

PRACTICAL - 1

OBJECTIVE: - The objective of this task is to analyse the academic performance of 20 students by calculating their total marks, percentage, pass/fail status, and grade allotment based on predefined criteria. This analysis can provide insights into the students' understanding of the subjects and their overall academic achievement.

PROBLEM STATEMENT

Enter the marks of 20 students in the given order

Serial number, Name of the student, Name of the college as header, Class as header, Subject-1, Subject -2, Subject -3, Subject -4

Calculate the following:

- Total marks of all the subjects
- Percentage of marks for each of the students
- Allotment of grades based on the criterion.

- If the marks are more than 75% then the result is "Pass" else "Fail"

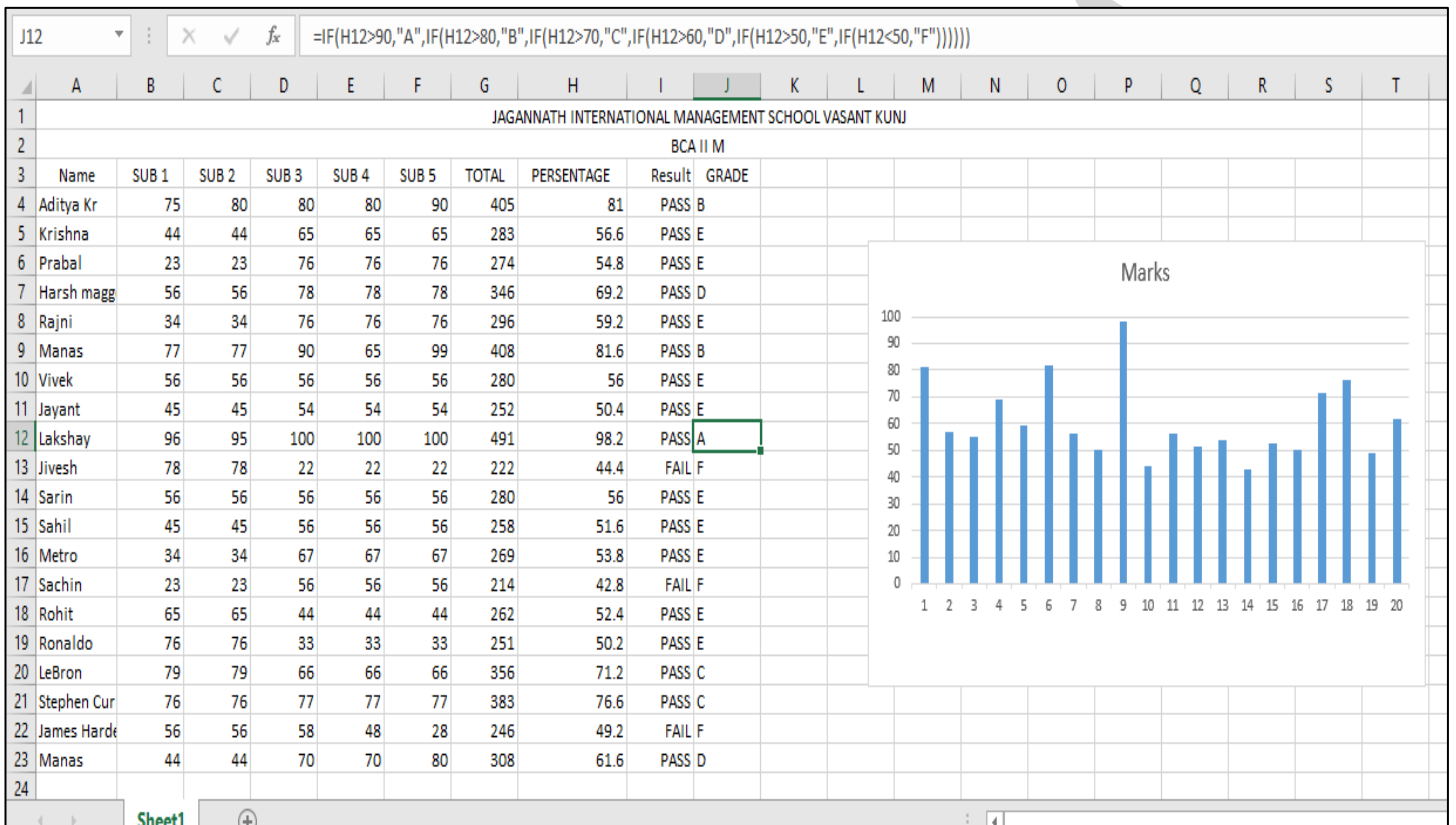
Now in other column allot the grades based on the following criterion:

- If the marks are more than 90% then grade is "A"
- If the marks are more than or equal to 75 and less than 90% then the grade is "B" else the grade if "C" provided that the result is "Pass"

PROCEDURE

- Enter the Data:** In Excel, enter the data in the following order: Serial number, Name of the student, Name of the college, Class, Subject-1, Subject-2, Subject-3, Subject-4.
- Calculate Total Marks:** In the next column, calculate the total marks for each student. You can use the SUM function in Excel. If your marks start from column E and end in column H, the formula would be =SUM (E2:H2). Drag this formula down to apply it to all students.
- Calculate Percentage:** In the next column, calculate the percentage of marks for each student. If total marks for each subject is 100 and there are 4 subjects, the formula would be =(I2/400) *100 (assuming total marks are in column I). Drag this formula down to apply it to all students.
- Determine Pass or Fail:** In the next column, use the IF function to determine if the student has passed or failed. The formula would be =IF(J2>75, "Pass", "Fail") (assuming percentages are in column J). Drag this formula down to apply it to all students.
- Assign Grades:** In the next column, use the IF function to assign grades based on the criterion. The formula would be =IF(J2>90, "A", IF(AND(J2>=75, J2<90), "B", IF(K2="Pass", "C", "Fail"))) (assuming pass or fail status is in column K). Drag this formula down to apply it to all students.

OUTPUT



PRACTICAL - 2

OBJECTIVE: - The objective of this task is to perform a statistical analysis of the ages of the residents in a building, which includes calculating the mean, median, and mode of both ungrouped and grouped data, and constructing a frequency distribution. This analysis can provide insights into the age distribution and central tendencies of the residents' ages.

PROBLEM STATEMENT

For the following set of data representing the age in years of the residents of a given building, compute mean, median and mode of the ungrouped data.

19 17 15 20 23 41 33 21 18 20 18 33 32 19 18 20
17 22 55 19 22 25 28 30 44 19 20 39 55 62

Also,

- (a) Construct a frequency distribution with interval of 15-19, 20-24, 25-29, 30-34, 35-39....
- (b) Compute the mean, median and mode of the grouped data.

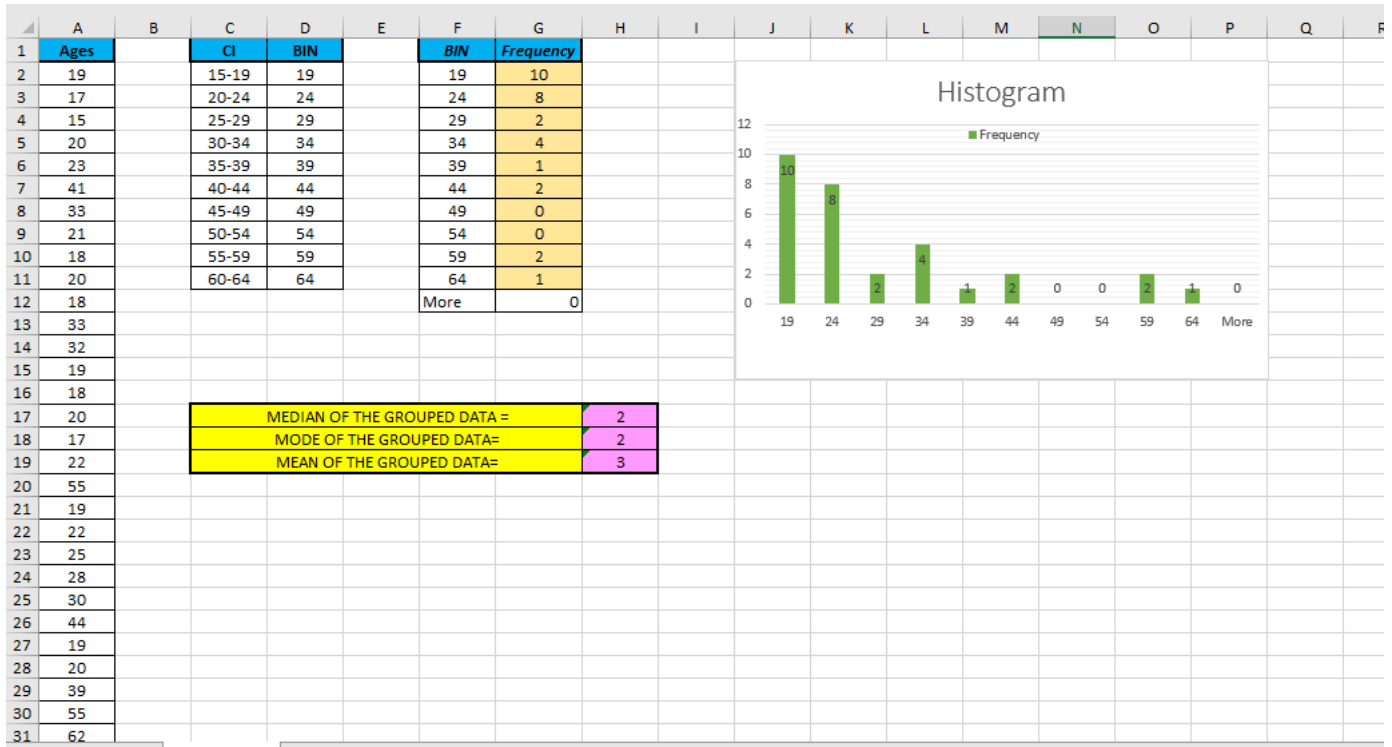
Print the output.

PROCEDURE

1. **Enter the Data:** Enter the given numbers in a column (let's say column A).
2. **Calculate Mean, Median, and Mode for Ungrouped Data:**
 - **Mean:** Use the AVERAGE function. The formula would be =AVERAGE (A1:A31).
 - **Median:** Use the MEDIAN function. The formula would be =MEDIAN (A1:A31).
 - **Mode:** Use the MODE.SNGL function. The formula would be =MODE.SNGL(A1:A31).
3. **Construct a Frequency Distribution:**
 - In column B, list your intervals: 15-19, 20-24, 25-29, 30-34, 35-39, and so on.
 - In column C, use the FREQUENCY function to calculate the frequency of each interval. The formula would be =FREQUENCY (A\$1: A\$31, B1:B5). Adjust the cell references to match your data and intervals.
4. **Calculate Mean, Median, and Mode for Grouped Data:**
 - **Mean:** Multiply the mid-point of each interval by its frequency, sum these products, and divide by the total frequency.
 - **Median:** Identify the interval where the cumulative frequency just surpasses half of the total frequency. The median lies in this interval.

- **Mode:** The interval with the highest frequency is the modal class. The actual mode can be calculated using a formula, but this requires the assumption that the data within the interval is uniformly distributed, which may not be accurate.

OUTPUT



PRACTICAL - 3

OBJECTIVE: - The objective of this task is to perform a statistical analysis on a given set of numbers by calculating the standard deviation, coefficient of variation, and variance. This analysis can provide insights into the dispersion and relative variability of the data set.

PROBLEM STATEMENT

For the following set of numbers compute the (1) Standard Deviation, (2) Coefficient of variation and (3) Variance.

Print the output.

PROCEDURE

1. **Enter the Data:** Enter the given numbers in a column (let us say column A).
2. **Standard Deviation (σ):** Use the STDEV.P function to calculate the standard deviation. If your data is in cells A1 through A31, the formula would be =STDEV.P(A1:A31).
3. **Mean (μ):** Use the AVERAGE function to calculate the mean. The formula would be =AVERAGE (A1:A31).
4. **Coefficient of Variation (CV):** It is the ratio of the standard deviation to the mean, expressed as a percentage. The formula would be =(B2/B3) *100 (assuming standard deviation is in cell B2 and mean is in cell B3).
5. **Variance (σ^2):** Use the VAR.P function to calculate the variance. The formula would be =VAR.P(A1:A31).

OUTPUT

	A	B	C
1	City	No. of Schools	No. of Candidates
2	New Delhi	300	30000
3	Mumbai	450	40000
4	Bengaluru	750	80000
5	Chennai	800	60000
6	Chandigarh	250	75000
7	Kerala	650	25000
8	Kashmir	700	60000
9	Bangal	565	82000
10	MEAN	558.125	56500
11	STANDARD DEVIATION	192.7423393	21023.79604
12	VARIANCE	37149.60938	442000000

PRACTICAL - 4

OBJECTIVE: - The objective of calculating the correlation coefficient in Excel is to determine the degree of association between two variables, in this case, sales and expenses.

The correlation coefficient ranges from -1 to 1. A value of 1 implies a perfect positive correlation, while a value of -1 implies a perfect negative correlation.

PROBLEM STATEMENT

The sales & expenses of a company (in Thousands of Rupees) are shown in the table below.

Sales (x)	50	50	55	60	65	65	65	60	60	50
Expenses (y)	11	13	14	16	16	15	15	14	13	13

For the given data set, compute the Correlation Coefficient and interpret the result. Print the output.

PROCEDURE

1. **Enter the Data:** Enter the sales data in one column (let's say column A) and the expenses data in another column (let's say column B).
2. **Calculate Correlation Coefficient:** Use the CORREL function to calculate the correlation coefficient. The formula would be =CORREL (A1:A10, B1:B10).

The correlation coefficient r ranges from -1 to +1. The closer r is to +1 or -1, the more closely the two variables are related.

- If r is close to 0, it means there is no relationship between the variables.
- If r is positive, it means that as one variable gets larger the other gets larger.
- If r is negative, it means that as one gets larger, the other gets smaller (often called an inverse relationship).

OUTPUT

E9				
	A		B	
1	Sales (x)		Expenses (y)	
2	50		11	
3	50		13	
4	55		14	
5	60		16	
6	65		16	
7	65		15	
8	65		15	
9	60		14	
10	60		13	
11	50		13	
12	Correlation Coefficient		0.786566506	

PRACTICAL - 5

OBJECTIVE: - The objective of estimating the hours of training to achieve 80% reduction in errors in Excel is to predict the efficiency of the training program and optimize it for better performance.

PROBLEM STATEMENT

For the following data set, estimate the hours of training to achieve 80% reduction in errors. Print the output.

x (Hours of Training)	15	16	17	18	19	20
y (Reduction in Errors, %)	48	51	50	65	72	76

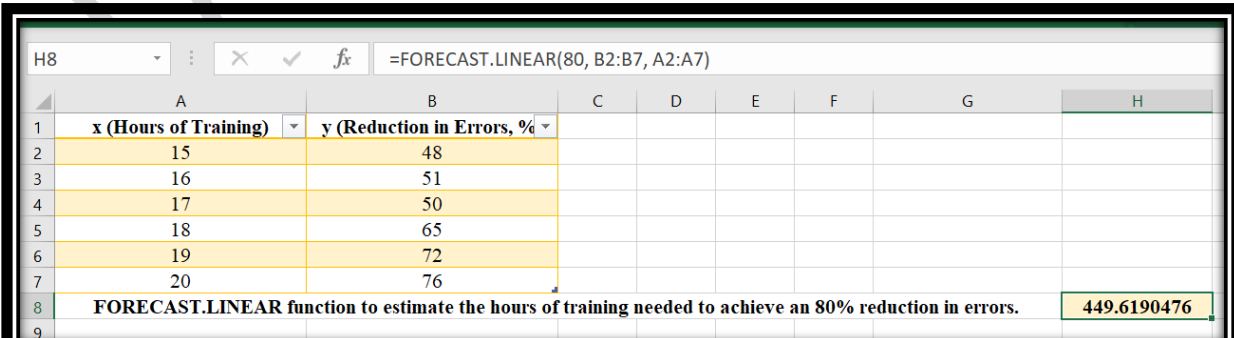
PROCEDURE

To estimate the hours of training to achieve 80% reduction in errors, you can use Excel's built-in FORECAST.LINEAR function, which predicts a future value along a linear trendline based on existing values. Here is how:

1. **Enter the Data:** Enter the hours of training data in one column (let us say column A) and the reduction in errors data in another column (let us say column B).
2. **Forecast the Value:** Use the FORECAST.LINEAR function to estimate the hours of training for 80% reduction in errors. The formula would be =FORECAST.LINEAR(80, B1:B6, A1:A6).

This formula will give you an estimate of the hours of training needed to achieve an 80% reduction in errors based on the linear trend of the given data.

OUTPUT



H8									
	A	B	C	D	E	F	G	H	
1	x (Hours of Training)	y (Reduction in Errors, %)							
2	15	48							
3	16	51							
4	17	50							
5	18	65							
6	19	72							
7	20	76							
8	FORECAST.LINEAR function to estimate the hours of training needed to achieve an 80% reduction in errors.							449.6190476	
9									

PRACTICAL - 6

OBJECTIVE: - The objective of performing these calculations in Excel is to analyse the relationship between the number of schools and the number of candidates in different cities, which can provide insights for educational planning and resource allocation.

PROBLEM STATEMENT

From the following table, calculate the following		
City	Number of Schools	Number of candidates
New Delhi	300	30000
Mumbai	450	45000
Bengaluru	500	48000
Chennai	480	67000
Trivandrum	459	77000

- The average number of students in the entire distribution.
- The standard deviation of the distribution.
- The correlation coefficient between the number of schools and the number of candidates.

The regression equation between number of students and number of candidates.

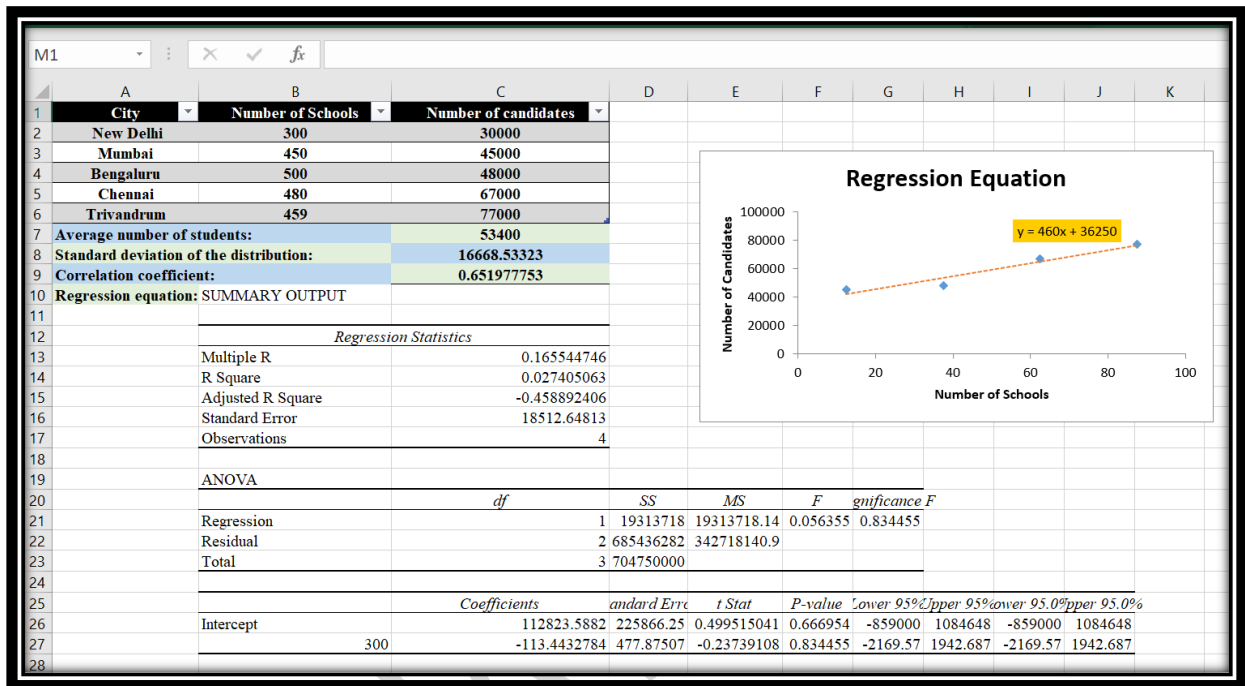
PROCEDURE

1. **Enter the Data:** Enter the city data in column A, the number of schools in column B, and the number of candidates in column C.
2. **Calculate the Average Number of Students:** Use the AVERAGE function. The formula would be =AVERAGE (C2:C6) (assuming your data is in rows 2 to 6).
3. **Calculate the Standard Deviation:** Use the STDEV.P function. The formula would be =STDEV.P(C2:C6).
4. **Calculate the Correlation Coefficient:** Use the CORREL function. The formula would be =CORREL (B2:B6, C2:C6).
5. **Calculate the Regression Equation:** Use the LINEST function. This function returns the slope and the intercept of the linear regression line through the data points. You can use INDEX and LINEST to get the slope and the intercept separately:
 - **Slope (m):** =INDEX (LINEST (C2:C6, B2:B6), 1, 2)

- **Intercept (b):** =INDEX (LINEST (C2:C6, B2:B6), 1, 1)

The regression equation will be of the form $y = mx + b$, where y is the number of candidates, x is the number of schools, m is the slope, and b is the y-intercept.

OUTPUT



PRACTICAL - 7

OBJECTIVE: - The objective of using Pivot Tables in Excel for these calculations is to summarize and analyse large datasets, allowing for a quick and easy understanding of the distribution and relationship between different categories such as nationality, location, department, and clients.

PROBLEM STATEMENT

Using Pivot table, determine -

- The number of Nationality per Location
- The number of Department / location / clients
- The number of client / location / nationalities

PROCEDURE

1. **Create a PivotTable:** Select your data, then go to Insert > PivotTable. A new worksheet will be created with a blank PivotTable.
2. **Number of Nationality per Location:**
 - Drag the Location field to the Rows area.
 - Drag the Nationality field to the Values area. It will default to Count of Nationality, which gives you the number of nationalities per location.
3. **Number of Department / Location / Clients:**
 - Drag the Department field to the Rows area.
 - Drag the Location field to the Rows area, below Department.
 - Drag the Clients field to the Values area. It will default to Count of Clients, which gives you the number of clients per department per location.
4. **Number of Client / Location / Nationalities:**
 - Drag the Client field to the Rows area.
 - Drag the Location field to the Rows area, below Client.
 - Drag the Nationality field to the Values area. It will default to Count of Nationality, which gives you the number of nationalities per client per location.

OUTPUT

	A	B	C	D	E
1	Base City	Department	Client	Location	Nationality
2	New Delhi	Marketing	Adidas	New York	American
3	Mumbai	Advertising	Hilfiger	London	English
4	Bengaluru	Human Resource	Woodland	Paris	Spanish
5	Chennai	Human Resource	Nike	Sydney	Dutch
6	Trivandrum	Advertising	Allen Solley	Frankfurt	Japanese
7	New Delhi	Quality Control	Adidas	New York	American
8	Mumbai	Advertising	Hilfiger	Seoul	Korean
9	Bengaluru	Human Resource	Woodland	Paris	Spanish
10	Chennai	Human Resource	Nike	Sydney	Dutch
11	Trivandrum	Advertising	Armani	Frankfurt	Russian
12	New Delhi	Marketing	Adidas	New York	American
13	Mumbai	Production	Hilfiger	Copenhagen	English
14	Bengaluru	Human Resource	Woodland	Paris	Spanish
15	Chennai	Human Resource	Nike	Sydney	Russian
16	Trivandrum	Advertising	Gucci	Frankfurt	Japanese
17	New Delhi	Quality Control	Adidas	New York	American
18	Mumbai	Advertising	Hilfiger	London	Korean
19	Bengaluru	Human Resource	Woodland	Paris	Spanish
20	Chennai	Human Resource	Nike	Sydney	Dutch
21	Trivandrum	Advertising	Allen Solley	Frankfurt	Japanese

	A	B
1		
2		
3	Row Labels	Count of Nationality
4	Copenhagen	1
5	Frankfurt	4
6	London	2
7	New York	4
8	Paris	4
9	Seoul	1
10	Sydney	4
11	Grand Total	20

H8									
	A	B	C	D	E	F	G	H	I
1									
2									
3	Count of Client	Column Labels							
4	Row Labels	Copenhagen	Frankfurt	London	New York	Paris	Seoul	Sydney	Grand Total
5	Advertising		4	2			1		7
6	Human Resource					4		4	8
7	Marketing				2				2
8	Production	1							1
9	Quality Control				2				2
10	Grand Total	1	4	2	4	4	1	4	20

K13									
	A	B	C	D	E	F	G	H	I
1									
2									
3	Count of Nationality	Column Labels							
4	Row Labels	Copenhagen	Frankfurt	London	New York	Paris	Seoul	Sydney	Grand Total
5	Adidas					4			4
6	Allen Solley			2					2
7	Armani			1					1
8	Gucci			1					1
9	Hilfiger	1		2			1		4
10	Nike							4	4
11	Woodland					4			4
12	Grand Total	1	4	2	4	4	1	4	20