Data Analysis Using Google Sheets and SQL

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[Link to analysis]

Introduction

This report analyzes the results of a school sports day. The dataset includes pupils' names, gender (M/N), school level (elementary, middle, high), the event they participated in (run, jump, ball throw), and the points they achieved. Using pivot tables, filters, and simple calculations, the report compares performance by gender and school level and highlights students who scored above their group's average. Together, these findings help provide a clearer understanding of how factors such as age, gender, and event type influenced the overall results.

Name	Gender	SchoolLevel	Event	Points
Mart	M	Elementary	Run	72
Anna	N	Middle	Jump	65
Tarmo	M	High	Ball Throw	81
Laura	N	Elementary	Run	54
Kristjan	M	Middle	Jump	77
Kairi	N	High	Ball Throw	89
Peeter	M	Elementary	Run	63
Mariliis	N	Middle	Jump	71
Siim	M	High	Ball Throw	92
Helena	N	Elementary	Run	60
Markus	M	Middle	Jump	83
Evelin	N	High	Ball Throw	75
Jaan	M	Elementary	Run	58
Merilin	N	Middle	Jump	80
Madis	M	High	Ball Throw	95
Anu	N	Elementary	Run	67
Toomas	M	Middle	Jump	70
Sandra	N	High	Ball Throw	84
Rasmus	M	Elementary	Run	62
Katriin	N	Middle	Jump	78

Interpretation of the Pivot Tables

This pivot table displays the average points achieved by boys (M) and girls (F) in the three events of the school sports day: Ball Throw, Jump, and Run. The results show that boys

scored slightly higher on average in all events, with the largest difference appearing in the Ball Throw. However, the overall averages were quite close, indicating that gender differences in performance were relatively small compared to the variation between the event types.

AVERAGE of Points	*Event*			
Gender	Ball Throw	Jump	Run	Üldkokkuvõte
M	89.33	76.67	63.75	75.3
N	82.67	73.50	60.33	72.3
Üldkokkuvõte	**86**	**74.86**	**62.29**	**73.8**

This pivot table shows the total sum of points by event and gender. The results reveal that boys scored slightly more in the Ball Throw event (268 vs 248), while girls outperformed boys in the Jump event (294 vs 230). In the Run event, boys again had higher total points (255 vs 181). Overall, the total points of boys (753) and girls (723) were very close, showing only a small difference between the genders.

SUM of Points	*Gender*		
Event	M	N	Üldkokkuvõte
Ball Throw	268	248	516
Jump	230	294	524
Run	255	181	436
Üldkokkuvõte	**753**	**723**	**1476**

Data Selection Examples

This sheet demonstrates how different parts of the dataset can be selected using simple filtering and selection techniques. Several subsets of the data are shown, such as all participants with their events and points, boys and girls listed separately, girls who scored over 80 points, and all elementary school students who participated in the running event. These selections illustrate how specific information can be extracted from a larger dataset based on chosen criteria.

Girls who scored over 80 points				
Name	Gender	SchoolLevel	Event	Points
Kairi	N	High	Ball Throw	89
Sandra	N	High	Ball Throw	84

Average score
73.8

All Elementary school students and their running contest points				
Name	Gender	SchoolLevel	Event	Points
Mart	M	Elementary	Run	72
Laura	N	Elementary	Run	54
Peeter	M	Elementary	Run	63
Helena	N	Elementary	Run	60
Jaan	M	Elementary	Run	58
Anu	N	Elementary	Run	67
Rasmus	M	Elementary	Run	62

Participants´ names, events and points		
Name	Event	Points
Mart	Run	72
Anna	Jump	65
Tarmo	Ball Throw	81
Laura	Run	54
Kristjan	Jump	77
Kairi	Ball Throw	89
Peeter	Run	63
Mariliis	Jump	71
Siim	Ball Throw	92
Helena	Run	60
Markus	Jump	83
Evelin	Ball Throw	75
Jaan	Run	58
Merilin	Jump	80
Madis	Ball Throw	95
Anu	Run	67
Toomas	Jump	70
Sandra	Ball Throw	84
Rasmus	Run	62
Katriin	Jump	78

Boys and their points			Girls and their points	
Gender	Points		Gender	Points
M	72		N	65
M	81		N	54
M	77		N	89
M	63		N	71
M	92		N	60
M	83		N	75
M	58		N	80
M	95		N	67
M	70		N	84
M	62		N	78

Summary of Statistical Calculations

This sheet analyzes the dataset by calculating key statistics such as the maximum, minimum, and average points, along with the total number of participants. It also examines how individual scores differ from the minimum and average values, and expresses these differences both numerically and as percentages. In addition, the sheet compares average performance by gender and school level.

max Points	min Points	avg Points	Nr of participants	difference(max Pointsmin Points)
95	54	73.8	20	41

Points	difference(Points54())	difference(Points73.8())	quotient(Points73.8())
72	18	-1.8	97.56%
65	11	-8.8	88.08%
81	27	7.2	109.76%
54	0	-19.8	73.17%
77	23	3.2	104.34%
89	35	15.2	120.60%
63	9	-10.8	85.37%
71	17	-2.8	96.21%
92	38	18.2	124.66%
60	6	-13.8	81.30%
83	29	9.2	112.47%
75	21	1.2	101.63%
58	4	-15.8	78.59%
80	26	6.2	108.40%
95	41	21.2	128.73%
67	13	-6.8	90.79%
70	16	-3.8	94.85%
84	30	10.2	113.82%
62	8	-11.8	84.01%
78	24	4.2	105.69%

The average scores of boys and girls showed only minimal variation, suggesting that gender did not significantly influence overall performance.

Gender	avg Points	difference(max Pointsmin Points)
M	75.3	37
N	72.3	35

However, the results differed more clearly by school level: the older the students, the higher their points. This indicates that age and physical development had a stronger impact on performance than gender.

SchoolLevel	avg Points
Elementary	62.29
High	86.00
Middle	74.86

The largest difference was observed at the high school level, where boys averaged 89.33 points and girls averaged 82.67 points.

This suggests that any gender-related differences in performance are amplified at the high school level, where physical maturity plays a larger role in determining outcomes.

Gender	SchoolLevel	avg Points
M	Elementary	63.75
N	Elementary	60.33
M	High	89.33
N	High	82.67
M	Middle	76.67
N	Middle	73.50

Comparison of Students' Scores to Their School-Level Averages

This sheet compares each student's score with the average score of their school level.

Average points according to school levels		
SchoolLevel	avg Points	
Elementary	62.29	
High	86.00	
Middle	74.86	

Using a lookup formula, each student is matched with the average points of their level (Elementary, Middle, or High).

The difference column shows whether a student performed above or below that level's average, and the final column identifies students who exceeded their group's average.

Students Who Performed Above Their School-Level Average

The students who scored above the average of their school level were:
Mart, Kristjan, Kairi, Peeter, Siim, Markus, Merilin, Madis, Anu, and Katriin.

Most of these students came from Middle and High school, which suggests that older students were more likely to perform above their group's average. This supports the overall pattern observed in the dataset: age and school level had a stronger influence on performance than gender.

Name	SchoolLevel	Points	VLOOKUP	Difference	Points over average
Mart	Elementary	72	62.29	9.71	+
Anna	Middle	65	74.86	-9.86	FALSE
Tarmo	High	81	86.00	-5.00	FALSE
Laura	Elementary	54	62.29	-8.29	FALSE
Kristjan	Middle	77	74.86	2.14	+
Kairi	High	89	86.00	3.00	+
Peeter	Elementary	63	62.29	0.71	+
Mariliis	Middle	71	74.86	-3.86	FALSE
Siim	High	92	86.00	6.00	+
Helena	Elementary	60	62.29	-2.29	FALSE
Markus	Middle	83	74.86	8.14	+
Evelin	High	75	86.00	-11.00	FALSE
Jaan	Elementary	58	62.29	-4.29	FALSE
Merilin	Middle	80	74.86	5.14	+
Madis	High	95	86.00	9.00	+
Anu	Elementary	67	62.29	4.71	+
Toomas	Middle	70	74.86	-4.86	FALSE
Sandra	High	84	86.00	-2.00	FALSE
Rasmus	Elementary	62	62.29	-0.29	FALSE
Katriin	Middle	78	74.86	3.14	+