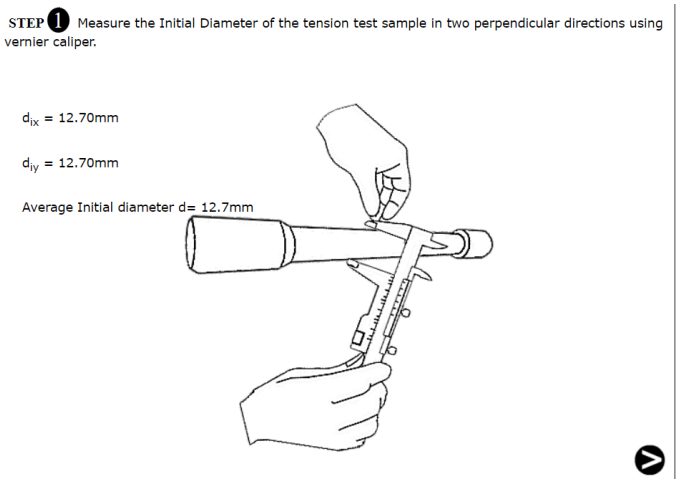
6. Procedures:

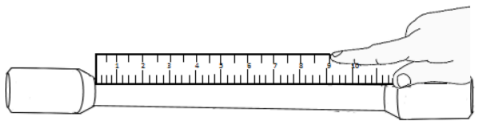
1. Determine by the caliper two-gauge length on the reduced section of the specimen. The first Gauge length is 2" (50 mm) and the second gauge length is 0.8" (20 mm). Mark the two gauge lengths on the tensile specimen.
2. Measure the diameter of the specimen within the gauge length (diameter must be equal a long all the reduced section of the specimen).
3. Set the testing machine and prepare it to be ready for performing the test, that implies; checking the electrical connections, switching on the machine, switching on the pressure pump and wait tell the pressure reach the needed value.
4. Mount the specimen by its ends into the holding grips of the testing apparatus shown in figure 3.
5. Switch on the loading button of the testing machine. The machine gradually increasing tensile load that is applied uniaxially along the long axis of a specimen until the specimen fractured.
6. Assemble the fractured specimen (fix the two half's together precisely) and measure the final diameter of the deformed specimen.
7. Remove the Load-Deflection curve from the printer of testing machine control unit.

Question: Name the machine used for the tensile testing, compression testing, etc?

Question: In tensile test what specimen characteristics are of importance?



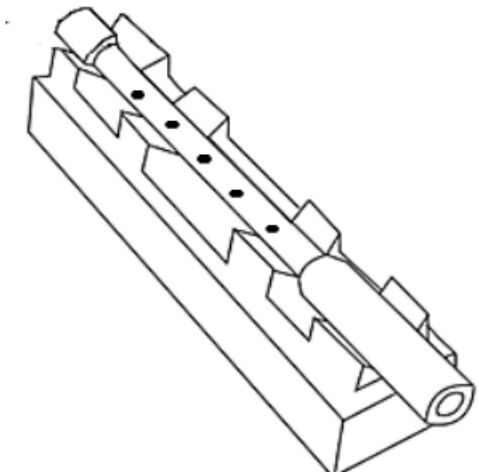
STEP ❷ Measure the Length of the specimen between the grips using a scale.



Length of the specimen between the grips =200mm

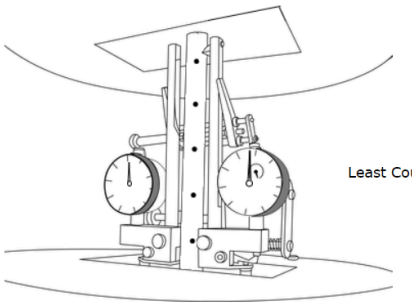
Question: what distance does we place the punch marks at?

STEP ❸ Punch marks are made at a distance of 2.5d.



Question: Name the part of the UTM used to measure the deflection:

STEP 5 Readings on the dials A and B of extensometer are adjusted to zero.

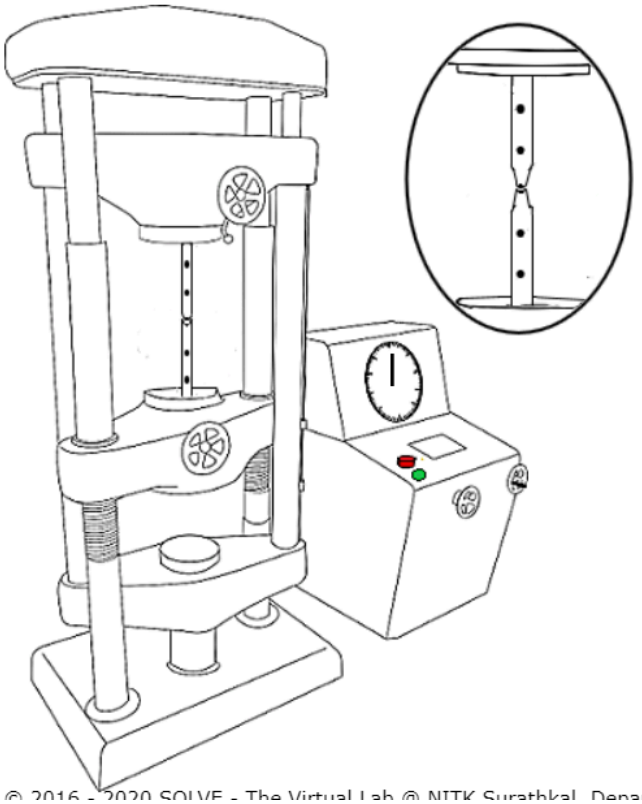


Least Count of Extensometer = 0.01mm

1. Determine by the caliper two-gauge length on the reduced section of the specimen. The first Gauge length is 2" (50 mm) and the second gauge length is 0.8" (20 mm). Mark the two gauge lengths on the tensile specimen.

Question: What marks the end of the tensile test?

STEP 6 Experiment is conducted. Load, extensometer readings are read at regular intervals of load upto the yield point. Ivory scale readings are noted till the specimen failure.

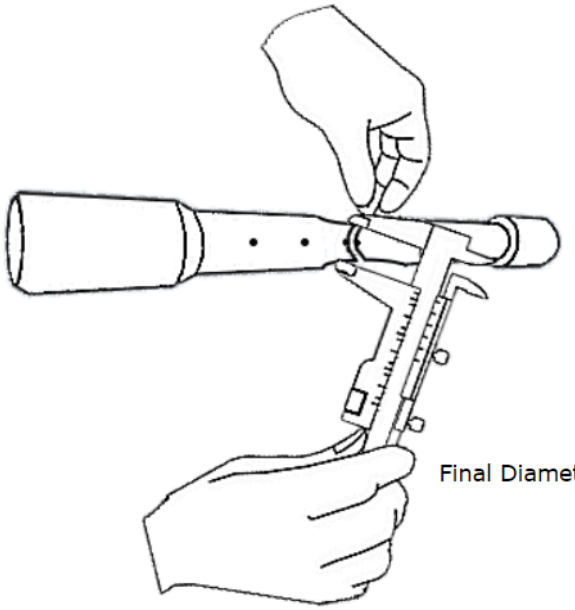


Load in kN	Extensometer Reading in Division			Ivory Scale Reading(mm)
	A	B	Average	
-	-	-	-	-
2.5	2	1	1.5	0.8
5	2	2	2	1
7.5	3	3	3	1
10	5	4	4.5	1
12.5	7	6	6.5	1
15	8	6	7	1
17.5	9	7	8	1
20	10	8	9	1.2

Download Data

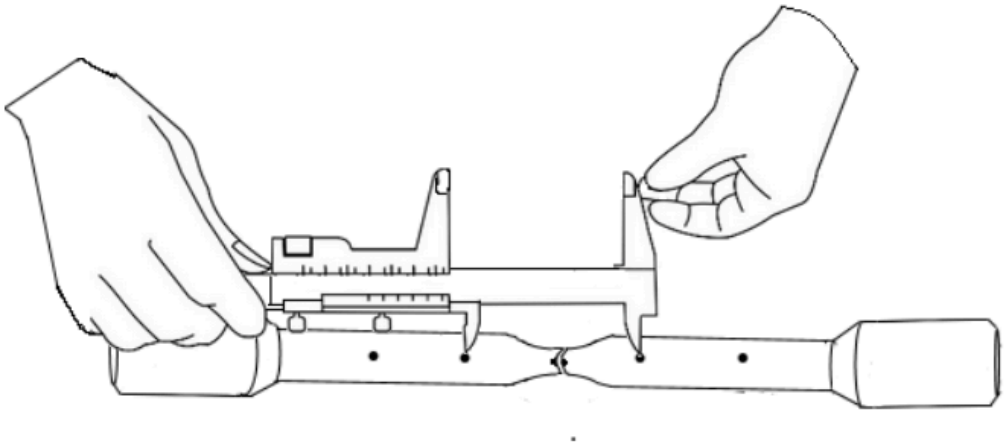
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STEP 9 Join two pieces of the test sample and measure the diameter at the neck of the specimen.



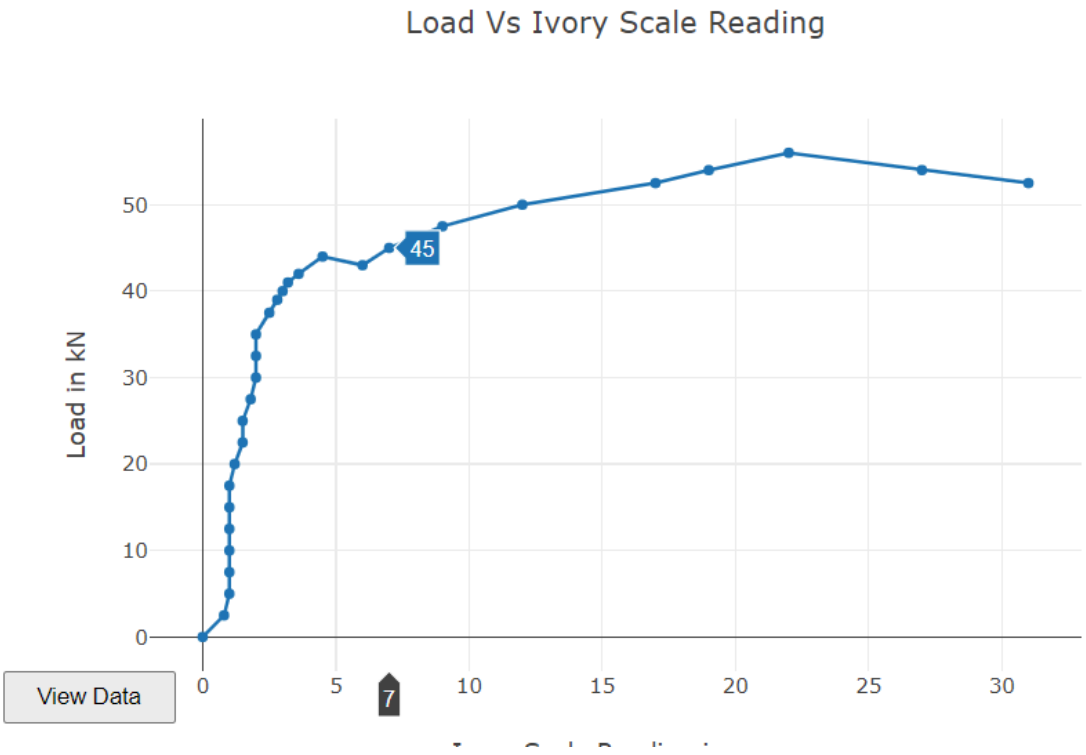
Final Diameter = 7.28mm

STEP 10 Measure the final length between three punch marks.



Final Length between the punch mark = 83mm

Question: Using the following graph obtain the following:


Load Vs Ivory Scale Reading
Load in kN
50
40
30
20
10
0
45
0
5
7
10
15
20
25
30
View Data

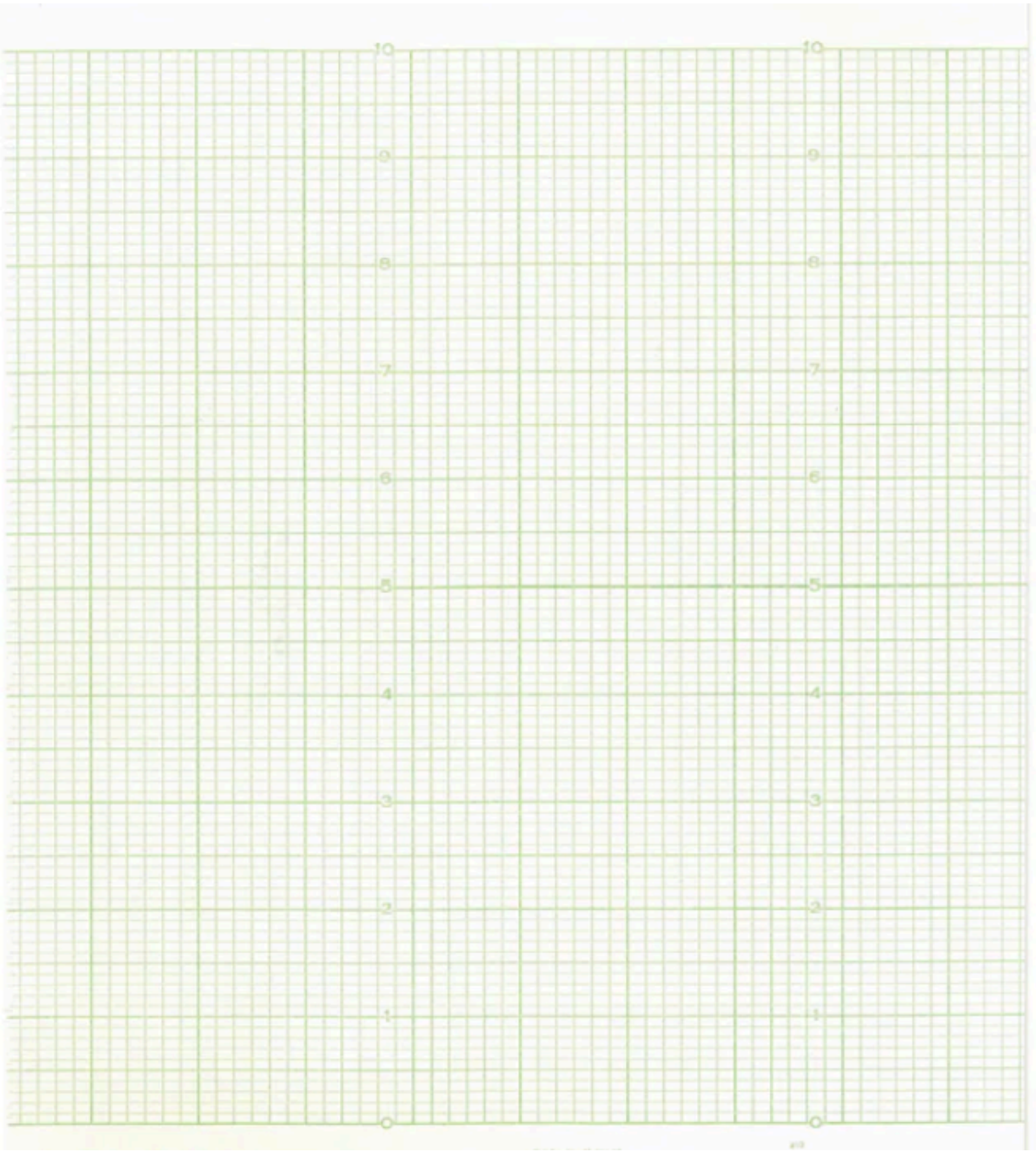
Average Initial diameter d= 12.7mm

Length of the specimen between the grips =200mm

Load in kN	Extensometer Reading in Division			Ivory Scale Reading(mm)	
	A	B	Average		
-	-	-	-	-	
2.5	2	1	1.5	0.8	
5	2	2	2	1	
7.5	3	3	3	1	
10	5	4	4.5	1	
12.5	7	6	6.5	1	A
15	8	6	7	1	
17.5	9	7	8	1	B
20	10	8	9	1.2	C
22.5	11	10	10.5	1.5	D
25	12	11	11.5	1.5	

Question: For points A,B C, D Estimate the Engineering stress and engineering stress and strain

Question: on the following chart paper draw up until point D then calculate the following



a. Modulus of elasticity
b. Proportional limit
c. Elastic limit
d. Yield strength

e. Elastic specific energy per unit volume

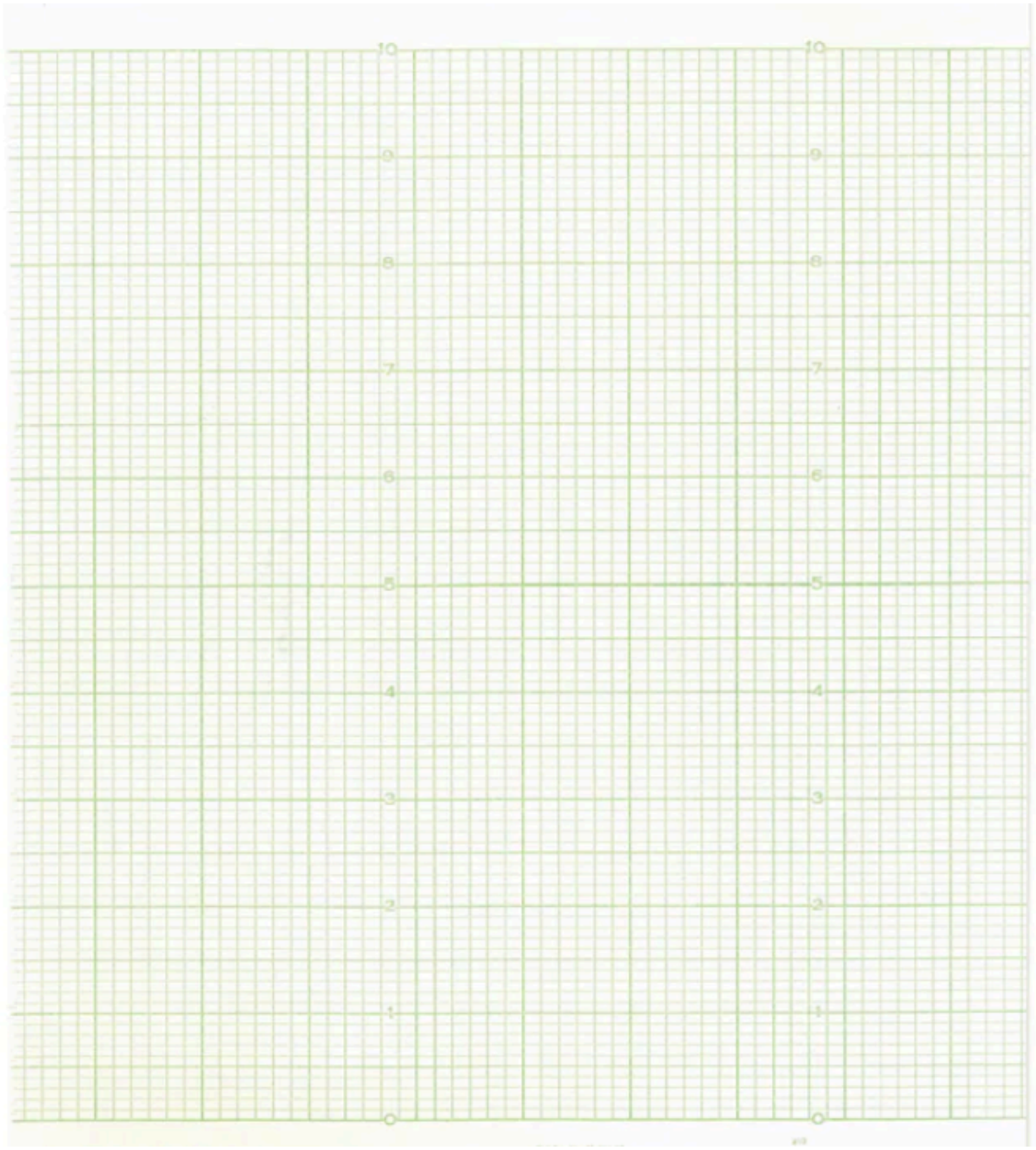
Question for the following points:

Average Initial diameter d= 12.7mm
Length of the specimen between the grips =200mm

Load in kN	Extensometer Reading in Division			Ivory Scale Reading(mm)
	A	B	Average	
-	-	-	-	-
2.5	2	1	1.5	0.8
5	2	2	2	1
25	12	11	11.5	1.5
27.5	13	12	12.5	1.8
37.5	18	17	17.5	2.5
39	19	18	18.5	2.8
40	19	19	19	3

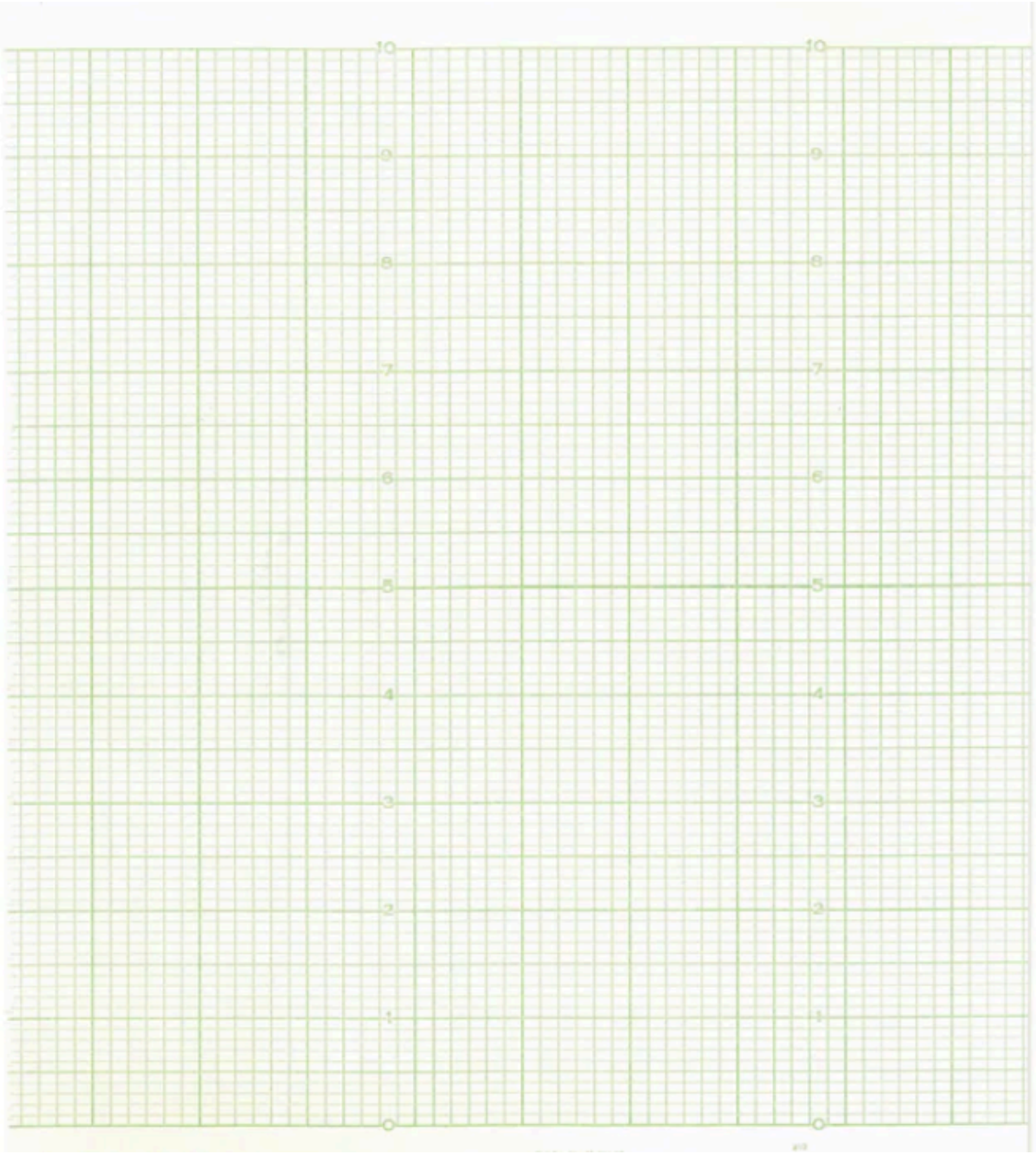
Draw the log true stress log true strain curve and evaluate the

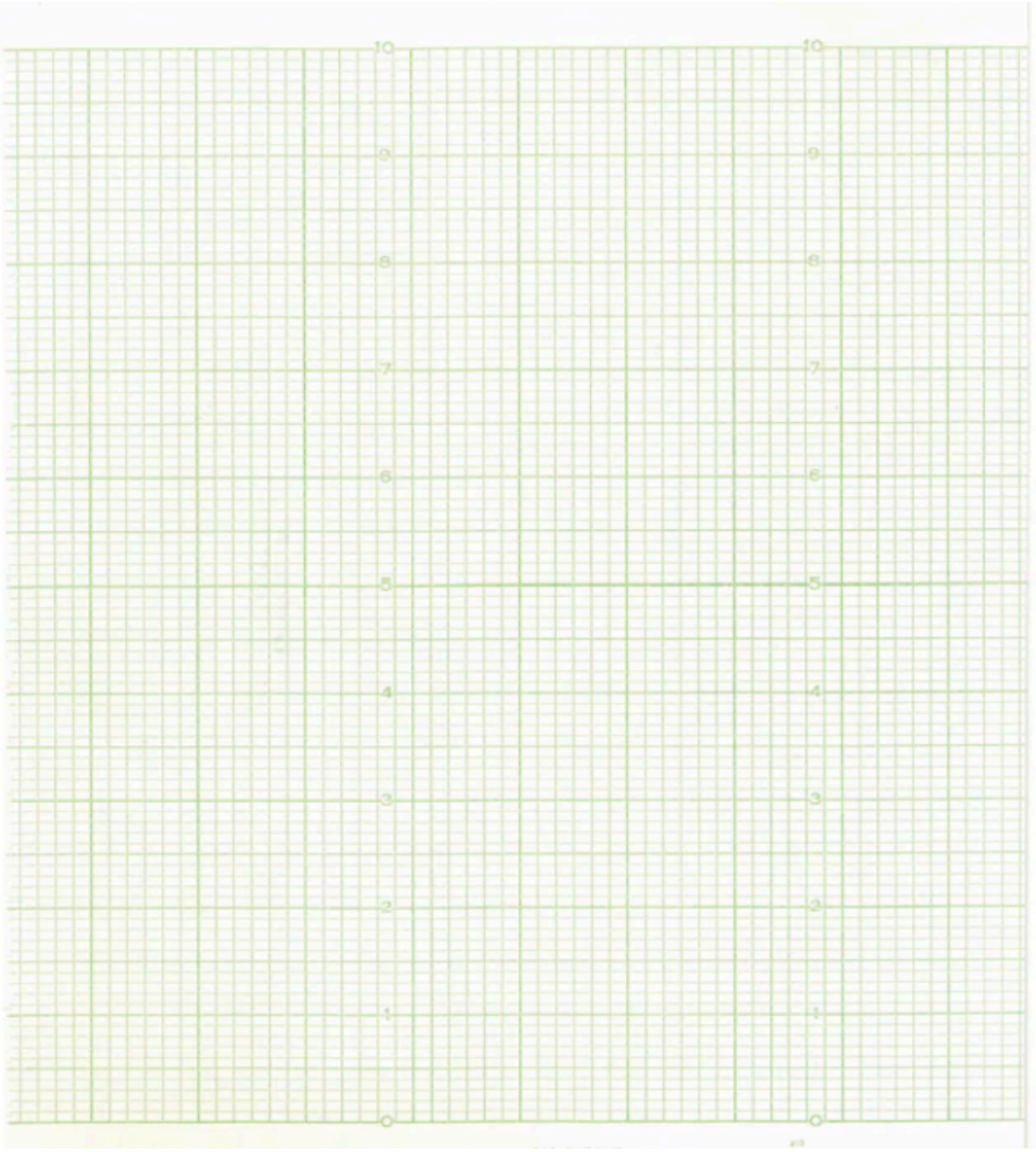
3. Draw the logarithm relation between true stress true strains then find the strength coefficient (K) and the strain-hardening exponent (n).



Question: for the above table: Draw the Engineering stress and strain curve then evaluate the following

f. Ultimate tensile strength
g. Fracture stress
h. Toughness
i. Elongation
j. Ductility




10
9
8
7
6
5
4
3
2
1
0