial accommodations per accommodation types on 31 January 2003.
   f) The import turnover.
   g) The result of the „Supply in the tourist market” test
   h) The changes in the seriousness of road casualties in Hungary between 1996 and 2005.
   i) The number and rate of female students

Exercise 16
Which are discrete quantitative variables?
   a) The size of a household
   b) The type of a secondary school
   c) The average gas consumption of a motor vehicle
   d) The unit price of potato
   e) The number of students in learning groups
   f) Permanent address
   g) Spoken foreign language

Exercise 17
   a) Construct a 3*4 contingency – table.
   b) Construct a 4 dimensional grouping table.

Exercise 18
In 1998 the computer business used 21 441 computers. The number of personal computers (PC) younger than a year was 5323. In 1997 there were 214 middle-sized computers between 1 and 3 years of age, while there were 38 mainframes of age 3 or more.

Questions:
   a) Define the statistical population.
   b) Construct a statistical table based on the information given above (do not fill in the cells with quantitative data).

Exercise 19
Coffee consumption per capita equalled 0.1 kg in Hungary in 1960, while it was 2.7 kg in 1990. The European mean was 1.7 kg/person in 1970, and the American average totalled 3.1 kg in 1980.

Questions:
   a) Define the statistical population.
   b) Construct a statistical table using the data above (do not enter data in the statistical table).
Exercise 20
Construct such a statistical table without numerical data which represents the number of students enrolled in higher educational institutions in the last three years grouped by institution type (college, university).

Exercise 21
Population of Hungary on 1 January of a given year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>No of males</th>
<th>No of females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1941*</td>
<td>9 316 074</td>
<td>4 560 875</td>
<td>4 755 199</td>
</tr>
<tr>
<td>1949</td>
<td>9 204 799</td>
<td>4 423 420</td>
<td>4 781 379</td>
</tr>
<tr>
<td>1960</td>
<td>9 961 044</td>
<td>4 804 043</td>
<td>5 157 001</td>
</tr>
<tr>
<td>1970</td>
<td>10 322 099</td>
<td>5 003 651</td>
<td>5 318 448</td>
</tr>
<tr>
<td>1980</td>
<td>10 709 463</td>
<td>5 188 709</td>
<td>5 520 754</td>
</tr>
<tr>
<td>1990</td>
<td>10 374 823</td>
<td>4 984 904</td>
<td>5 389 919</td>
</tr>
<tr>
<td>2001</td>
<td>10 200 298</td>
<td>4 851 012</td>
<td>5 349 286</td>
</tr>
<tr>
<td>2003</td>
<td>10 142 362</td>
<td>4 818 456</td>
<td>5 323 906</td>
</tr>
<tr>
<td>2004</td>
<td>10 116 742</td>
<td>4 804 113</td>
<td>5 312 629</td>
</tr>
<tr>
<td>2005</td>
<td>10 097 549</td>
<td>4 793 115</td>
<td>5 304 434</td>
</tr>
</tbody>
</table>

* 31 January
Source: CSO 2004

Questions:
(a) Define the statistical population.
(b) Determine the common and distinctive variables.
(c) Name and calculate the possible ratios.
(d) Interpret the ratios calculated in (c).

Exercise 22
Name the following ratios.

(a) Yesterday one euro cost 245 HUF in the foreign currency market.
(b) In a Hungarian city the number of flats equalled 3 955 000 on 1 January 1994.
(c) We give a 10-25% discount on our run-out models.
(d) 33% of the turnover of ski equipments comes from selling skis.
(e) The Ford group raised its new car sales by 4% from the previous year.
(f) The printer capacity is 19 black and white and 4 colour pages per minute.
(g) VW group’s market share is 18%.
(h) In 1991, there were 103 fridges per 100 active households.
(i) Undivided territory with 50% coverage is on sale.
(j) Flats are on sale from 268 000 HUF/sqm.
Exercise 23
Fill in the following table.

<table>
<thead>
<tr>
<th>Type of ratio</th>
<th>From which statistical row can it be determined?</th>
<th>Example from business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geographical comparative</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise 24

MARRIAGES AND BREAK-UPS

<table>
<thead>
<tr>
<th>Name</th>
<th>1980</th>
<th>1990</th>
<th>2001</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marriages</td>
<td>80 331</td>
<td>66 405</td>
<td>43 583</td>
<td>45 398</td>
<td>43 791</td>
</tr>
<tr>
<td>Within: second marriages</td>
<td>23 506</td>
<td>18 478</td>
<td>13 930</td>
<td>13 975</td>
<td>13 654</td>
</tr>
<tr>
<td>Marriage break-ups</td>
<td>98 221</td>
<td>89 817</td>
<td>78 248</td>
<td>79 152</td>
<td>76 112</td>
</tr>
<tr>
<td>o due to death</td>
<td>70 424</td>
<td>64 929</td>
<td>53 857</td>
<td>54 106</td>
<td>51 474</td>
</tr>
<tr>
<td>o due to divorce</td>
<td>27 797</td>
<td>24 888</td>
<td>24 391</td>
<td>25 046</td>
<td>24 638</td>
</tr>
<tr>
<td>Divorces per 1000 existing marriages</td>
<td>9.9</td>
<td>9.9</td>
<td>11.0</td>
<td>11.6</td>
<td>11.6</td>
</tr>
<tr>
<td>Divorces per 1000 new marriages</td>
<td>346.0</td>
<td>374.8</td>
<td>559.6</td>
<td>551.7</td>
<td>562.6</td>
</tr>
</tbody>
</table>

Source: Hungarian Central Statistical Office 2004

Questions:

a) Determine the type of the population.

b) Report on the changes of the marrying habits in Hungary with the help of dynamic and distribution ratios.

c) Define the types and calculation methods of the used ratios.

d) Calculate the number of unbroken (healthy) marriages in the given years.

Exercise 25

Hungarian literature teachers observed how well students read obligatory readings in the secondary school. It turned out that 55% of the boys and 48% of the students have not even read the obligatory literature. We also know that 65% of the students are males.

Questions:

a) Define the above ratios.

b) What percentage of the students not reading the compulsory literature is male?
Exercise 26

1. Tanulók, hallgatók (a nappali és a felnőttoktatásban együtt)

*Students (full-time and part-time education together)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Övodai</td>
<td>391,9</td>
<td>400,5</td>
<td>327,5</td>
<td>326,0</td>
</tr>
<tr>
<td>Kindergarten</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Általános iskolai</td>
<td>1 177,6</td>
<td>992,8</td>
<td>913,0</td>
<td>890,6</td>
</tr>
<tr>
<td>Primary school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Szakközépiskolai</td>
<td>225,4</td>
<td>178,0</td>
<td>134,8</td>
<td>135,2</td>
</tr>
<tr>
<td>Vocational school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Középiskolai</td>
<td>360,0</td>
<td>448,3</td>
<td>531,4</td>
<td>529,0</td>
</tr>
<tr>
<td>Secondary school</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Felsőfokú iskolai</td>
<td>108,4</td>
<td>195,5</td>
<td>409,1</td>
<td>421,5</td>
</tr>
<tr>
<td>Tertiary education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Összesen – Total</td>
<td>2 263,3</td>
<td>2 215,3</td>
<td>2 315,8</td>
<td>2 302,5</td>
</tr>
</tbody>
</table>

Source: Education data 2004/2005 (CSO)

Questions:

a) Determine the type of the population and the common and distinctive variables and their types.

b) With the help of dynamic and distribution ratios, report on how the structure of the participant mix in education in Hungary went in the given years.

Exercise 27

The following pieces of information were published in an economics paper:

- On 23 February 2005 the average gas consumption of households in Zala county was ......
- Share purchasing by foreign investors is continuously growing. In 2004 it came up to 33% of the total turnover.
- There are 135 engineers per 10 thousand residents, while in the USA there are 81 per 10 thousand residents.
- In the year 2004, 35% of all the mortgages for new flats were state subsidized loans.
- In 1991 there were 103 fridges per 100 active households.
- The average precipitation (rainfall) is 12.4 mm/sqm.
- The tuition fee is 257 thousand HUF/semester; there is no entrance exam.
- Yesterday one euro cost 245 HUF on the foreign currency market.
- There was a 235% increase in Chinese imports from last year anyway.

Questions:

a) Define the listed ratios.

b) Give the methods of calculation.

Exercise 28

The following table shows how the turnovers of sold sport equipments at the various stores of a department chain went in the years given:
Questions:

a) Calculate the missing data in the table.

b) Define the types of index numbers in the table.

Exercise 29

The following table shows how the number of students changed at a tertiary educational institution:

<table>
<thead>
<tr>
<th>Year</th>
<th>thousand HUF</th>
<th>1980=100%</th>
<th>1990=100%</th>
<th>Previous year =100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td></td>
<td>0.738</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991</td>
<td></td>
<td>0.905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td>0.690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td></td>
<td>0.788</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994</td>
<td></td>
<td>1.071</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995</td>
<td></td>
<td>0.881</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td></td>
<td>0.833</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td></td>
<td>1.545</td>
<td>0.810</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td>2.318</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td>1.727</td>
<td></td>
<td></td>
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<tr>
<td>2000</td>
<td></td>
<td>1.636</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>1.727</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td>2.455</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td>2.182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td>1.909</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td></td>
<td>220</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions: Calculate the missing data in the table.

Exercise 30

In a college student group there are 23 boys and 11 girls. 12 of the boys and 4 of the girls live in a dorm. 5 boys commute from a different city. Half of the locals are girls.
Questions:
1. Construct a statistical table based on the text above.
2. Determine the types of the table and of the statistical rows.
3. Calculate at least two types of ratios from the table and give their types as well.

Exercise 31
The number of Hungarians going abroad equalled 243 thousand in 1997. This number rose by 16.5% by 1998. The figure of 195 thousand in 1999 grew by 14.9% by 2000. In 2002 the number of Hungarians going abroad grew by 74.1% from 1997, while it grew by 8.5% from 2001.

Questions:
1. Construct a statistical table based on the information given above.
2. Calculate the missing data in the table.

Exercise 32
The productivity of a jewellery mending company is 5 pieces/person. 74% of the employees are blue-collar workers.

Questions:
1. Name the given ratio.
2. Calculate the productivity per blue-collar worker.
3. Give the relation between the three ratios.

Exercise 33
We know the following pieces of information about the external trade turnover of Hungary in 2003:
- Export of food, beverages and tobacco products totalled 630 billion HUF. This meant 7% of the turnover in 2003.
- The export value of raw materials equalled the same percentage of the total export turnover as the export value of energy sources.
- The total import summed up to 9 644 billion HUF, the largest part of it (52%) was taken up by machineries and transportation vehicles.
- The share of the commodity group mentioned previously amounted to 61% of the total export.
- The processed goods came to 36% of the export and 29% of the import.
- Total import grew by 10.2% while total export increased by 8.7% from the previous year.

Questions:
1. Construct a grouping statistical table based on the information given above.
2. Define the types of the statistical rows in the table.
3. Calculate two different types of ratios and name their type.
Exercise 34
The following table shows how the production of „Little Ants” Ltd changed in the year 2004.

<table>
<thead>
<tr>
<th>Month</th>
<th>Change in production previous month = 100%</th>
<th>Change in production January = 100%</th>
<th>Change in production June = 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td>101</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td>108</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td>111</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
<td>100</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td>118</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td>109</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td>103</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td>101</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td></td>
<td>92</td>
</tr>
</tbody>
</table>

Questions:
a) Name the type of the given index numbers.
b) Calculate the missing data in the table.

Exercise 35
The following data are known about marriages and childbirths in Nekeresdfalva:

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (people)</th>
<th>Marriages</th>
<th>Childbirths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (pieces)</td>
<td>Number per 1000 inhabitants</td>
<td>Number (people)</td>
</tr>
<tr>
<td>2003</td>
<td>101 520</td>
<td>5.378</td>
<td>1 402</td>
</tr>
<tr>
<td>2004</td>
<td>616</td>
<td>5.482</td>
<td>12.674</td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We also know that from 2004 to 2005 the number of marriages grew by 1.43%, while the number of childbirths grew by 2.11%, and the number of inhabitants grew by 1.12% from 2003 to 2005.

Questions:
a) Fill in the gaps of the statistical table.
b) Determine the type of the statistical table and of the statistical rows.
c) Define the types of the ratios in the statistical table.

Exercise 36
In a city 5% more, i.e. 114 more, babies were born in a given year than in the previous year.

Questions:
a) Define the types of ratios.
b) How many babies were born in the given and the previous years?
Exercise 37
The following data are known about the turnover of a computer firm:

<table>
<thead>
<tr>
<th>Month</th>
<th>Turnover (thousands HUF)</th>
<th>Change of turnover previous month=100%</th>
<th>Change from previous month thousand HUF</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>104.0</td>
<td></td>
<td></td>
<td>+2</td>
</tr>
<tr>
<td>April</td>
<td>105.0</td>
<td></td>
<td></td>
<td>+7</td>
</tr>
<tr>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td>+150</td>
</tr>
<tr>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td>-200</td>
</tr>
<tr>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td>-1</td>
</tr>
</tbody>
</table>

Questions:
1) Calculate the missing data in the table.
2) Define the types of ratios in the statistical table.

Exercise 38
In four villages of a county it was observed how people visit the neighbouring club. 2400 male and 2500 female visitors came from Smurf Village. From Vanity Village 2800 men visited the club, and there were 940 women per 1000 men. From Dreamy Village 820 women arrived, which amounted to 51% of the visitors from the village. In Mommyland there were 960 men per 1000 women. In total 7500 men visited the club in the given period.

Questions:
1) Construct a statistical table based on the information given above.
2) Calculate the missing data.
3) Name the types of ratios used.

Exercise 39
The following table shows the age structure of the population of Hungary in the given years:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>2 529 453</td>
<td>2 176 507</td>
<td>2 341 173</td>
<td>2 130 549</td>
<td>1 744 626</td>
</tr>
<tr>
<td>15-39</td>
<td>3 662 417</td>
<td>3 821 424</td>
<td>3 832 516</td>
<td>3 687 555</td>
<td>3 561 553</td>
</tr>
<tr>
<td>40-59</td>
<td>2 396 513</td>
<td>2 564 369</td>
<td>2 707 642</td>
<td>2 598 873</td>
<td>2 808 036</td>
</tr>
<tr>
<td>60-74</td>
<td>1 372 661</td>
<td>1 759 799</td>
<td>1 830 132</td>
<td>1 959 846</td>
<td>1 977 574</td>
</tr>
<tr>
<td>Total</td>
<td>9 961 044</td>
<td>10 322 099</td>
<td>10 709 483</td>
<td>10 374 823</td>
<td>10 091 789</td>
</tr>
</tbody>
</table>

Questions:
1) Name the type of the population given and of the statistical table.
2) Determine which ratios could be of value when reporting on the changes of the age structure of Hungary.
3) Calculate the ratios listed in 2), and report on the changes in writing.
Exercise 40
The following information is known about the number of employees at Solliton plc.: 47.94% of the employees are women, 50.58% of the women, i.e. 765 women, are white-collar workers. This ratio is 27.62% in the case of the male employees.

Questions:
(a) Construct a statistical table based on the information given.
(b) Calculate the missing data in the table.

Exercise 41
The value and change of the turnovers of a restaurant are presented in the following table.

<table>
<thead>
<tr>
<th>Time period</th>
<th>Turnover (thHUF)</th>
<th>Previous time period=100%</th>
<th>1999 l.=100%</th>
<th>Previous time period (thHUF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999. I.</td>
<td>124</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>118</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td></td>
<td>216,94</td>
<td></td>
<td>-56</td>
</tr>
<tr>
<td>IV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000. I.</td>
<td></td>
<td>55,24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td></td>
<td>220,16</td>
<td></td>
<td>-9</td>
</tr>
<tr>
<td>IV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001. I.</td>
<td></td>
<td>92,31</td>
<td></td>
<td>-64</td>
</tr>
<tr>
<td>II.</td>
<td></td>
<td></td>
<td></td>
<td>-10</td>
</tr>
<tr>
<td>III.</td>
<td></td>
<td>213,71</td>
<td></td>
<td>-51</td>
</tr>
<tr>
<td>IV.</td>
<td></td>
<td>80,75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Questions:
(a) Calculate the missing data in the table. Report on the restaurant’s business success in the given period.
(b) Define the types of ratios in the table.