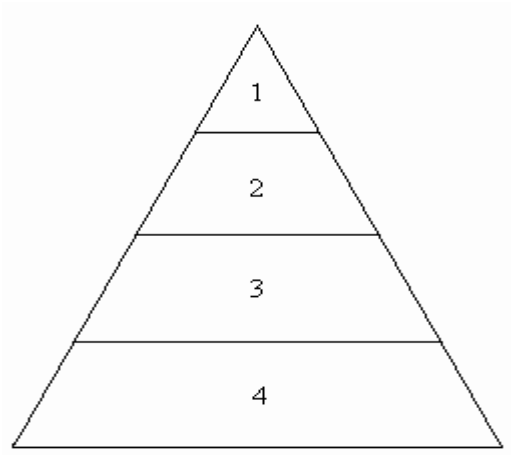
INTRODUCTION & AIMS

The aim of this Geography Coursework is to compare two shopping centres within the South-East London shopping hierarchy, establishing key geographical differences between the two shopping centers such as: The frequency of visits, distance willing to travel, sphere of influence, and purchases made at either of the shopping centers by the shoppers. The two shopping centres chosen to investigate for the Geography Coursework are: Bromley – Suburban Business District level and Catford – Neighbourhood level.
A shopping hierarchy is a method of showing the importance of shopping centres in order, based upon various services in which a particular shopping centre provides to customers as well as the size of the particular shopping centre. The band in which a shopping centre is ranked, within the shopping centre hierarchy is due to various factors, which have to be taken into consideration, such as:

- Sphere of Influence – The distance shoppers are willing too travel to purchase goods form a shopping centre.
- Accessibility of the shopping centre for both shoppers and business workers within the CBD – via A&B-roads, Motorways, Dual Carriageways and Bus & Railway Networks.
- Parking Facilities located in and around the shopping centre for both shoppers and business workers within the CBD – Multi-Storey Car-parks, (Disabled) Car-parking bays.
- The Range & number of shops and services available to shoppers within the shopping centre – Comparison, Specialist, convenience/ Perishable goods
- The level of security present for the protection of shoppers – CCTV, Security Guards, Police patrol.
- The cleanliness of the shopping centre – Cleaners, Dustbins, Waste Disposal & Recycling sections, Toilet facilities.

For the purpose of these comparisons, the class rankings will be split into four bands:

1. REGIONAL
2. SUBURBAN BUSINESS DISTRICT
3. NEIGHBOURHOOD
4. LOCAL



CENTRES WITHIN THE LONDON SHOPPING CENTRE HIERACHY – EXAMPLE:

1.

- BLUEWATER: GREENHIVE
- LAKESIDE: THURROCK

- WEST END: LONDON

2.

- THE GLADES: BROMLEY
- THE WHITGIFT CENTRE: CROYDON
- LEWISHAM PRECINCT: LEWISHAM

3.

- THE MEWS: CATFORD
- DEPTFORD MARKET: DEPTFORD
- EAST-STREET MARKET: CAMBERWELL

4.

- LOCAL CORNER SHOP
- PETROL STATION
- SERVICE STATION

The Geography Coursework was conducted with the investigation of Bromley shopping centre – chosen by The Geography Department at St Dunstan's College; and Catford shopping centre. Both of these shopping centres are located within South-East London.
Below is an A to Z map showing the proximity of the two shopping centres, within South-East London.

MAP – BROMLEY & CATFORD – FIG 1

The map above shows there are two main roads connecting both, Bromley shopping centre and Catford shopping centre, these two main roads are the A21 & A2212. The map above also shows that Bromley is the Capital of the district, whereas Catford is a suburb of the Capital of the district Lewisham.

MAP – BROMLEY

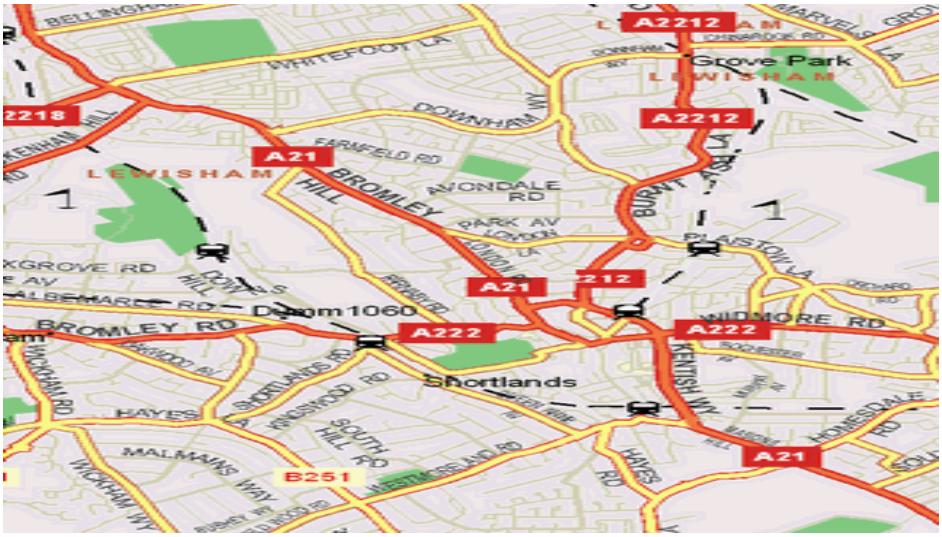
The 1st map shows an aerial view of the surrounding area of Bromley and the 2nd map shows the accessibility of Bromley.

MAP 1 – FIG 2

The map shows a pedestrianised zone, indicated by the Brown roads on the map, in which lead to The Glades Shopping Mall, built in 1993 in order to compete with out of Town shopping centres. From the map it is evident that there are more Car-parks in Bromley shopping centre than in Catford shopping centre. Bromley is also seen too be less of a residential area instead more of an environmental area, with a high frequency of parks situated within Bromley.

MAP 2 – FIG 3

The map shows the various main roads leading in and out of Bromley. There are 3, A-roads – A222, A21 & A2212. There are also 2 train tracks in which enter Bromley, one in which passes just to the South of Bromley and the other train track stops just to the North of Bromley.

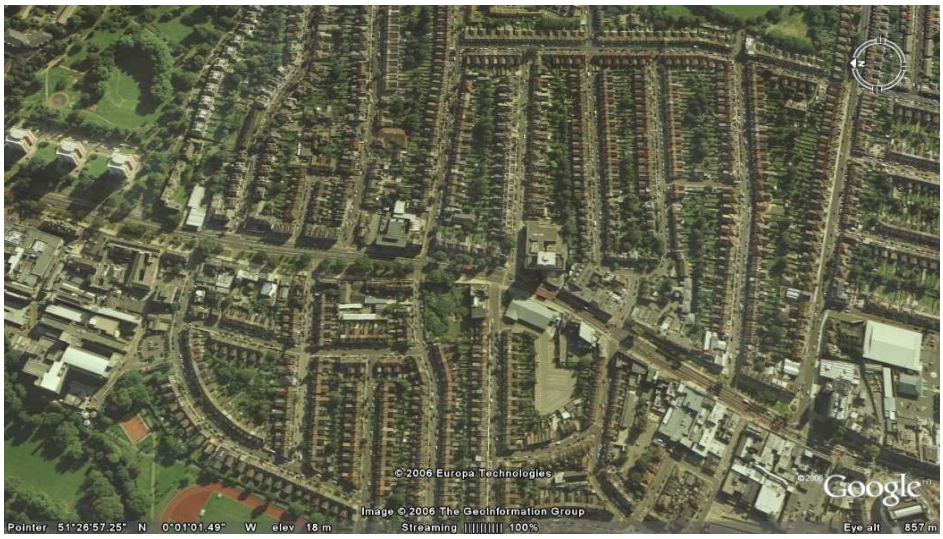


MAP – CATFORD

The 1st map shows an aerial view of the surrounding area of Catford and the 2nd map shows the accessibility of Catford.

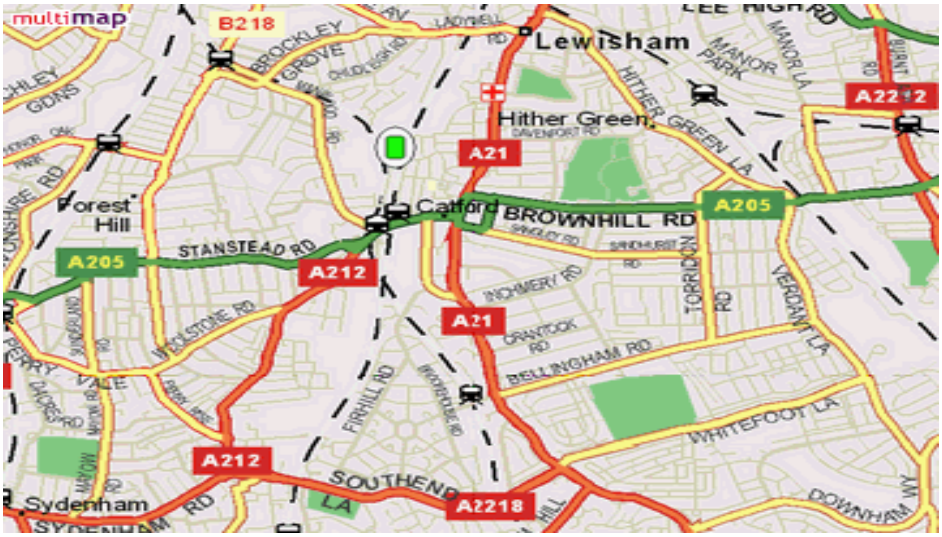
MAP 1 – FIG 4

The map shows the surrounding area of Catford, in which is a predominantly residential area, with few parks, therefore unlike Bromley, Catford is not a highly environmental area. There are also, in comparison to Bromley, very few Car-parks and there is also a lack of a pedestrianised area.



MAP 2 – FIG 5

The map shows the various main roads leading in and out of Catford. There are 3, A-roads – A205 (via East & West), A212 (via South-West) & A21 (via North & South). There are also 2 train tracks in which enter Catford, one from the South-East heading to the North-West and the other train track enters from the S.South-West and heading N.North-East.



HYPOTHESIS 1

BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD

The first difference between Bromley shopping centre and Catford shopping centre is, Bromley shopping centre will have a larger sphere of influence than Catford shopping centre. A sphere of influence is the area served by a particular shopping centre in which potential shoppers travel too. The factors in which determine the size of a shopping centres, sphere of influence are: the size, type and range of shops in which the shopping centre encloses. The remaining factors in which are taken into consideration are the transport links in and around the shopping centre and the level of competition between nearby shopping centres. Bromley's sphere of influence shall be larger than Catford's sphere of influence, this is because both the range of shops and size of Bromley is greater than that offered by Catford and also there is less competition between shopping areas within the Suburban Business district level, where Bromley is situated within the hierarchy, than the Neighbourhood level, where Catford is situated. Bromley is also accessible than Catford as more bus networks converge within Bromley, there are also more Car-parks; therefore it is also easier to park when travelling by car. Therefore the nodality of Bromley is greater, meaning Bromley has a greater amount of transport links converging, than Catford.

FIG 6

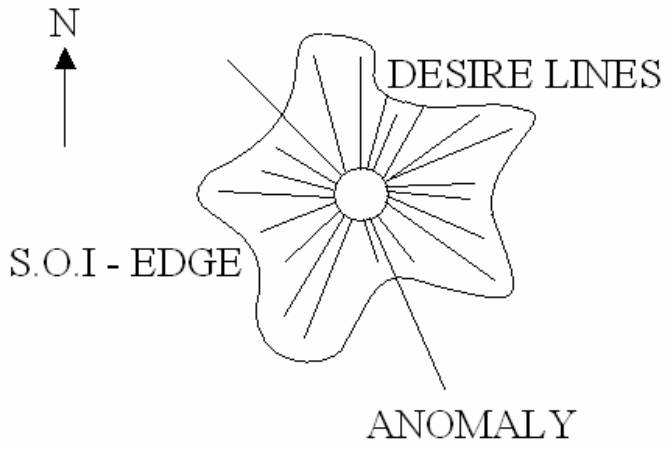
	BROMLEY	CATFORD
A-ROADS	3	3
B-ROADS	3	2
BUS ROUTES	21	14
TRAIN STATIONS	3	2
MULTI-STOREY C.P	7	1

From the table above, it is evident; Bromley shopping centre has more transport routes and Car-parks than Catford shopping centre, therefore an ideal shopping centre for shoppers deciding to either take Public Transport or personal Vehicles.

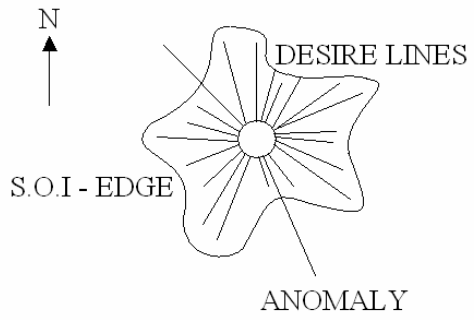
S.O.I – SHOPPING CENTRE

FIG 7

BROMLEY SHOPPING CENTRE S.O.I



CATFORD SHOPPING CENTRE S.O.I



The predicted S.O.I for both, Bromley shopping centre and Catford shopping centre, are above, these predictions were based upon the data table within Hypothesis 1 - BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD.

- The desire lines show the distance in which a shopper lives from the shopping centre. The edge of a Sphere of influence is the maximum distance a shopper is willing to travel to a shopping centre. Each desire line is a straight line drawn from the location in which the shopper lives, to the service centre which they use. This information is obtained by a questionnaire survey of shoppers who use the service centre. If enough lines are drawn then it is possible to deduce the approximate boundary of the trade area - Edge of S.O.I.

- The anomaly is an exception to the maximum distance a shopper is willing to travel to a shopping centre, therefore an anomaly means a shopper could be willing to travel a greater distance to a shopping centre however the time of the journey in reality could be relatively short due to road and transport links connecting the shoppers location to the shopping centre, therefore it could be quicker to get to than another shopping centre that is closer in distance, as the roads leading towards the other shopping centre could be congested therefore would make the journey time greater for the shopper. However the longer desire lines are most useful for this as then there will be a larger sphere of influence.

HYPOTHESIS 2

THERE WILL BE MORE SHOPS AND A GREATER PERCENTAGE (%) OF COMPARISON SHOPS IN BROMLEY THAN CATFORD

The reason for Bromley shopping centre having more shops and a greater percentage (%) of comparison shops than Catford shopping centre is because Bromley shopping centre has a larger sphere of influence than Catford shopping centre, as well as a greater nodality and proportion of comparison shops. A comparison goods shop is a shop that sells goods that are not a necessity therefore shoppers often spend more time comparing prices between the same goods, but at different shops, in order to find the most competitive price and stylish design.

For example such a good could be a, D.A.B radio in which can be purchased from shops such as, DIXONS, CURRIES, SONY, PC-WORLD or ARGOS in which sell Electronic - comparison goods.

There are more comparison goods within Bromley shopping centre compared to Catford shopping centre as comparison goods command a greater range and have a higher threshold, because of these factors comparison goods need more customers in the form of high street shoppers, in which there is an increase in the possibility of this occurring within Bromley shopping centre due to the larger Sphere of Influence.
The range of a shop is the maximum distance a shopper is willing to travel in order to shop, at a certain shop.
A threshold is the minimum amount of shoppers required, to prevent the shop - business entering liquidation, by making a profitable annual turn-over.

For example a Village shop, in which within the Hierarchy would be classed at Local level could have a threshold of 400 shoppers, a Supermarket could have a threshold of 50,000+ shoppers and a Hypermarket could have a threshold of 70,000+ shoppers.

In contrast shops selling convenience - perishable goods with a lesser range and low threshold would dominate Catford shopping centre.
Convenience - perishable goods are goods in which are frequently purchased by shoppers as convenience - perishable goods are needed daily and expire after a specific date.

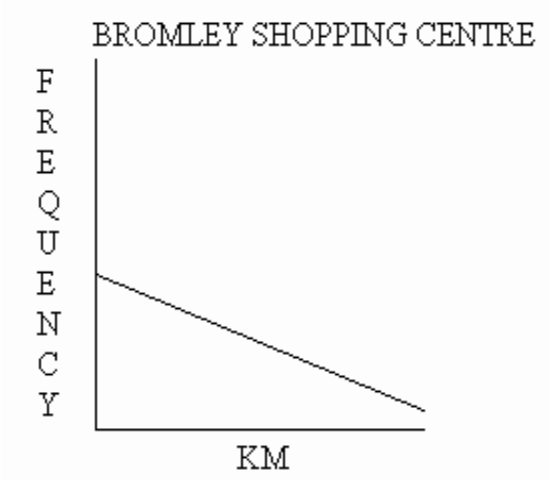
For example a convenience - perishable good could be a loaf of bread in which could be purchased by a shopper from a local Newsagents, in which within the Hierarchy would be classed at Local level.

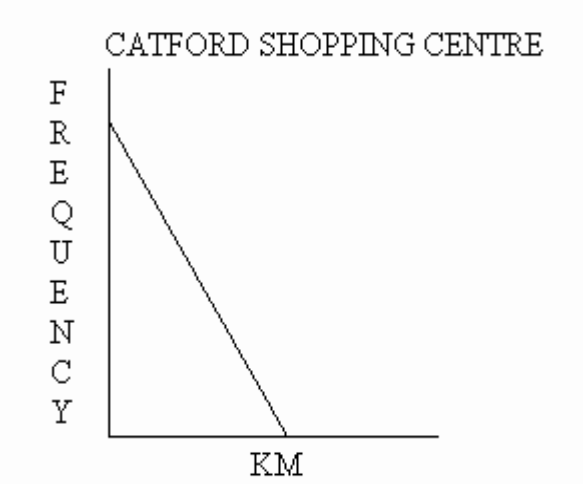
HYPOTHESIS 3

CATFORD WILL BE VISITED MORE FREQUENTLY THAN BROMLEY AND PEOPLE TRAVEL LESS DISTANCE

The reason for Catford being visited more frequently than Bromley is because Catford shopping centre has a greater proportion of convenience goods shops than Bromley shopping centre therefore shoppers visit Catford shopping centre more frequently as there is greater demand for these types of goods. Catford will be visited more frequently than Bromley, because not only does it have convenience goods shops but also many comparison shops, therefore shoppers have a wider range of types of shops, within one shopping centre, therefore Bromley shopping centre will be visited less frequently than Catford shopping centre. This section explains the Geographical Term, Friction of Distance in which, Catford the smaller shopping centre shall be closer to other local shopping centres, as convenience goods shops do not have as wide a range of goods, therefore tend to be relatively nearby to other shopping centres, as shoppers are not as willing to travel long distances to convenience goods shops, to purchase convenience - perishable goods. The nearest competition for Bromley shopping centre, is Croydon shopping centre, however there is also competition from Bluewater shopping centre and Lakeside shopping centre, in which shall be further away as Bromley shopping centre is dominated by long range comparison shops, therefore shoppers will be willing to travel further, therefore the shopping centres do not have to be close together as shoppers will be willing to travel 20-30km for goods in Bromley shopping centre. I have predicted that there will be an evident relationship between the FREQUENCY of times a shopper shops at a shopping centre and the distance /KM in which they travel to the shopping centre, this is shown below in the form of 2 line graphs, distance /KM against FREQUENCY representing either of the two shopping centres.

FIG 8





The gradient for the Bromley shopping centre is relatively shallow in comparison the steep gradient for the Catford shopping centre. This is because Bromley shopping centre sells predominantly comparison goods and therefore Bromley shopping centre will not be visited as frequently as Catford shopping centre. In addition, Catford shopping centres range is considerably shorter than Bromley shopping centres range, therefore shoppers to Catford shopping centre need not to consequently, travel as far in order to arrive at the destination that is Catford shopping centre and so will be more inclined to frequently visit.

METHODOLOGY

BROMLEY SHOPPING CENTRE: DATA COLLECTION:

The first survey was done in Bromley shopping centre, on Wednesday 17th May 2006 at approximately 2:30pm-4:30pm.
Bromley shopping centre covers approximately 2.56km²+ which is too great an area for one pupil to survey by themselves. Therefore, all pupils within the Geography Coursework class were taken at the same time. The Geography Teachers divided Bromley shopping centre into 11 areas A-K distributing groups of 2-3 pupils in to each of the 11 areas A-K. The distribution of the 11 groups into the 11 areas A-K within Bromley shopping centre allowed for the completion of both a Questionnaire survey and Land-Use survey for 20-30 shops, the Land-Use survey was later used to form a chart of frequency of particular types of shops, in which enabled the collection process to be undertaken quicker and more efficiently as well as a greater range of data being collected for more reliability. As well as both a Questionnaire survey and Land-Use survey for 20-30 shops, being undertaken both a Pedestrian and Method of Transport flow count were undertaken also, where both the Number of Pedestrians & Method of Transports within Bromley shopping centre over a period of 5 minutes were tallied and recorded in to the relevant boxes on a Table in which was later transferred on to an Excel spreadsheet therefore making the process of sketching Graphs and Pie-Charts of the collected data much easier using the Microsoft Office Excel programme. The Geography Teachers then combined all of the 55 sets of data collected by the 11 groups distributed into the 11 areas A-K within Bromley, by transferring all the data on to an Excel Spreadsheet.

QUESTIONNAIRE:

To ensure the Answers given by shoppers to the Questions asked when conducting the Questionnaire were relevant to particular hypothesis, for analysis it was necessary for the Questions to be specific. The Questionnaire consisted of 8 Questions, in which we asked the shoppers, the responses were then filled in to the relevant boxes on a Table of Results in which was later transferred on to an Excel spreadsheet therefore making the process of sketching Graphs and Pie-Charts of the collected data much easier. The Questions asked when conducting the Questionnaire were as follows, in the same sequences as below:

1. HAVE YOU COME HERE FOR SHOPPING ONLY?

This question was a necessity to ask and the Questionnaire could not be developed if the interviewee gave a any other responses, either than that they come to the shopping centre for shopping purposes, as any other reasons for coming to the shopping centre apart from shopping, is irrelevant for the Geography Coursework.

2. WHERE HAVE YOU TRAVELED FROM TODAY?

This question is used within the 1st and 3rd hypothesis in order to establish the desire lines for the S.O.I in the 1st hypothesis and the distance shoppers are willing to travel compared to the frequency of visits to the shopping centre. However not many shoppers, especially in Catford shopping centre, where willing to disclose there Postcodes instead chose to disclose either there Road or Town. This data given makes drawing the Desire lines on the A3 S.O.I Maps, more difficult as there is a greater possibility of making minor errors, whereas when a Postcode is given the shoppers location can be easily pin-pointed, using an A to Z or internet sites that provided Maps of England, such as www.streetmap.co.uk or www.the**aa**.com/travelwatch/planner_main.jsp, used for the A3 S.O.I Maps of both shopping centres. This question can also allow scatter graphs, "Distance willing to travel" to be sketched using the Microsoft Office Excel programme.

3. HOW OFTEN DO YOU SHOP IN BROMLEY/CATFORD SHOPPING CENTRE?

This question is used to prove the 3rd hypothesis, as the Graph of the number of times a shopping centre is visited, can be sketched using the Microsoft Office Excel Spreadsheet programme.

Therefore via analysing the two Graphs sketched using the Microsoft Office Excel Spreadsheet programme, a conclusion of which of the two shopping centres is visited more frequently, by shoppers can be formed as well as allowing us to establish a relation ship between distance and number of times visited.

4. WHICH MAIN METHOD OF TRANSPORT DID YOU TAKE TO GET TO BROMLEY/CATFORD SHOPPING CENTRE?

This question is used to prove the 1st hypothesis as it shows which shopping centre is more accessible and how far shoppers are willing to travel to get there. This question also helps with the explanation of anomalies of shoppers travelling greater distances to the shopping centres.

5. HOW LONG DID YOUR JOURNEY TAKE TO BROMLEY/CATFORD?

This question is used to provide anomalies in the 1st hypothesis. This is because there is a possibility that another shopping centre is nearer to the shopper than either Bromley or Catford shopping centre, however in order to access the nearer shopping centre the journey time, in minutes, maybe greater therefore either Bromley or Catford shopping centre is more convenient to access for the shopper, than the shopping centre that is nearer in distance. This question also helps with the explanation of anomalies of shoppers taking longer journey times, in minutes, to the shopping centres.

6. WHY DO YOU SHOP IN BROMLEY/CATFORD?

This question is used to provide a second set of support information for the 2nd hypothesis as it shall tell us the reasons for shoppers deciding to shop at the shopping centre. This question should prove that the majority of shoppers go to the smaller shopping centre, Catford, to purchase convenience/perishable goods rather than the larger shopping centre, Bromley in which the majority of shoppers will purchase comparison goods.

7. HOW MUCH DO YOU SPEND OR INTEND TO SPEND ON AN AVEARGE VISIT?

This question is used to prove the 2nd hypothesis as it shows the reasons for shoppers shopping in certain shopping centres. Allowing us to answer the question, do shoppers go to the larger shopping centre to purchase expensive goods from comparison goods shops or cheaper goods from convenience goods shops?

8. ARE THERE ANY CHANGES YOU WOULD MAKE TO THE SHOPPING CENTRE?

This question is used to prove the 1st hypothesis as it shows why shoppers are willing to travel further to get to the larger shopping centre rather than the smaller shopping centre, showing the size of a shopping centres threshold.

For the collection of data for The Geography Coursework survey, it was necessary to use a statistical sampling method to select individual shoppers in order to interview for the Questionnaire. The statistical sampling was used in order to reduce any possible biases of individual shoppers within a group who could potentially give comparable data when answering the questions in the Questionnaire. Therefore in order to undertake the statistical sampling a simple method was used, that meant interviewing every 5th shopper. However if a shopper for any reason refused to answer the Questionnaire, then in order to apply fairly the statistical sampling, the count would commence again, from 1, until the 5th shopper. This statistical sampling was continued until 6 shoppers had been interviewed, using the Questionnaire.

For the Questionnaire, a total of 55 sets of data were collected between The Geography Coursework classes; distributed over the 11 areas A-K. Therefore in order to keep the amount of data used for analysis similar for both shopping centers a method of random sampling had to be applied. Of the 55 sets of data collected, only 35 sets of data were selected using the random sampling method. The process of random sampling was carried out by ordering the sets of data and giving each individual data a number from 1-55 and then using the random function on the calculator in which gives a number between 0 and 1, multiply the number given by 55, in which shall give an n^{th} interviewee, therefore that set of data shall be used.

EXAMPLE:
Ran# = 0.552
0.552 x 55 = 30.36
30.36 ≈ 30

Hence, in this example the 30th set of data in the order shall be used. Once 35 sets of data had been randomly selected, the data was inserted into a Final Data Summary Table, using a Microsoft Office Excel Spreadsheet. Desire line maps were then sketched.

A Land-Use survey, maps out a particular area indicating the size and types of shops existing in the area also. The Land-Use survey was carried out in each of the 11 areas A-K by surveying the given area A-K and using a code sheet, labeling the Land-Use on a map of the specific area A-K. The coded sheet included shops and services under the following subheadings:

- Convenience Goods
- Comparison Goods
- Comparison Services
- Specialist Services
- Specialist Services
- Industrial Premises
- Road-Oriented Functions
- Public Services
- Residential Premises
- Vacant Premises

An example of how this was conducted was as follows: JD Sports – C26 – Sports Goods, British Home Store (B.H.S) – C8 – Department Store. However, in some cases the specific Land-Use of a shop was not listed within the code sheet, so therefore extra codes were added and then labeled accordingly:

- X1
- X2

The Land-Use survey enables us to gather suitable information for Hypothesis 2 - THERE WILL BE MORE SHOPS AND A GREATER PERCENTAGE (%) OF COMPARISON SHOPS WITHIN BROMLEY SHOPPING CENTRE THAN CATFORD SHOPPING CENTRE. Once the relevant sets of data had been collected, the results were tabulated using an Excel spreadsheet showing the frequency of each Land-Use group within both Bromley shopping centre and Catford shopping centre. Therefore an analysis of this data can be made in order to prove or disprove Hypothesis 2 - THERE WILL BE MORE SHOPS AND A GREATER PERCENTAGE (%) OF COMPARISON SHOPS WITHIN BROMLEY SHOPPING CENTRE THAN CATFORD SHOPPING CENTRE.
The conclusive sets of data collection undertaken were a Pedestrian flow count and Traffic flow count. The Pedestrian flow count was undertaken by counting the number of people walking beyond a specific point within 1 of the 11 areas A-K within a period of 5 minutes. However to undertake the Pedestrian flow count it was necessary, when counting to stand, back against a shop or wall in order to ensure that no pedestrians could walk behind us when counting, out of our line of view, hence being excluded from the Pedestrian flow count.

The Traffic flow count was undertaken by recording on to a tally the number of particular types of transportation crossing beyond a specific point within 1 of the 11 areas A-K within a period of 5 minutes. The Traffic flow count was undertaken in order to possibly account for anomalies in Hypothesis 1 - BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD. This is because if there are a greater number of methods of transportation within one of the shopping centers compared to the other shopping centre, this could signify good accessibility and therefore possible anomalous data can be explained.

CATFORD SHOPPING CENTRE: DATA COLLECTION

The second survey was done in Catford shopping centre, on Wednesday 23rd August 2006 at approximately 2:30pm - 4:30pm.
Catford shopping centre covers approximately 0.49km²+, which is a manageable area for 1 pupil or a group of 2 pupils to survey by themselves.
The surveys completed within Catfrod shopping centre differed from the surveys completed within Bromley shopping centre as the entire Land-Use survey for Catford shopping centre was completed by 1 pupil or a group of 2 pupils instead of each group within 1 of the 11 areas A-K recording the Land-Use survey for 20-30 shops and combining the data collected. Instead of, undertaking the 2nd centre data collection similar to the Questionnaire within Bromley, where each group within the 11 areas A-K interviewed 6 shoppers and then the sets of data were combined by The Geography Teachers for our use, within Catford shopping centre all 35 interviewees were to be undertaken individually, without any further statistical sampling method.

On the whole the majority of the shoppers encountered were compliant with the Questionnaire however there were some shoppers who did not for some reason want to participate in the Questionnaire. Below I have listed some of the main issues encountered within the collection of the data from the Questionnaire due to the nature of the questions used within the Questionnaire:

- All the shoppers in which I interviewed within my group, refused to give me their postcode, and some shoppers where even reluctant to disclose their addresses, as they believed this was personal information and they did not want to receive any leaflets etc from us via postage.

- Some shoppers were also reluctant in disclosing how much money they spent or were intending to spend in the shopping centre because some of the shoppers believed this question to be of personal information.

- Due to the time of day in which the survey was undertaken, approximately 2:30pm - 4:30pm, most of the middle aged adults in which were possible interviewees were unable to participate in the Questionnaire as they said they were in a hurry to go and collect their children from either: Summer or Play School Clubs & Activities or Crèches.

However in conclusion to the above problems encountered above, I could easily eliminate the problem encountered with Question 6 of the Questionnaire, using a Statistical method referred to as a Pilot Survey, in which Pilot Data is collected and therefore can be analyzed in order to detect flaws within specific Questions which are too generalized.

Similar diagrams as produced for the Bromley shopping centre data will be produced, using the data collected for the Catford shopping centre, including:

- Table of tallied result of the Pedestrian flow count and Traffic flow count

- Desire line map on A3 – S.O.I map

- Scatter graph – (with line of best fit) Frequency against Distance from the shopping centre

- Calculated Spearman Rank Coefficient to statistically show the strength of the relation between the two ranked pieces of data

ANALYSIS - HYPOTHESIS 1

BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD

From both the Desire line A3 maps it is evident that Bromley shopping centre has a larger S.O.I than Catford shopping centre, as Bromley shopping centres S.O.I covers a considerably larger area (km²) compared to Catford shopping centers S.O.I. therefore this proves my Hypothesis 1 - BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD.
Below is a table showing both the Shopping centers area of S.O.I:

FIG 9

SHOPPING CENTRE (S.C)	GRID SQUARES	AREA (km²)
BROMLEY S.C	26	26
CATFORD S.C	62	62

Both the A3 S.O.I maps show Bromley shopping centers S.O.I to be almost approximately 3 times greater than the size of Catford shopping centers S.O.I covering an area of approximately 62km² compared to 26km². This suggests that Bromley shopping centre serves a greater proportion of the local South-East London population than Catford shopping centre.
There are many factors in which can explain the reasons for Bromley shopping centre covering a lager area within the S.O.I, mentioned on page 1, INTRODUCTION & AIMS.

Bromley shopping centres longest desire line is 13.2km due South West. The majority of Desire lines stretch between the North-East and North-West, towards the Capitals of the District, such as: Sidcup and Lewisham. However the Desire lines retract towards the South-East and South-West, this is due to shoppers being attracted to Bromley shopping centres main competition within the South-East London shopping hierarchy, The Whitgift centre situated within the Capital of the District, Croydon. As a result there is a greater Friction of distance, as the goods in which the shoppers are purchasing can be obtained for the same price however within a nearer distance and lesser journey time.

The longer Desire lines are due to Bromley shopping centres accessibility, with 6 A+B roads converging into Bromley shopping centre, only 1 out of the 6 converging main roads into Bromley shopping centre is accessible from the South therefore there are fewer shoppers willing to travel to Bromley shopping centre from the South shown by the few Desire lines heading in a Southerly direction from Bromley shopping centre. The other 5 main roads converging into Bromley come from a northerly direction 3 roads converging into Bromley between the North and North-west, therefore providing good accessibility to shoppers in and around areas such as: Lewisham, Catford and Beckenham, where there is less competition from nearby shopping centres, except for The Lewisham Precinct, within Lewisham, in which is overlapped by both the Lewisham shopping centre and Bromley shopping centre S.O.I, this is because, although both of these shopping centres are ranked within the same bands of the South-East London shopping centre hierarchy,
Lewisham shopping centre is considered to be, by shoppers a shopping centre in which needs more "changes" made "to the centre", due to its reputation of being the crime Capital of South-East London, though recently crime rates have decreased due to the erection of a new Metropolitan Police Station, the most officered Police Station within Europe. However in comparison to Bromley shopping centre, Lewisham shopping centre is in need of desperate modernization, in order to improve the facilities available to shoppers, creating a less hostile environment in which is considered to be a Push Factor to both previous regular shoppers and potential shoppers to Lewisham shopping centre.

The S.O.I of Catford shopping centre is smaller than the S.O.I of Bromley shopping centre, with desire lines extending towards all compass directions, evenly distributed. The longest desire line stretched from Lamorbey road, Sidcup due East of Catford shopping centre, from a distance of 8.25km therefore is classified as an anomaly, because along with 3 other sets of data, they do not manage to co-inside with other sets of data collected in which enabled desire lines to be drawn in lengths approximately 0.5km-2km, therefore showing the majority of the desire lines are short in length, concentrated around the circumference of Catford shopping centre, with 19 desire lines within a 2km radius vicinity, signified by the white circle on the S.O.I maps.

The average distance traveled by shoppers to Catford shopping centre is 2.3km (1d.p), which in comparison to the average distance traveled by shoppers to Bromley shopping centre, 3.6km (1.d.p), is seen to be considerably lower. Though the Catford shopping centre S.O.I partially overlaps the Capital of the District Lewisham in which Lewisham Precinct located, the A3 S.O.I maps evidently show fewer desire lines heading in a North-Easterly direction, from Catford shopping centre, this is most probably due to the presence of The Lewisham Precinct, classed at Suburban business district level.

Below is a list of the bus routes served by Bromley shopping centre, obtained fromhttp://www.theglades.uk.com/pages/bus.mhtml. The list of bus routes help to convey the true extent of accessibility of Bromley shopping centre within the South-East of London.

FIG - …

Chislehurst	**61, 162, 269**
Purley Way	**119**
Eltham	**126, 162, 314**
Coney Hall	**314, 138, 246**
Catford	**208, 336**
Downe	**146**
Beckenham	**162, 227, 352, 354, 358, 367**
Lewisham	**208, 261**
Crystal Palace	**227, 358**
Edenbridge	**246**
Bexleyheath	**269**
Biggin Hill	**246, 320**
Biggin Hill Valley	**320**
Locksbottom	**61, 261, 336, 358, 402**
Penge	**227, 354, 358**
Lower Sydenham	**352**
West Croydon	**367**
Tunbridge Wells	**402**
West Wickham	**119, 352**
Hayes	**119, 138, 246, 314**
Keston	**320**
Bickley	**162, 269, 336**
Clock House	**227, 358**
East Croydon	**119, 367**
Addington	**314**
Petts Wood	**208**

FIG…. above is a photo of Bromley shopping centre which gives valid evidence for HYPOTHESIS 1, because the public transport links are shown to be efficient with 2 buses accessing the Bromley shopping centre. To the left of the photo, there is a Bus Lane signifying the efficiency of busses within Bromley shopping centre as the buses are able to access Bromley shopping centre without creating congestion therefore the journey times are reduced significantly for shoppers taking public transport.

In conclusion to this specific HYPOTHESIS, from the above Geographical information collected and analyzed, I have consequently proven my HYPOTHESIS to be both valid and efficient in regards to the Geography Coursework.

ANOMALIES

By analyzing both of the A3 S.O.I maps, on Bromley shopping centre and Catford shopping centre, it is evident that there are a number of anomalous sets of data.
Though there are a number of anomalous sets of data apparent on both of the A3 S.O.I maps, on Bromley shopping centre and Catford shopping centre, some of the anomalous sets of data were only classified as anomalous data within a Geographical context, rather than in a Mathematical context, being Mathematical outliers.

BROMLEY SHOPPING CENTRE:

- The shopper interviewed in Bromley shopping centre lives on Ricketts Hill Road, Tatsfiled and travels a distance of 13.20km in order to get to Bromley shopping centre, using a car as means of transport, the journey time takes approximately 20 minutes to reach Bromley shopping centre. The journey time does not seem to correspond in relation to the great distance traveled by the shopper to Bromley shopping centre, you would expect on average a journey of 13.20km to take at least 45 minutes, however obviously the route in which the shopper takes is generally "traffic free", and her route is most probably along either of the 3 A-ROADS leading into Bromley shopping centre, or even a Dual Carriageway, as the Speed Limit is 60-70mph, 30mph greater than the Speed Limit of Automobiles within Towns and therefore the journey time shall be reduced as the shopper shall be covering more miles per hour and consequently arrive in a reduced time span. The shopper obviously enjoys their infrequent visits to Bromley shopping centre as they said in the Questionnaire, they would not make any changes to the specific area that is Bromley shopping centre, and they are also willing to travel this great distance also because of the wide range of shops available within Bromley shopping centre.

- The shopper interviewed in Bromley shopping centre lives on Kirkwood Road, Peckham and travels a distance of 9.00km in order to get to Bromley shopping centre, using a bus as means of transport, the journey time takes approximately 30 minutes to reach Bromley shopping centre. For a shopper to travel 9.00km, in which is just over 5 miles to Bromley shopping centre on a bus is not only a considerable distance but a very tedious journey and therefore a journey lasting 30 minutes on a bus can be considered a very long time. However, this shopper is not considered as being a frequent visitor to Bromley shopping centre traveling to Bromley shopping centre only once per month though according to the survey, the shopper enjoys shopping in Bromley shopping centre because of its positive environment and therefore the shopper is prepared to travel the considerable distance to Bromley shopping centre on Public Transport. However I do believe this particular shopper has given me false information, regarding their journey time, as their journey time does not seem to correspond to the distance traveled, I say this because from my own experience traveling to and from Peckham and Bromley shopping centre, on a bus takes at least 45 minutes, minimum.

- The shopper interviewed in Bromley shopping centre lives on Beuval Road, Dulwich and travels a distance of 8.25km in order to get to Bromley shopping centre, using a car as means of transport, the journey time takes approximately 30 minutes to reach Bromley shopping centre. Though the shopper lives a considerable distance away from the shopping centre, this shopper has access to a car and therefore due to Bromley shopping centers accessibility, their travel time is not lengthy, and due to the safe and relatively cheap parking facilities available as well. As the shopper spent a reasonable amount of money, over £90, on the visit I predict that the shopper has most likely come to Bromley shopping centre in order to purchase perishable items for their family and hence, traveling 8.25km once a week for family food shopping is unsubstantial.

- The shopper interviewed in Bromley shopping centre lives on Sandrock Road, Lewisham and travels a distance of 7.50km in order to get to Bromley shopping centre, using a bus

as means of transport, the journey time takes approximately 15 minutes to reach Bromley shopping centre. The shopper's journey to Bromley shopping centre only takes 15 minutes and therefore can be considered a short journey, time-wise. The shopper travels just under 5 miles to Bromley shopping centre most probably on the single bus route in which connects Lewisham and Bromley, on the 208 bus along Bromley Road. As Bromley Road used to be a busy main road within the London Borough of Lewisham, Lewisham Council opted to install a Bus Lane on both sides of Bromley road heading in opposite directions in order to reduce congestion and increase the efficiency of bus networks. Thought the distance traveled by the shopper is far in relation to their housing location, the journey time is relatively short due to the efficient accessibility of Bromley shopping centre via, Public Transport, as there are various bus routes in which head towards Bromley shopping centre on a regular 10-15 minute interval basis from Lewisham.

- The shopper interviewed in Bromley shopping centre lives on Station Road, Sidcup and travels a distance of 6.40km in order to get to Bromley shopping centre, using a bus as means of transport, the journey time takes approximately 15 minutes to reach Bromley shopping centre. This shopper lives relatively local to Bromley shopping centre as Sidcup is the first major Town due North-East of Bromley shopping centre. The locality between Sidcup and Bromley shopping centre is emphasized by the efficient Public Transport from the North-East of Bromley shopping centre in Sidcup to Bromley shopping centre. The shopper obviously enjoys shopping relatively frequently at Bromley shopping centre, 52 times per year, as they said in the Questionnaire, they would not make any changes to the specific area that is Bromley shopping centre.

CATFORD SHOPPING CENTRE:

- The shopper interviewed in Catford shopping centre lives on Lamorbey Road, Sidcup and travels a distance of 8.25km in order to get to Catford shopping centre, using a car as means of transport, the journey time takes approximately 30 minutes to reach Catford shopping centre. I predict that this shopper is purchasing only perishable goods within Catford shopping centre, because they say that there needs to be more Department Stores within Catford shopping centre, showing they are not satisfied with the shops available for Comparison goods, and also this particular shopper lies within band 2 on Average expenditure per visit to Catford shopping centre, showing they spend only a minimal amount of money, an amount that is normally associated with an infrequent shopping trip for traditional Caribbean /West Indian and or African perishable goods.

- The shopper interviewed in Catford shopping centre lives in Woolwich, however the shopper refused to disclose their Road Name within the Questionnaire so therefore on the Data Table the Road Name is noted as "NO ROAD NAME GIVEN"; and travels a distance of 7.90km in order to get to Catford shopping centre, using a car as means of transport, the journey time takes approximately 15 minutes to reach Catford shopping centre. This shopper has must have either very good access to Bromley shopping centre, as Woolwich is a considerable distance away from Catford shopping centre, or this particular shopper has given me false information, regarding either their housing location, Road Name /Area or their journey time, as their journey time does not seem to correspond to the distance traveled.

- The shopper interviewed in Catford shopping centre lives on Hayes Chase, West-Wickham and travels a distance of 6.10km in order to get to Catford shopping centre, using a car as means of transport, the journey time takes approximately 30 minutes to reach Catford shopping centre. The main reason for this shopper traveling for such a long distance and time, is because they are most likely purchasing traditional Caribbean /West Indian and or African perishable goods, which can only be purchased from specific shops and or stalls within predominantly Black shopping centers at either Neighborhood or

Local levels, within the shopping hierarchy, therefore the shopper is forced to travel for such a long distance and time to Catford shopping centre, the closest Town in which has a predominantly Black shopping centre, in order to obtain the goods.

- The shopper interviewed in Catford shopping centre lives on Asylum Road, Peckham and travels a distance of 4.6km in order to get to Catford shopping centre, using a Train as means of transport, the journey time takes approximately 30 minutes to reach Catford shopping centre. I do believe this particular shopper has given me false information, regarding their journey time, as their journey time does not seem to correspond to the distance traveled, I say this because from my own experience traveling to and from Peckham and Bromley shopping centre, via the Railway network /Train takes approximately 20 minutes maximum.

ANALYSIS - HYPOTHESIS 2

THERE WILL BE MORE SHOPS AND A GREATER PERCENTAGE (%) OF COMPARISON SHOPS IN BROMLEY THAN CATFORD

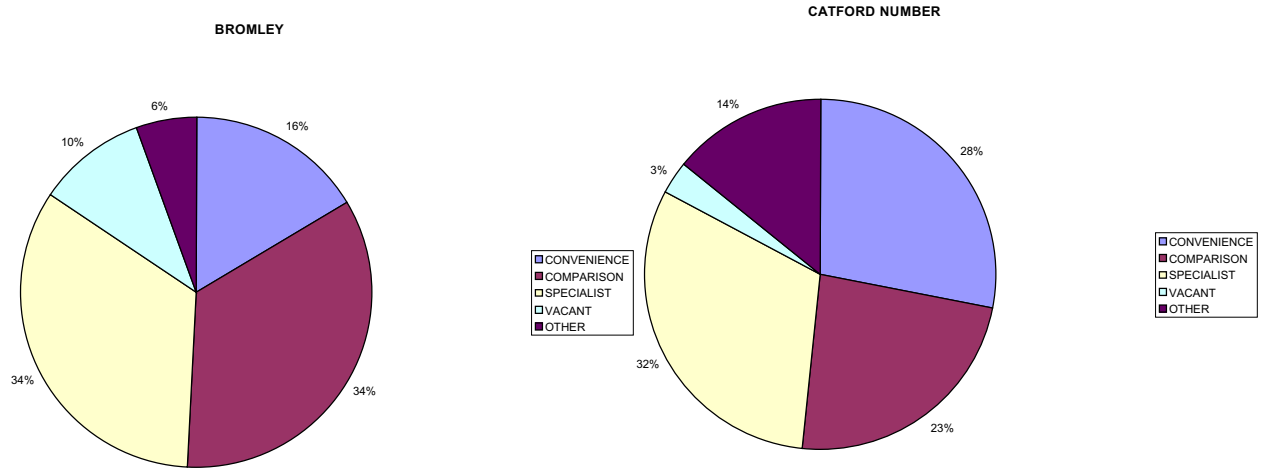
The sets of data within the table, below demonstrates both the Number and Percentage of types of shops within Bromley shopping centre, The Glades, Bromley and Catford shopping centre.
The sets of data within the table were collected within the Methodology, Land-Use survey, in which a Code Sheet was used, in exception for The Glades, Bromley, in which the use of the internet site: http://www.theglades.uk.com/index.mhtml#, provided, both the Number and Percentage of types of shops within The Glades, Bromley.

FIG 10

SHOPPING CENTRE	A+B	C+D	E+F	V	OTHER	TOTAL
BROMLEY NUMBER	55	116	114	33	19	337
BROMLEY %	16	34	34	10	6	100
GLADES NUMBER	5	72	46	0	0	123
GLADES %	4	59	37	0	0	100
B + G NUMBER	60	188	160	33	19	460
B + G %	13	41	35	7	4	100
CATFORD NUMBER	18	15	20	2	9	64
CATFORD %	28	23	32	3	14	100

From the table, FIG 10 above, it is evident that the sets of data show that there are a considerable greater Number and Percentage of types of shops within Bromley shopping centre in comparison to Catford shopping centre. Within Bromley shopping centre, excluding the total Number of shops within The Glades, there are 337 shops. Catford shopping centre has a total Number of 64 shops, in which is less than 20%, of the total Number of shops, within Bromley shopping centre.
Bromley shopping centre is more densely populated, in terms of shops, per Kilometer in comparison to Catford shopping centre. This is because Bromley shopping centre is approximately, 4 times the length of Catford shopping centre and there are a greater Number and Percentage of types of shops within Bromley shopping centre in comparison to Catford shopping centre. The Glades, Bromley, is located within the Capital of the District, Bromley, there are 123 shops within The Glades, Bromley. Therefore the total Number of shops within Bromley shopping centre and The Glades, Bromley, is 460 shops. This is approximately, 7 times the Number of shops within Bromley shopping centre and The Glades, Bromley, in comparison to Catford shopping centre.

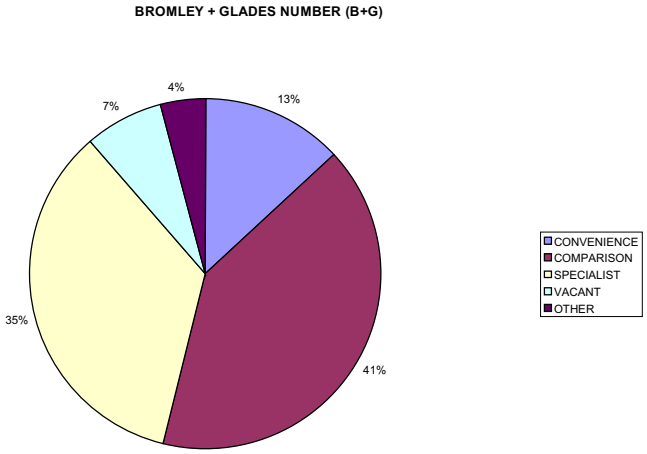
FIG 11



The Pie-charts, above show the Number and Percentage of types of shops within, Bromley shopping centre and Catford shopping centre. From analyzing both of the Pie-charts, it is evident that there are a greater proportion of comparison shops within Bromley shopping centre, in comparison to Catford shopping centre. Within Bromley shopping centre 34% of the shops are comparison goods shops, compared to Catford shopping centre, where only, 23% of the shops are comparison goods shops.

The Pie-chart, FIG 12, below shows the Number and Percentage of types of shops within, both, Bromley shopping centre and The Glades, Bromley, giving a proportional total of the amount of shops within the, Capital of the District Bromley.

FIG 12



Within the, Capital of the District Bromley, comparison goods shops account for 41%, of the total amount of shops, it is clear that there are a greater proportion of comparison shops in Bromley and Catford as entire districts as well as individual shopping centers.

This evident difference in outlets is partially related to HYPOTHEIS 1: BROMLEY THE LARGER CENTRE WILL HAVE A LARGER SPHERE OF INFLUENCE THAN CATFORD, therefore a substantially greater nodality. These features aid the nature of comparison goods which have a long range and high threshold demand and therefore are proportionally greater in size. In contrast, Catford shopping centre shall be dominated by convenience goods shops as they have short range and low threshold demand and so the spheres of influence and nodality for these shops need not be relatively outsized.

In order to maintain the shop economically without the shop having to go into, Financial deprivation and or Liquidation a shop comparison good shop needs a greater number of shoppers a higher threshold, as the shoppers will be spending considerable amounts of money to aid a profitable turnover. Therefore the individual shopping centre with the greatest pedestrian flow would have shops with a higher threshold and hence, more comparison goods shops consequently.

FIG 13

SHOPPING CENTRE (S.C)	TOTAL PED F.C	NO. OF AREAS	AV. PED F.C
BROMLEY S.C	601	11	55
CATFORD S.C	196	6	33

From the pedestrian flow, it is clear that the average number of shoppers per zone for each centre is substantially greater in Bromley than in Catford. The average pedestrian flow was 67 in Bromley shopping centre, approximately twice that of Catford shopping centre, where the

average pedestrian flow was a mere 33. The significant difference in shoppers is most likely due to individual shops thresholds. With comparison shops needing a higher threshold, the pedestrian flow would indicate and support that there are a higher proportion of comparison outlets in Bromley shopping centre than Catford shopping centre. However, despite this, Catford does still have a reasonably large proportion of specialist goods shops in which account for over ¼ of all stores within Catford shopping centre. Within Catford shopping centre there are numerous noticeable traditional specialist Caribbean /West Indian and or African goods shops mainly selling perishable goods or Hair and or Cosmetic goods. However these shops are only known to shoppers of Caribbean /West Indian and or African heritage, hence why these types of specialists goods stores are located within predominantly Black shopping centers, as they are located nearby to housing locations of the shoppers /clients. However there are some specialist goods shops within Catford shopping centre which are relatively unknown shops, the reason for these shops locating in Catford shopping centre, is because the large chain stores and companies locate within the Regional and Suburban Business District level of the shopping hierarchy, therefore these small self-owned businesses have relatively minimal amount of competition against larger and more popular chain stores and companies.

FIG - …..

FIG…., above is a photo of DEBENHAMS department store, just one of many department stores within Bromley shopping centre. However on the other hand there are only a handful of Department stores to be found within Catford Shopping centre, further indicating the high proportion of comparison outlets within Bromley Shopping centre in comparison to Catford shopping centre

In conclusion to this specific HYPOTHESIS, from the above Geographical information collected and analyzed, I have consequently proven my HYPOTHESIS to be both valid and efficient in regards to the Geography Coursework.

ANALYSIS - HYPOTHESIS 3

CATFORD WILL BE VISITED MORE FREQUENTLY THAN BROMLEY & SHOPPERS WILL TRAVEL LESS DISTANCE TO GET THERE.

The table, below, shows the average number of days shopped at each shopping centre, by shoppers over the course of 1 year:

SHOPPING CENTRE (S.C)	AVERAGE No. OF DAYS
BROMLEY S.C	4177 /35 = 119
CATFORD S.C	4451 /35 = 127

The table, above proves my HYPOTHESIS 3: CATFORD WILL BE VISITED MORE FREQUENTLY THAN BROMLEY.

The average number of days shopped for Bromley shopping centre is lower than the average number of days shopped for Catford shopping centre, Catford shopping centre is visited on average 127 times per year, whereas Bromley shopping centre is only visited on average 119 times per year, this is 1.7 (1d.p) times lesser than the frequency of Catford shopping centre. HYPOTHESIS 2: THERE WILL BE MORE SHOPS AND A GREATER PERCENTAGE (%) OF COMPARISON SHOPS IN BROMLEY THAN CATFORD, can be used as a reference in order to explain these results, because shoppers to Bromley shopping centre purchase comparison goods which are expensive and non-perishable, therefore shoppers visit Bromley shopping centre more infrequently than shoppers to Catford shopping centre, in which shoppers purchase convenience - perishable goods, in which need to be purchased more frequently.

An evident mathematical relationship between distance /KM traveled and FREQUNCY of visits to each individual shopping centre can be established by using the Spearman Rank Correlation Coefficient programme in which allows the user to obtain accurate computer drawn scatter graphs of their programmed Geographical data and by using a Statistical Test /Spearman Rank Correlation Coefficient, in order to define the correlation strength.

The Mathematical formula below, allows the Spearman Rank to be calculated efficiently.

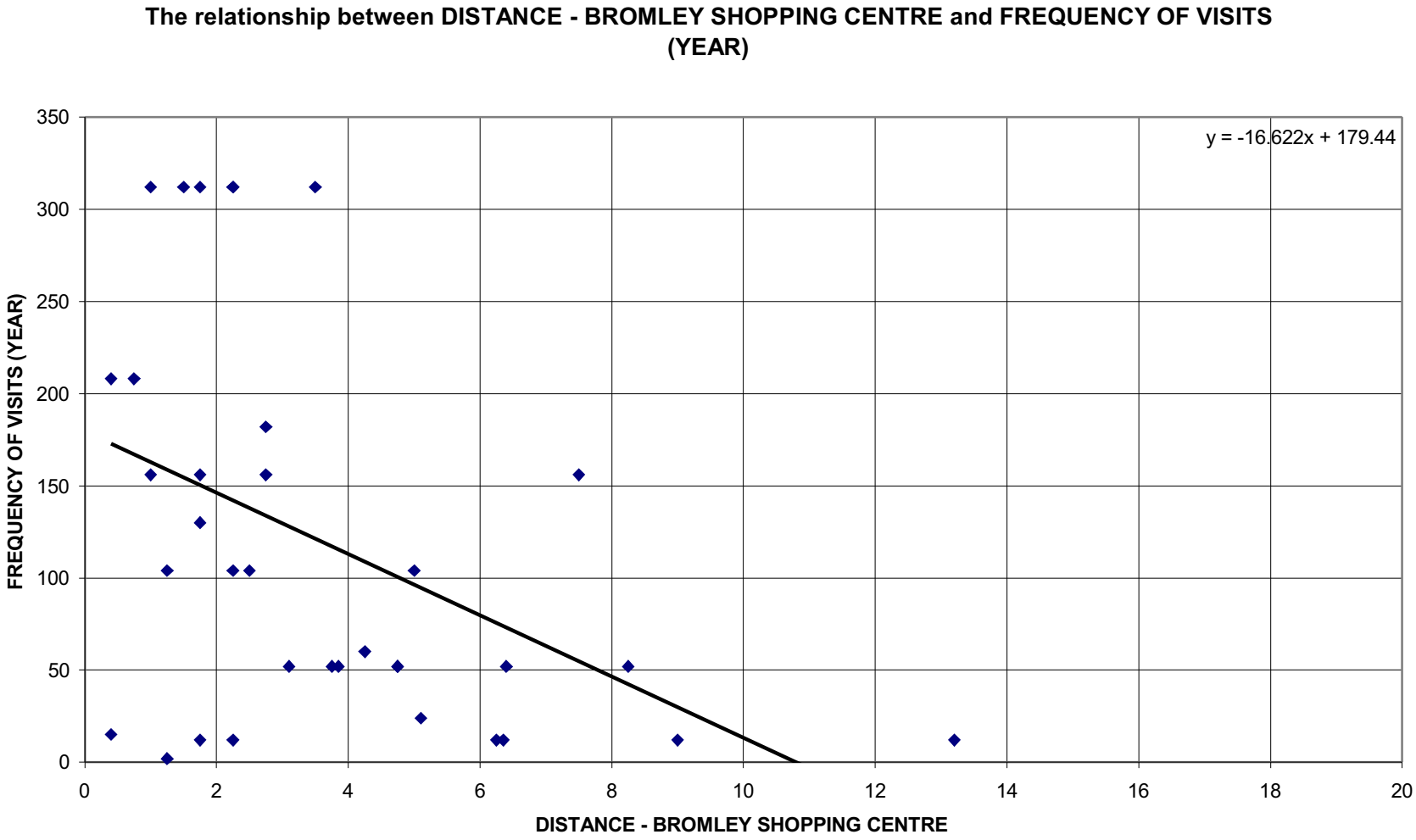
$$\rho = 1 - 6\Sigma D^2 \div N(N^2 - 1)$$

KEY:

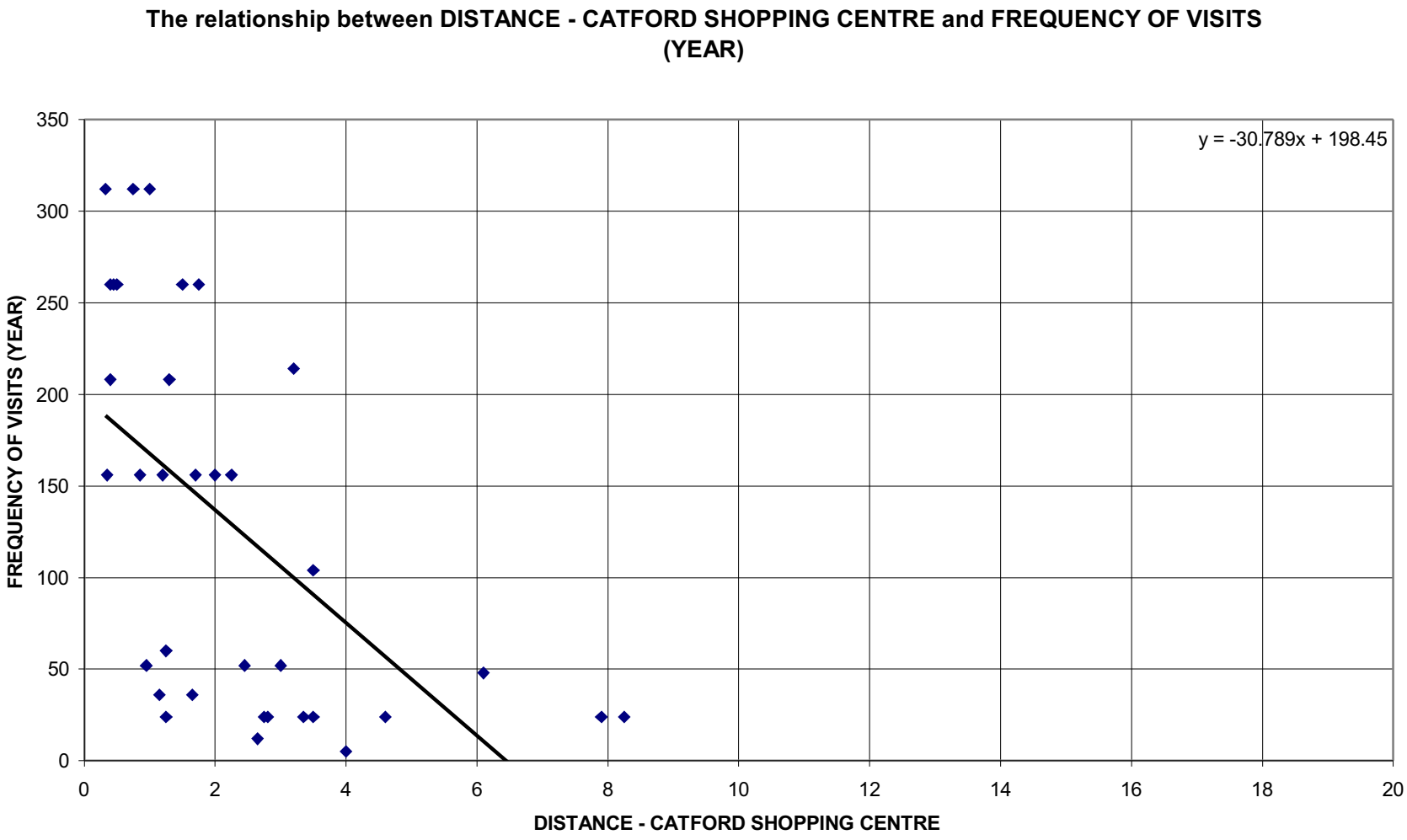
D = *D*ifference between the ranks of corresponding values of X and Y
N = Number of pairs of values

The Statistical Test will give a rank where $-1 < \rho < 1$ from their programmed Geographical data. The significance of the rank depends on the sign before the number, for example ± /positive or negative values. The rank values have specific meanings and interpretations which are as follows: the closer a rank value is to the positive whole integer of 1, suggests a perfect or strong positive correlation and correspondingly the closer a rank value is to the negative whole integer of -1, suggests a perfect or strong negative correlation.
The probability of the Statistical Test being negative, thus a closer rank value to the negative whole integer of -1, is very high because these negative rank values would correspond with HYPOTHESIS 3: CATFORD WILL BE VISITED MORE FREQUENTLY THAN BROMLEY & SHOPPERS WILL TRAVEL LESS DISTANCE TO GET THERE. With every individual Spearman Rank Correlation Coefficient, a Table of Significance is produced which shall consequently allow me to mathematically, validate or invalidate my individual HYPOTHESIS.

SPEARMAN RANK CORRELATION COEFFICIENT:
BROMLEY SHOPPING CENTRE



SPEARMAN RANK CORRELATION COEFFICIENT:
CATFORD SHOPPING CENTRE



Both the scatter-graphs drawn for either shopping centre, using the ….. programme have a ……. trend.
Any function: y = f(x) in which, when drawn gives a straight line has an equation of the form: y = mx + c. However this does not include vertical lines, because vertical lines are not mathematical functions of "x": y = f(x), because a function of "x" can only have 1 point in the same vertical line.

In the straight line equation: y = mx + c:

- y - The coordinate of the points that satisfy the function, therefore lie on the straight line graph.
- m - The gradient of the straight line graph.
- x - The coordinate of the points that satisfy the function, therefore lie on the straight line graph.
- c - The "y intercept" of the straight line graph.

Equation for the Bromley shopping centre graph: y = +……..

Equation for the Catford shopping centre graph: y = +……..

The gradient for the Bromley shopping centre graph:

The gradient for the Catford shopping centre graph:

The Friction of distance effect is greater for Catford shopping centre, because the gradient for the Catford shopping centre graph is greater than the gradient for the Bromley shopping centre graph.

Bromley shopping centre gradient: …. days per km.

Catford shopping centre gradient: …. days per km.

From Fig. 14a demonstrates that for the Penge data, $\rho_P = -0.578$ indicating that there is a moderate negative correlation. Moreover since $|\rho_P| = 0.578 \geq 0.394$, we can accept the hypothesis at the 99% significance level. Fig. 15a illustrates that $\rho_B = -0.283$ implying a weak negative correlation. In addition, since $|\rho_B| \geq 0.283$, the hypothesis concerning Bromley can be accepted at 95% significance.

Both Fig. 14b and Fig. 15b establish the expected inverse trend between distance and frequency meaning the further a shopper must travel; the less frequently he or she visits the centre. However, the trend lines differ tremendously in gradient. The gradient of the best fit line for Bromley is -8.813 and for Penge, -22.251. Therefore, the friction of distance for Penge is much greater than that of Bromley suggesting that distance is a much larger impact in the smaller centre. A gradient of -22.251 indicates that for each kilometre away from Penge, a shopper visits the centre 22 times less frequently per year. Likewise, for every kilometre from Bromley, a shopper visits the centre 8 or 9 times less per year. Thus, distance does in fact have a greater impact on Penge and this evidence can support both Hypothesis 1 and 3. With the friction of distance of Bromley being much smaller than that of Penge, people living further away would be prepared to travel to Bromley and not Penge and hence, Bromley would have a larger sphere of influence. Moreover, it also indicates that shoppers will travel less distance to go to Penge.

From Fig. 14b and Fig. 15b, it is evident that there were both positive and negative anomalies. A positive anomaly is a person who lives far from the centre but appears to shop too often and a negative anomaly is one who lives close to the centre but appears to shop there too infrequently.

Penge

P1 P2	These shoppers may shop frequently at Penge despite living far perhaps because of access to good transport links such as a main road or a nearby bus stop or train station. This may be added to with perhaps a certain liking of the safe environment.
N1 N2	Despite living so close to the centre, these shoppers perhaps travel there infrequently as they may do their convenience shopping at a larger centre near to where they work or because of their dislike of the noisy environment and traffic.

Bromley

P3 P4	Despite living far from the centre, these people most probably visit Bromley frequently due to its excellent transport links. With 3 mainline train stations, 21 bus stops and its pro public transport roads, it can take merely minutes to reach Bromley although travelling from quite a distance away.
N3 N4	Although not having to travel far at all to Bromley, these shoppers may go there infrequently due to the centre's comparison dominance. They may not go shopping for comparison goods often perhaps due to economical class. They may have a lower than average income and so, cannot afford to shop at Bromley very often despite its proximity.

After having gathered evidence, represented data and made the necessary calculations, I can state that my hypothesis has been proved and it is true that Penge is visited more frequently and people travel less distance to go there.

In conclusion to this specific HYPOTHESIS, from the above Geographical information collected and analyzed, I have consequently proven my HYPOTHESIS to be both valid and efficient in regards to the Geography Coursework.

EVALUATION

Finally, having now conducted efficiently the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy. I now conclude that each of the three individual hypothesis, I have constructed are all relevant to the Geography Coursework and are correct and have all been further validated within their individual analysis.

In relation to the topic studied within the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy, I have learnt many significant and important: Geographical, Mathematical, Information Technology (ICT) and General Knowledge: skill, facts and figures.

GEOGRAPHICAL

- How to construct relevant hypothesis in relation to the topic being studied within the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy, and gather relevant data in order to validate and or invalidate the hypothesis within the analysis of the hypothesis.

- A shopping hierarchy is a method of showing the importance of shopping centres in order, based upon various services in which a particular shopping centre provides to customers as well as the size of the particular shopping centre. I have also learnt that a hierarchy can be used to rank more than 1 unit in a topic area the factor that is being used to rank these units can be extremely diverse also.

- I have learnt a significant number of Geographical terminology meanings and Jargon in which can be applied within the G.C.S.E Geography Coursework.

MATHEMATICAL

- How to construct relevant hypothesis in relation to the topic being studied within Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy, and gather relevant data in order to validate and or invalidate the hypothesis within the analysis of the hypothesis

- The Mathematical formula allowing the Spearman Rank to be calculated efficiently:
  $\rho = 1 - 6\Sigma D^2 \div N (N^2 - 1)$

- How to use the Mathematical process of Random Sampling, in order to select the interviewees within the Bromley shopping centre, for the Questionnaire from the Microsoft Office Excel Spreadsheet Programme: "*A sample is a subset chosen from a population for investigation. A* RANDOM SAMPLE *is one chosen by a method involving an unpredictable component. A* RANDOM SAMPLE *can also refer to taking a number of independent observations from the same probability distribution, without involving any real population."*

- How to use the Spearman Rank Correlation Coefficient programme in which allows the user to obtain accurate computer drawn scatter graphs of their programmed Geographical data and by using a Statistical Test /Spearman Rank Correlation Coefficient, in order to define the correlation strength.

INFORMATION TECHNOLOGY (ICT)

- How to use the Spearman Rank Correlation Coefficient programme in which allows the user to obtain accurate computer drawn scatter graphs of their programmed

Geographical data and by using a Statistical Test /Spearman Rank Correlation Coefficient, in order to define the correlation strength.

- How to use the Microsoft Office Excel Spreadsheet programme, in order to construct: pie-charts and bar charts from the Geographical data collected from the shopping centre Questionnaires.

GENERAL KNOWLEDGE

- How to construct relevant hypothesis in relation to the topic being studied within the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy, and gather relevant data in order to validate and or invalidate the hypothesis within the analysis of the hypothesis

- I have learnt all of the information relevant to the hypothesis of each of the individual shopping centers studied within the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy.

- However I do believe the main knowledgeable set of information learnt within the Geography Coursework; comparing two shopping centres within the South-East London shopping hierarchy, is that in order to set up a self-employed business on a low scale, there are many factors that have to be thought through strategically in order to decide the location of the business to avoid, high levels of competition and land tax rent, because within Bromley shopping centre there recently has been a significant number of closures to self-employed business, mainly due to those two reasons mentioned.

The reliability of the data collection methods has affected the accuracy of the data and validity of conclusions and analysis to a certain extent, I do believe, because for example, with the Questionnaire:

Though on the whole the majority of the shoppers were compliant with the Questionnaire, however there were some shoppers who did not for some reason want to participate in the Questionnaire. Below I have listed some of the main issues encountered within the collection of the data from the Questionnaire due to the nature of the questions used within the Questionnaire:

- All the shoppers in which I interviewed within my group, refused to give me their postcode, and some shoppers where even reluctant to disclose their addresses, as they believed this was personal information and they did not want to receive any leaflets etc from us via postage.

- Some shoppers were also reluctant in disclosing how much money they spent or were intending to spend in the shopping centre because some of the shoppers believed this question to be of personal information.

- Due to the time of day in which the survey was undertaken, approximately 2:30pm - 4:30pm, most of the middle aged adults in which were possible interviewees were unable to participate in the Questionnaire as they said they were in a hurry to go and collect their children from either school or nursery.

Within the Questionnaire some of the data collected are evident anomalous data, identified within the ANOMALIES section of the Geography Coursework, as some particular shoppers had given me false information, regarding either their journey time and or their location, as these sets of data regarding their journey time and housing location did not seem to correspond, when checked using: internet sites that provided Maps of England, such as www.streetmap.co.uk or www.the**aa**.com/travelwatch/planner_main.jsp.

The Pedestrian flow count was a hard and tiresome process to undertake because counting the amount of shoppers walking past the "counter" within a certain zone, who has their back to the wall of a building or shop window in order to stop shoppers from walking behind them and therefore being consequently eliminated from the Pedestrian flow count is both inefficient and impractical as the zone in which the Pedestrian flow counts take place are to great an area for one individual "counter" to manage and therefore some shoppers are unintentionally uncounted and therefore eliminated from the Pedestrian flow count. Therefore these data are to some extent unrepresentative of the true data within each shopping centers and therefore effects the validity of HYPOTHESIS 2 and HYPOTHESIS 3

The Land-Use survey helped to produce a valid HYPOTHESIS 2, because the types of shops where categorised noticeably on the Land-Use survey sheet, and therefore the data collected was confirmed to be 100% correct as the data was primary and therefore the pie-charts produced using the Microsoft Office Excel Spreadsheet programme where 100% valid and helped to further validate my HYPOTHESIS 2.

In order to improve the reliability of the data collection and accuracy of data, there are a few steps in which can be undertaken to ensure this, for example:

The Questionnaire proved to be the main source for the collection of anomalous data from interviewee shoppers within both shopping centres, therefore certain questions within the Questionnaire should be edited accordingly to avoid anomalous data being given, if the Geography Coursework was to be undertaken again, for example, the questions below should be edited from the Questionnaire due their vagueness and their potential to provide anomalous data:

2. WHERE HAVE YOU TRAVELED FROM TODAY?

This question is a vital piece of evidence in order to help prove or disprove, HYPOTHESIS 1 and HYPOTHESIS 3, therefore I believe if a shopper refuses to give their complete Post-code, in which can be used to give a pin-point location of the shopper, using internet sites that provided Maps of England, such as www.streetmap.co.uk or www.the**aa**.com/travelwatch/planner_main.jsp then the interview should cease and another interviewee found instead. This also decrease the potential for anomalous data because the likelihood of a person being able to give an accurate Post-code that is not of their own is less than a person being able to give a false Road Name, therefore only Post-codes should be accepted.

5. HOW LONG DID YOUR JOURNEY TAKE TO BROMLEY/CATFORD?

This question is a vital piece of evidence in order to help prove or disprove, HYPOTHESIS 1 and HYPOTHESIS 3, therefore I believe that this question should be asked directly after the above question, therefore being referred to as question 3. rather than question 5. because these to questions above, shown within the Geography Coursework, have a close relationship. Once the, interviewee has given their Post-code within question 2. the interviewer should, using a wireless internet connection on a laptop, work out the journey time from the given location to the shopping centre, using the internet sites that provided Maps of England, such as www.streetmap.co.uk or www.the**aa**.com/travelwatch/planner_main.jsp, to work out, accurately the journey time and then cross reference this time given with the suggested time given by the interviewee to produce a realistic journey time. However question 5. could actually be removed altogether as a question to the interviewee as this shall reduce the Questionnaire time and tedium for the interviewee, and instead using the internet sites that provided Maps of England, such as www.streetmap.co.uk or www.the**aa**.com/travelwatch/planner_main.jsp, the interviewer can obtain the journey time.

The Questionnaire in order for the Geography Coursework to be as fair as possible, should be undertaken twice for each individual shopping centre, one on a weekday and one on a weekend, preferably neither on the day when late night shopping hours are being run for the individual shopping centers, keeping the factors of: Months, Days and Times /Hours constant between each

centers, this should allow for a greater level of comparisons to be drawn between each of the two shopping centers.

By increasing the sample size of shoppers by 65 shoppers, to give a greater sample size of 100 shoppers within each shopping center, shall help to reduce anomalous data, as long as the other suggested improvements are undertaken within the Geography Coursework as well, because a greater sample size will give a better overall representation of the shoppers in each individual shopping centre. Consequently the Spearman Rank Correlation Coefficient shall therefore give a significantly more accurate interpretation of the correlation provided by the data of the individual shopping centres.

To extend the Geography Coursework, I could instead of just simply investigating two shopping centres add in a third shopping centre from the Regional shopping centre level of the South- East London Hierarchy, from the list below:

- BLUEWATER: GREENHIVE
- LAKESIDE: THURROCK
- WEST END: LONDON

The reason for using a third shopping centre within a higher level of the South- East London shopping Hierarchy, is to check the accuracy and consistency of the three HYPOTHESIS and see whether or not the HYPOTHESIS are valid or invalid when a greater number of shopping centres are taken into account within the Geography Coursework. Note there is no need to investigate shopping centres at Local shopping centre level of the South- East London Hierarchy because Local shopping centres such as: the CO-OP and the Local Newsagents are decreasing in numbers significantly due to high levels of competition from High Street stores and small style chain stores which are taking a great proportion of business and clients from the Local Newsagents and therefore forcing them into closure, these small style chain stores are for example: Tesco Express and B.P Express and Shop.
However preferably the third shopping center to investigate from the Out-of-Town shopping centres, would be WEST END: LONDON, because this shopping centre is most similar to the shopping centers investigated, Bromley shopping centre and Catford shopping centre, as both BLUEWATER: GREENHIVE and LAKESIDE: THURROCK, are both Out-of-Town shopping centres therefore the HYPOTHESIS produced will have to be edited to accommodate for the Out-of-Town shopping centre to be represented fairly, the Pedestrian Flow will have less significance within a Out-of-Town shopping centre like BLUEWATER: GREENHIVE and or LAKESIDE: THURROCK because both are enclosed shopping centres.

Alternatively instead of focusing solely on the South- East London shopping Hierarchy, I could compare shopping centres within the same level of the shopping Hierarchy, however within different parts of London. For example comparing shopping centers at the, Regional shopping centre level of the London Hierarchy, from North London, East London, South London and West London.