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## Analysis of the impact that hours studied in a day has on percentage scored in 12th

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### ABSTRACT

*We investigate whether there is a direct co-relation between number of hours studied and marks scored in Class 12. This was done by using 2 important mathematical excel functions – regression and co-relation. Data of 520 students was collected for analysis.*

**Keywords**— Education, Study hours, 12th Standard

### 1. OBJECTIVE

- To determine the co-relation between number of hours studied in class 12 and percentage scored in Class 12.
- To find the regression analysis.
- To interpret the results achieved.
- To get better understanding of the data with the help of simple graphs.
- To depict the future value.

### 2. INTRODUCTION

It is said that hardwork beats talent when talent does not work hard. The key to success in today's world is nothing but perseverance. The data collected is primary in nature. 520 students from different colleges were asked to fill in a simple form that had a few basic questions namely – name, number of hours studied and percentage score in 12<sup>th</sup> grade.

### 3. DATA

Table 1: Data

Sr. No	% Scored in class 12	Number of hours of study per day
1	77.00	3
2	90.00	6
3	71.00	2
4	62.00	0.5
5	67.00	1
6	96.00	12
7	77.00	3
8	76.00	2
9	89.00	4
10	86.00	4
11	90.00	4
12	94.00	6
13	87.00	5
14	92.00	5
15	98.00	10
16	75.00	3
17	89.00	6
18	75.00	7

19	70.00	2
20	98.00	10
21	79.00	3
22	80.00	2
23	66.00	1
24	86.00	4
25	78.00	4
26	68.00	1
27	98.00	9
28	77.00	3
29	68.00	3
30	83.00	6
31	87.00	5
32	68.00	2
33	95.00	8
34	77.00	4
35	73.00	4
36	97.00	8
37	67.00	2
38	85.00	6
39	78.00	2
40	82.00	3
41	60.00	1
42	92.00	6
43	63.00	0.5
44	62.00	1
45	74.00	2
46	97.00	10
47	68.00	0.5
48	79.00	3
49	80.00	3
50	71.00	2
51	69.00	2
52	89.00	4
53	63.00	2
54	70.00	1.5
55	83.00	4
56	61.00	1
57	75.00	2
58	89.00	6
59	73.00	3
60	74.00	3
61	82.00	3
62	62.00	3
63	59.00	1
64	70.00	2
65	83.00	4
66	60.00	2
67	80.00	5
68	90.00	5
69	73.00	2.5
70	85.00	3
71	74.00	1.5
72	83.00	3.5
73	83.00	4
74	60.00	2
75	84.00	5.5
76	92.00	6
77	75.00	2
78	79.00	1.5
79	71.00	1
80	64.00	1.5
81	61.00	2.5
82	94.00	6

83	94.00	7
84	98.00	8
85	94.00	4.5
86	97.00	3.5
87	85.00	4
88	79.00	6
89	70.00	5
90	89.00	3
91	75.00	2
92	60.00	1
93	95.00	8
94	95.00	6.5
95	70.00	1
96	93.00	6
97	75.00	1
98	81.00	3.5
99	96.00	6
100	79.00	4
101	75.00	2.5
102	83.00	4
103	88.00	4
104	61.00	2
105	64.00	1
106	83.00	5
107	61.00	3
108	85.00	5
109	70.00	3
110	83.00	3
111	66.00	1.5
112	94.00	8
113	96.00	8
114	98.00	10
115	75.00	8
116	86.00	6
117	76.00	3
118	75.00	3
119	94.00	6
120	78.00	2
121	87.00	7
122	82.00	3
123	72.00	2
124	63.00	2
125	93.00	6
126	84.00	5.5
127	86.00	4
128	66.00	2
129	62.00	2.5
130	87.00	7
131	68.00	2.5
132	82.00	5
133	80.00	4
134	77.00	3
135	79.00	2.5
136	87.00	5
137	90.00	5
138	66.00	1.5
139	66.00	3
140	71.00	3
141	63.00	2
142	63.00	0.5
143	77.00	2
144	90.00	6
145	91.00	7
146	78.00	4

147	85.00	6
148	66.00	3
149	62.00	4
150	96.00	7
151	66.00	7
152	60.00	1
153	81.00	2.5
154	63.00	3
155	70.00	3
156	97.00	8.5
157	95.00	7
158	67.00	3
159	81.00	2.5
160	68.00	2
161	60.00	1
162	89.00	5
163	89.00	6
164	62.00	2
165	98.00	9
166	76.00	5
167	67.00	4
168	68.00	2
169	70.00	2.5
170	90.00	7
171	76.00	1.5
172	81.00	3
173	69.00	2
174	95.00	3
175	67.00	1
176	78.00	3
177	60.00	2
178	74.00	3
179	86.00	6
180	89.00	7
181	76.00	3.5
182	90.00	7
183	94.00	8
184	85.00	3.5
185	64.00	2
186	61.00	1
187	72.00	0.5
188	75.00	5
189	58.00	1
190	97.00	8.5
191	82.00	3
192	76.00	3
193	82.00	3
194	89.00	4
195	70.00	5
196	59.00	3
197	92.00	7
198	68.00	2
199	71.00	1.5
200	74.00	3
201	98.00	9
202	93.00	6
203	90.00	5
204	63.00	2.5
205	74.00	2
206	81.00	4
207	80.00	5
208	93.00	6
209	84.00	6
210	68.00	3

211	92.00	6.5
212	94.00	6
213	60.00	1.5
214	97.00	8
215	89.00	6
216	63.00	2
217	59.00	3
218	83.00	5
219	90.00	5
220	92.00	6
221	69.00	2
222	92.00	6
223	73.00	3.5
224	81.00	3
225	69.00	2
226	72.00	2
227	62.00	1.5
228	87.00	7
229	91.00	5
230	70.00	3
231	58.00	1
232	74.00	2
233	94.00	6.5
234	62.00	2
235	63.00	3
236	72.00	3
237	72.00	5
238	83.00	5
239	61.00	2
240	59.00	1
241	94.00	5
242	73.00	4
243	91.00	6
244	86.00	7
245	67.00	2
246	78.00	3
247	87.00	5
248	80.00	5
249	95.00	7
250	81.00	4.5
251	63.00	2
252	62.00	3
253	76.00	2
254	90.00	6
255	59.00	0.5
256	98.00	9
257	91.00	6
258	70.00	3
259	73.00	4
260	67.00	2
261	62.00	2.5
262	98.00	8
263	74.00	3
264	80.00	6.5
265	60.00	2
266	92.00	8
267	95.00	7
268	93.00	7.5
269	94.00	7
270	82.00	5
271	66.00	4
272	86.00	6.5
273	71.00	6
274	86.00	8

275	89.00	7
276	88.00	9
277	68.00	3
278	81.00	5
279	71.00	3
280	74.00	4
281	91.00	7
282	58.00	2
283	70.00	2.5
284	87.00	7
285	83.00	5
286	75.00	4
287	93.00	6
288	98.00	8
289	80.00	4
290	90.00	7
291	83.00	3
292	87.00	6
293	90.00	8
294	76.00	6.5
295	73.00	4.5
296	82.00	5
297	70.00	3
298	82.00	5
299	89.00	7
300	93.00	5.5
301	69.00	3
302	72.00	4
303	66.00	3
304	91.00	8
305	58.00	2.5
306	62.00	3
307	79.00	5
308	69.00	5.5
309	94.00	7
310	76.00	6
311	79.00	4.5
312	82.00	5
313	79.00	4.5
314	80.00	5
315	87.00	6
316	82.00	7
317	93.00	8
318	72.00	3
319	75.00	3.5
320	95.00	7
321	78.00	4
322	64.00	3
323	62.00	2
324	97.00	8.5
325	80.00	6
326	81.00	5
327	63.00	2.5
328	70.00	2
329	69.00	2
330	80.00	5
331	71.00	4
332	76.00	5
333	77.00	5
334	66.00	3.5
335	78.00	4
336	71.00	5
337	96.00	8
338	75.00	5

339	96.00	9.5
340	96.00	9
341	60.00	3
342	81.00	5
343	60.00	3.5
344	97.00	10
345	85.00	6
346	72.00	4
347	73.00	5
348	93.00	8
349	85.00	6
350	97.00	7
351	73.00	3.5
352	67.00	4.5
353	69.00	4
354	65.00	5
355	85.00	7.5
356	97.00	8
357	68.00	5
358	98.00	8.5
359	74.00	3
360	60.00	3.5
361	61.00	3
362	78.00	6.5
363	77.00	6
364	86.00	4
365	58.00	1.5
366	98.00	6.5
367	67.00	4.5
368	90.00	8
369	76.00	8
370	84.00	7
371	92.00	5.5
372	82.00	7
373	95.00	7
374	85.00	6
375	60.00	7.5
376	67.00	5
377	83.00	8
378	71.00	6
379	87.00	4
380	71.00	2
381	97.00	8.5
382	89.00	5
383	63.00	3
384	86.00	8
385	89.00	4
386	94.00	5
387	88.00	2
388	85.00	5
389	70.00	6
390	87.00	4.5
391	89.00	5.5
392	62.00	6
393	98.00	7
394	88.00	8
395	92.00	9
396	71.00	3
397	96.00	5
398	76.00	4
399	85.00	8
400	91.00	4.5
401	65.00	3
402	93.00	5

403	78.00	5
404	90.00	9
405	63.00	6
406	93.00	6
407	87.00	7
408	82.00	5
409	66.00	3
410	72.00	3
411	77.00	2
412	85.00	4
413	83.00	3
414	94.00	5
415	82.00	4
416	62.00	5
417	82.00	3
418	72.00	4
419	87.00	3
420	85.00	4
421	73.00	3
422	85.00	4
423	83.00	4
424	75.00	4.5
425	64.00	2.5
426	75.00	3
427	68.00	0.5
428	96.00	4
429	73.00	3
430	72.00	2
431	98.00	7
432	89.00	5
433	59.00	0.5
434	89.00	5
435	82.00	4
436	94.00	7
437	95.00	6
438	77.00	4.5
439	93.00	5
440	93.00	6
441	65.00	2
442	61.00	1
443	66.00	1.5
444	77.00	2
445	87.00	4
446	67.00	2.5
447	81.00	3
448	94.00	7.5
449	81.00	3.5
450	74.00	6
451	88.00	5
452	95.00	6.5
453	63.00	3
454	79.00	3
455	58.00	1.5
456	89.00	8
457	68.00	4
458	77.00	3.5
459	58.00	3
460	86.00	7
461	67.00	2
462	86.00	4.5
463	95.00	8
464	61.00	3
465	88.00	4.5
466	85.00	4

467	82.00	3
468	95.00	7
469	79.00	7
470	84.00	7.5
471	93.00	8
472	61.00	3.5
473	75.00	5
474	60.00	3
475	65.00	2
476	87.00	8
477	68.00	5
478	97.00	9
479	98.00	8
480	88.00	5
481	74.00	5
482	62.00	4.5
483	77.00	6
484	67.00	3
485	87.00	5
486	87.00	7
487	68.00	3.5
488	89.00	8
489	82.00	3
490	93.00	9
491	79.00	5
492	81.00	7.5
493	96.00	8
494	72.00	3
495	63.00	2
496	82.00	3.5
497	58.00	2.5
498	59.00	4
499	69.00	5
500	89.00	8
501	64.00	5
502	93.00	7.5
503	62.00	3
504	72.00	8
505	84.00	8
506	76.00	5
507	84.00	6
508	63.00	4
509	72.00	4
510	70.00	3.5
511	96.00	8
512	83.00	4.5
513	76.00	4
514	81.00	5.5
515	71.00	4
516	70.00	6
517	89.00	9
518	70.00	3.5
519	60.00	3
520	62.00	4

Correlation		
	Column 1	Column 2
Column 1	1	
Column 2	0.74556673	1

#### 4. ANALYSIS

Interpretation - A weak positive correlation is when it lies between 0.1 and 0.3 , a moderate correlation is one that lies between 0.3 to 0.5 and a strong correlation is one that lies between 0.5 and 1. since the correlation of this data is 0.74556673 , it is a strong correlation. it means that the number of hours a candidate studies directly influences the % he gets in class 12.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.74556673
R Square	0.55586975
Adjusted R Square	0.55501236
Standard Error	7.71425595
Observations	520

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	38581.6272	38581.6272	648.324527	2.3801E-93
Residual	518	30826.0478	59.5097449		
Total	519	69407.675			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	61.3292776	0.76236513	80.4460691	7.244E-295	59.83157	62.8269852	59.83157	61.3292776
X Variable 1	3.87233546	0.15208163	25.4622176	2.3801E-93	3.57356287	4.17110806	3.57356287	3.87233546

**Interpretation:**

This means that when a person studies 1 hour more, his % will increase by 3.87%.

$$Y = a + bx$$

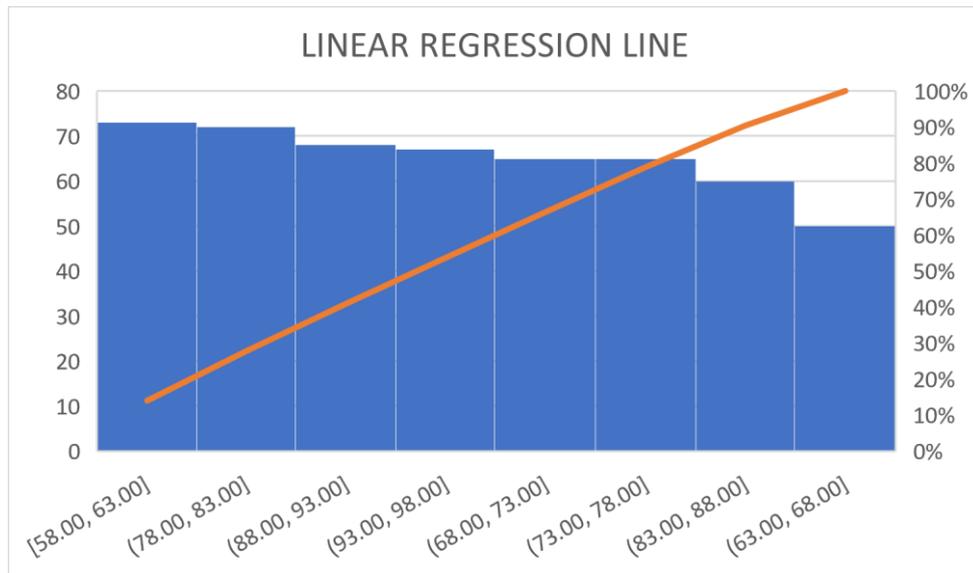
$$Y = 61.33 + 3.87X$$

Assuming that the student studies for 4 hours the % scored will be:

$$Y = a + bx$$

$$Y = 61.33 + 4(3.87)$$

$$Y = 76.81$$



**Fig. 1: Linear Regression Line**

**5. CONCLUSION**

From the above data we can analyse that the greater the number of hours a student puts in to study, higher will the marks be. marks scored is a dependent variable that depends on number of hours of a study that is an independent variable. through the regression analysis, we can determine the future value by putting in the number of hours studied. with the help of the linear regression function, we were able to understand that if a student puts in 1 hour more of studies, his % will increase by 3.87%. from the data, it is evident that only those students are able to crack their board examinations by scoring 90% or more who are able to put in a lot many hours of studies. Hence, one can conclude that the only those students who put in higher hours of studies can score good marks. hence the only secret to success is hard work.