Course	**ENGR 13300**	**Semester**	Fall 2024
Assignment Name	EXCND 1	**Section**	22
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Student 1 Purdue login	raghav 21		

<--- replace the shaded text with actual values
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Problem Description

/add a description and delete this comment/

Input Section:

Table 1: Spot Weld Shear Strength Tests

Weld Strength (MPa)
5408
5420
5407
5463
5431
5429
5469
5408
5475
5401
5416
5481
5442
5446
5377
5453
5376
5487
5454
5422
5388
5416
5375
5354
5459
5382
5409
5421
5422
5357
5459
5406
5416
5388
5445
5444
5435
5457
5429
5466
5399
5445
5381
5401
5458
5383
5391
5436
5425
5411
5485
5401
5477
5454
5388
5399
5431
5407
5447
5453
5388
5431
5416
5385
5329
5428
5372
5440
5431
5440
5473
5418
5481
5413
5390
5422
5423
5465
5387
5406
5399
5448
5441
5427
5440
5342
5435
5366
5412
5421
5482
5452
5387
5430
5384
5396
5406
5420
5462
5418

Calculation Section:

Table 2: Calculation of descriptive statistics for data in Table 1

statistic	value	unit
min	=MIN(A16:A115)	MPa
max	=MAX(A15:A115)	MPa
range	=D17-D16	MPa
mean	=AVERAGE(A16:A115)	MPa
median	=MEDIAN(A16:A115)	MPa
mode	=MODE(A16:A115)	MPa
standard deviation	=STDEV.S(A16:A115)	MPa
variance	=D22^2	(Mpa)^2
count	=COUNT(A16:A115)	count

Table 3: Calculation of histogram quantities

description	value	unit
number of bins using general rule	=INT(SQRT(D24))	
bin width using general rule	=D18/D28	
Updated values to make the histogram more presentable.		
number of bins	10	
bin width	16	
bin upper limits	=D16+D33	
	=D34+$D$33	
	=D35+$D$33	
	=D36+$D$33	
	=D37+$D$33	
	=D38+$D$33	
	=D39+$D$33	
	=D40+$D$33	
	=D41+$D$33	
	=D42+$D$33	

Table 4: Calculations for mimimum required shear strength

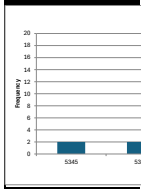
description	value	unit
1 ksi = 6.8948		[MPa]
https://www.engineeringtoolbox.com/unit-converter-d_185.html#Pressure		
required minimum shear strength	780	[ksi]
	=D53*D59	[Mpa]
number of samples below the required minimum shear strength	=COUNTIF(A16:A115, ">"&D54)	

Output Section:

Table 5: Outputs of EXCEL Histogram Function (Analysis ToolPak)

Bin	*Frequency*
5345	2
5361	2
5377	5
5393	13
5409	15
5425	18
5441	16
5457	13
5473	9
5489	7
More	0

Figure 1: Histogram of weld shear strength t



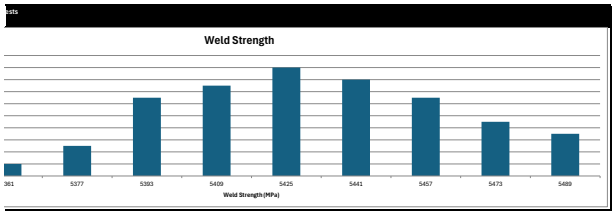
Question 5

If the required minimum shear strength is 780 ksi (kilo pound per square inch), should the company buy the welding robot? Justify you

Yes because 91% of the welds were above 780 ksi.

Question 5

If the required minimum shear strength is 780 kip per square inch (ksi), should the company buy the welding robot? .



r answer using the data.

Justify your answer using the data.