

SUN EXPOSITION & HOME PRICE

INTERNET FILE

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INTRODUCTION

The input part consists mostly of data collection. The pupils are requested to do the field work of collecting data relating to flats prices, taking into account the flats, flats and home orientation with respect of the sun daily position. The data are subsequently written into provided forms (see example). This way data are promptly available for a spreadsheet work or as input for a java analysis and graphics program.

Different form of analysis can be performed on collected data. Inland comparisons between different orientations, different city districts or areas, with percentage increment/decrement of price, price averages, best position. If performed in an international project, the activity allows confrontations amongst same flats types with respect to countries, latitude, geographical position, social situation.

Graphics and data are obtained for:

Price per square meter with respect to compass point in a worker's district; price per square meter with respect to compass point in medium-high social neighborhoods; price increment in percentage from flats facing north to flats facing south, for both the environments; price increment in percentage from flats in workers' district to flats in medium-high district, same orientation.

Slopes of price per square meter with respect to orientation for flats in four different cities of four European Countries (in the provided example Spain, Greece, Italy and Portugal).

International comparison of price increment in percentage from any compass point to South.

Next files are examples of an international comparison of apartment prices depending of the height and orientation with the data collected by students in their country.

[F1_E_Zaragoza.ods, F1_G_Athina.ods, F1_I_Fiumicino.ods, F2_EPIG_comparisons.ods, F3_EPIG_comparisons.ods]

Pupils' activity proposal

Objectives

Collect data of flats prices and their orientation with respect to compass points; perform simple statistics calculations, get graphics; find a dependence of prices to sun exposition, geographical position, city district; find analogies and common trends and / or differences amongst different countries; figure out possible differences in outcomes for different countries, try to explain if some data don't fit into possible interpretations.

Prerequisites:

Knowledge of basic statistics concept like average, mean value, percentage; basic trigonometry to understand the effect of sun exposition in apartment luminosity and heat; (Advanced) ability to use a spreadsheet like Open Office, to input collected data, write formulas, get graphics;

Material needed:

A pre-defined form on which the collected data are written; a laptop with a spreadsheet and a Java environment; an internet connection to exchange data and results with partner schools; a Geographic map of Europe.

Procedure:

Part (a), Field work

Divide up into teams. Any team is responsible for collecting flat prices in a city district; data of at least two different city districts are needed. For any district collect price and width of at least two different flats for at least four different floor numbers, then average the price per square meter of the two flats. Collected data are to be written onto the provided form. Register accurately the flat orientation with respect to the compass points, or at least the cardinal point faced by the majority of the windows.

Part (b), domestic input

Write collected data into the input cells of the provided spreadsheet form (F1); (Advanced): write your own formulas onto the form to get the graphics of the slope of the price against the compass point, comparison between districts; (Subsequent): write collected data into the input cells of the analysis software.

Part (c), exchange

Send data and graphics to any partner school participating in the project; ask for data recorded by partner schools

Part (d), international input

Write the data of partner schools onto the provided international spreadsheet forms (F2, F3); (Advanced) prepare the form Fb in order to get graphics that show the slope of prices against compass points for any city; (Subsequent): write collected data into the input cells of the analysis software.

Output Analysis:

(F1): a) Observe the graphics that show the price per square meter against the floor number: what can you deduce from the slope? Is that behavior common for North and South exposition? Can you get the graphics for East and West orientation? Do they show analog behavior? b) Observe the graphics that show bars for the price per square meter against compass points exposure: what can you figure out from the slope? Why do you think bars show this behavior? Is that behavior common for any floor number? Can you get the graphics for the missing floors? Do they show analog behavior? c) Observe the graphics that show bars comparing the prices per square meter in the central medium-high level district with those in the medium-workers district: what can you infer from them? Why do you think bars show this behavior? Is that behavior common for any flat orientation? Can you get the graphics for the missing compass points? Do they show analog behavior?

(F2): Observe the graphics that show the price per square meter comparison for all the countries: what can you deduce from the slope? Is that behavior common for all the possible expositions? Can you get the graphics for the missing floors and for the missing districts? Do they show analog behavior? How can you explain differences in prices for different countries? Which kind of explanation can you give for the most expensive and the cheapest situation?

(F3): a) Observe the bars graphics that show the price percentage increment between two districts of the same city, for all the participating countries: what can you deduce from that? Does this show a common behavior, or remarkable differences? b) Observe the bars graphics that show the price percentage increment between two compass points in the same district of the same city, for all the participating countries: what can you deduce from that? Does this show a common behavior, or remarkable differences? c) Can you get similar graphics for all the districts?

Discussion:

d1) Discuss the common features of the price behavior with respect to sun exposition. Can you find particular different outcomes in some country? Try to figure out the reason why this behavior is shown.

d2) Locate the graphics showing the price behavior with respect to the floor number. Can you find particular different outcomes in some country? Try to figure out the reason why this behavior is shown. Is there a country where there are negligible differences in price for different floors? Investigate possible reasons.

d3) Discuss the common features of the price behavior with respect to the city districts. Can you find particular different outcomes in some country? Try to explain the reason why this behavior is shown.

d4) Using the international forms, compare the situation discussed in (d1) in all the cities. Can you infer a common behavior? Is that reasonable?

d5) Using the international forms, compare the situation discussed in (d3) in all the cities. Can you infer a common behavior? Is that reasonable?

d6) Using the international forms, compare the price percentage increment between South and the other compass points. Do they show a common behavior? Can you spot differences? Investigate the reasons why differences are shown.

Conclusions:

Write a summary where you motivate all the points discussed from d1 to d6. When all the summaries of the participating countries are ready, try to have it published in a local newspaper.

Show details of at least two district of any city, four different floors for any district.