

IE-352
Section 1, CRN: 48700/1/2
Section 2, CRN: 48706/7/8
Second Semester 1435-36 H (Spring-2015) – 4(4,1,2)
“MANUFACTURING PROCESSES – 2”

Saturday, March 14, 2015 (23/05/1436H)

HW 2 (MIDTERM 1)

Name:	Student Number:	Section:
	4	10 / 11

Place the correct letter in the box at the right of each question [$\frac{1}{2}$ Point Each]

1. The available group of manufacturing processes in the company is called the ...

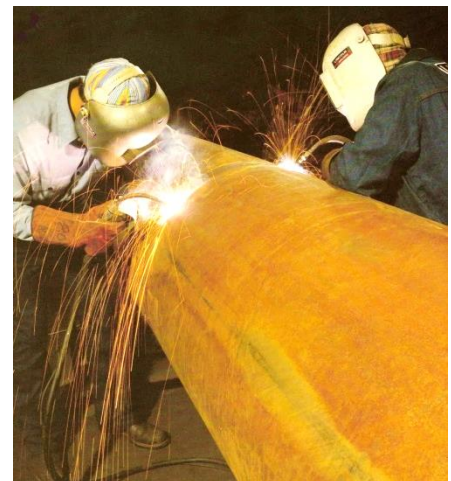
- A. manufacturing support system
- B. technological processing capability
- C. production system
- D. physical product limitations
- E. production capacity

2. Procedures and people managing a company's production operations is called ...

- A. manufacturing support system
- B. technological processing capability
- C. production system
- D. physical product limitations
- E. production capacity

3. The figure below displays what type of manufacturing process?

- A. deformation process
- B. material removal process
- C. surface processing operation
- D. solidification process
- E. assembly operation



4. **Alumina is a type of ..., while elastomers are a type of**

- A. polymer; ceramic
- B. composite; polymer
- C. ceramic; polymer
- D. ceramic; metal alloy
- E. ceramic; composite

5. **What is true regarding *flow line production*?**

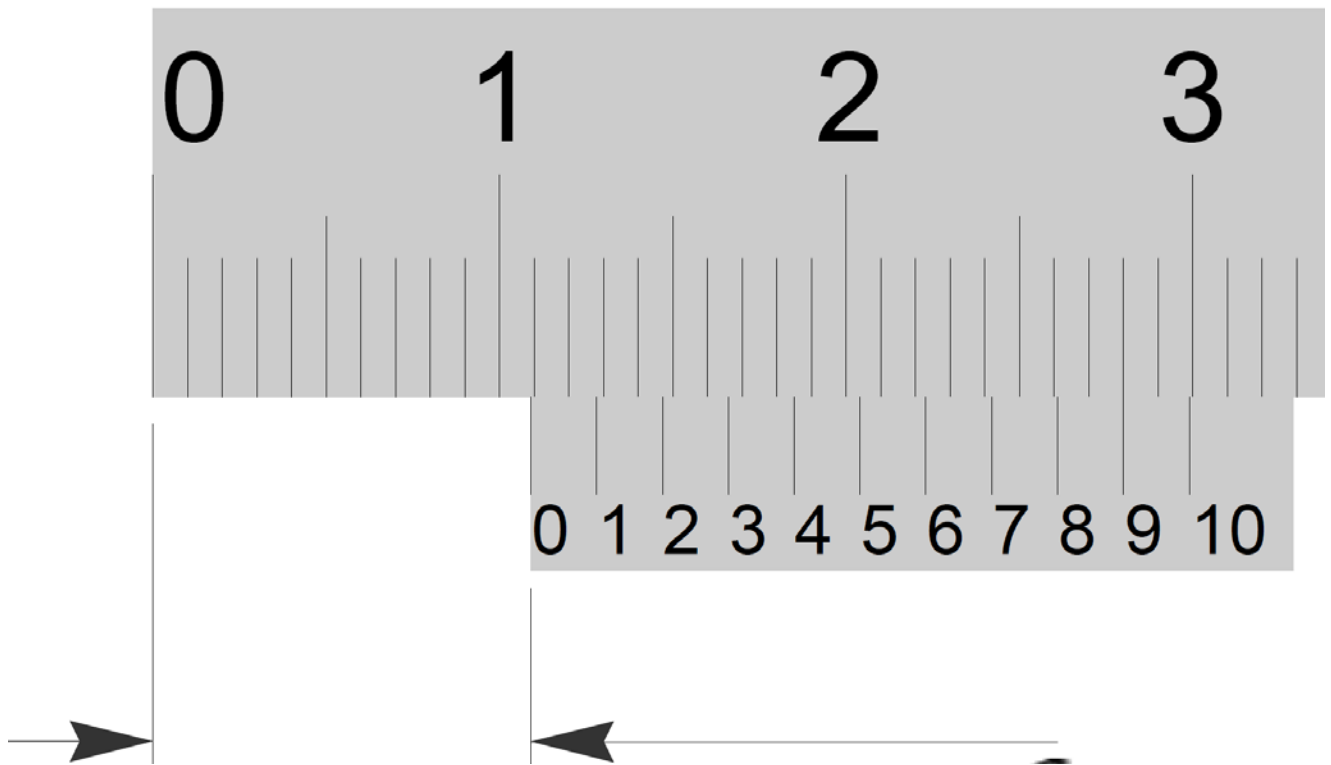
- A. low quantity production; multiple processing is required
- B. high quantity production; small number of machines
- C. medium quantity production; multiple processing is required
- D. high quantity production; multiple processing is required
- E. medium quantity production; small number of machines

6. **Quality control deals with ..., while manufacturing engineering deals with**

- A. satisfying product requirements; planning and controlling production
- B. designing processes and equipment; satisfying product requirements
- C. designing processes and equipment; planning and controlling production
- D. planning and controlling production; designing processes and equipment
- E. satisfying product requirements; designing processes and equipment

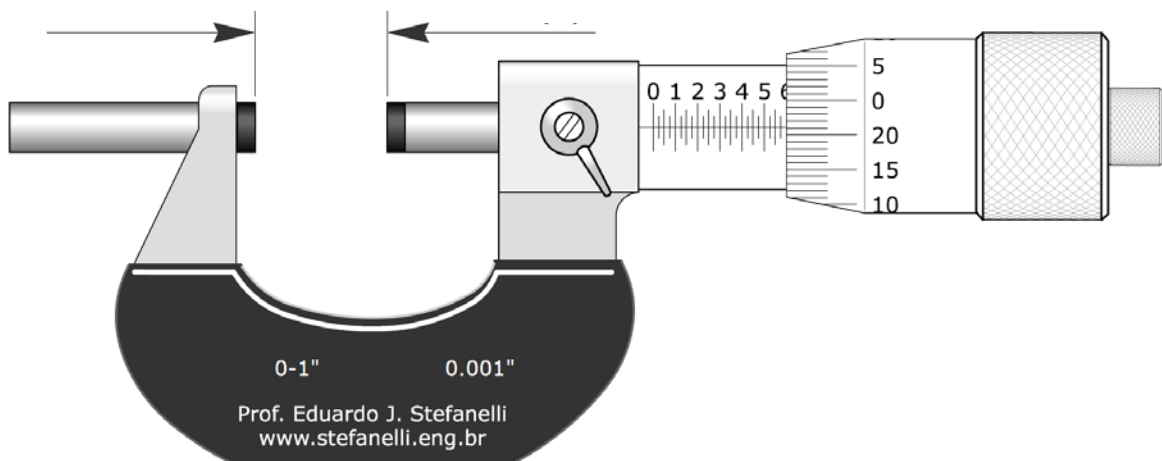
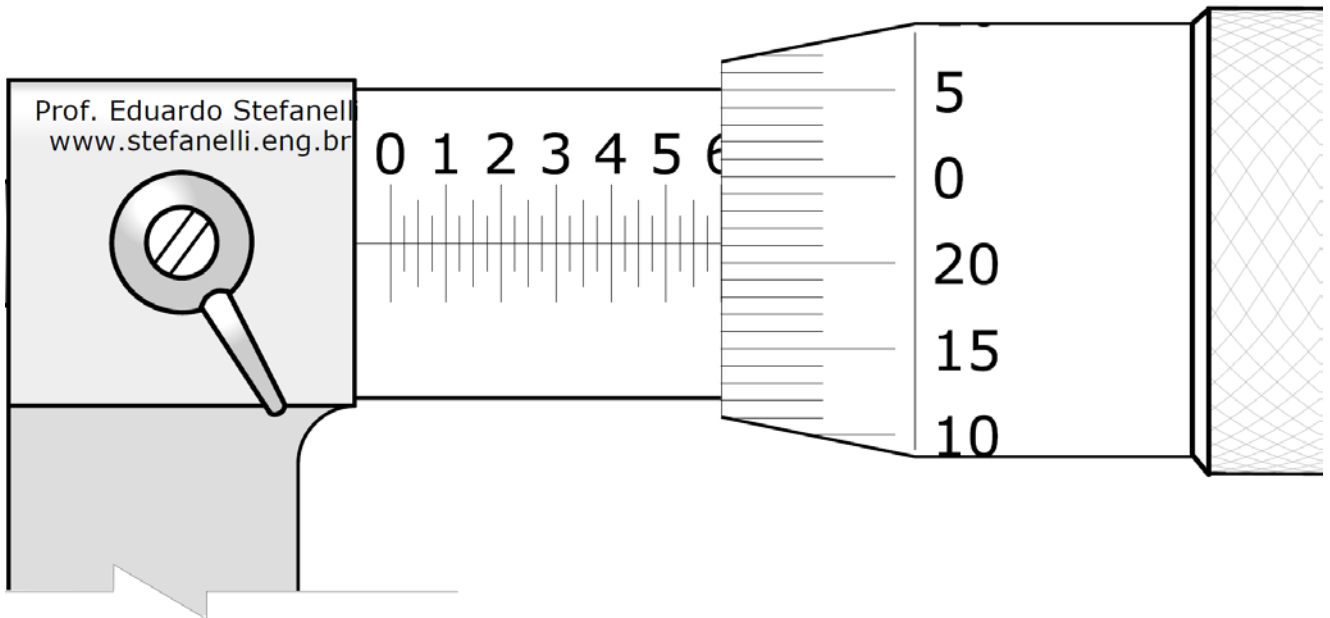
7. The correct reading in the ... shown below is ...

- A. Micrometer scale; 10.9 mm
- B. Micrometer scale; 1.09 mm
- C. Vernier scale; 10.9 mm
- D. Vernier scale; 1.09 mm
- E. Vernier scale; 10.9 cm



8. The correct reading in the ... shown below is ...

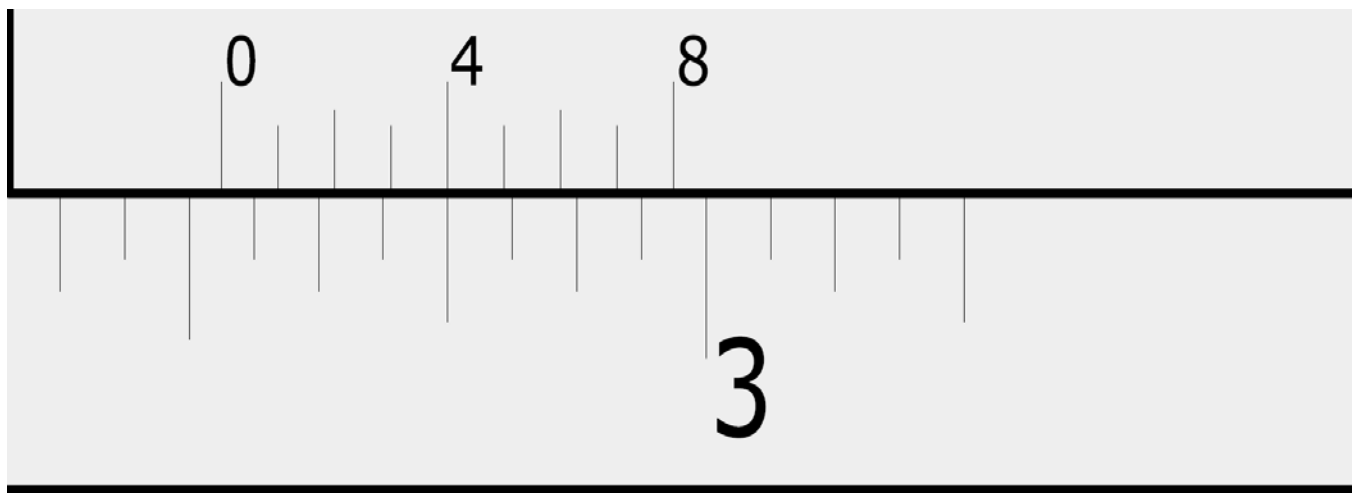
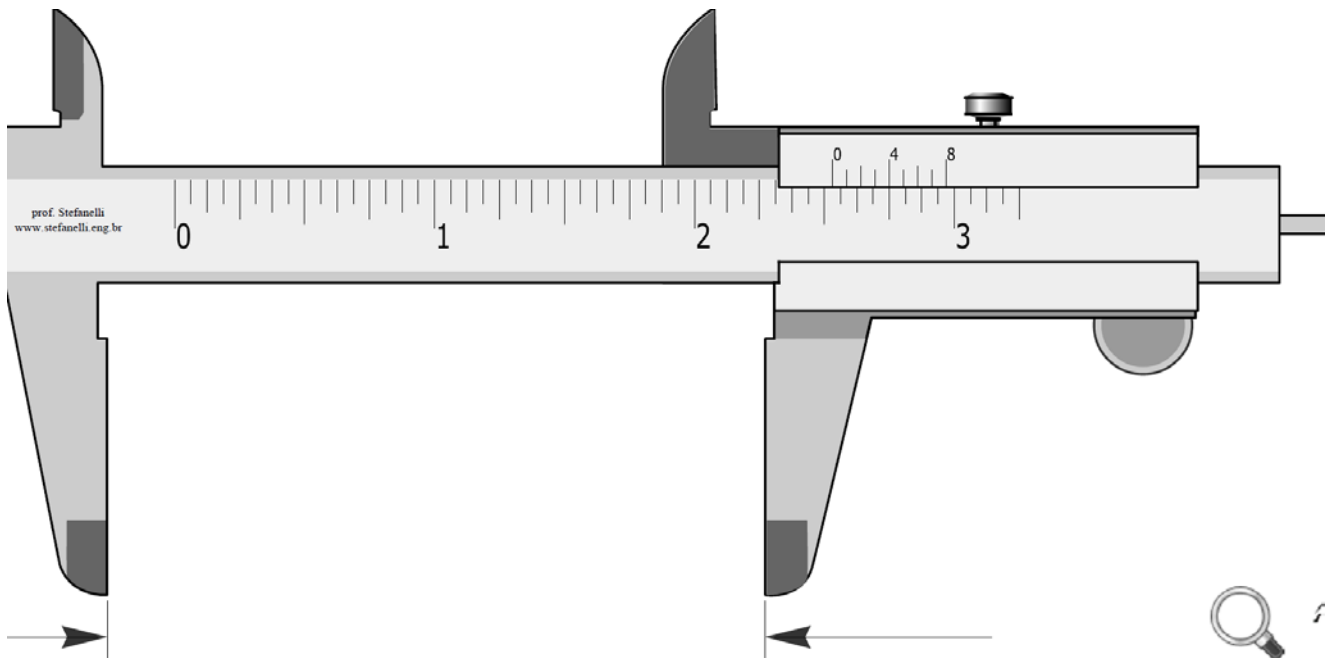
- A. outside micrometer; 0.596 in
- B. outside micrometer; 5.96 in
- C. inside micrometer; 0.596 in
- D. inside micrometer; 5.96 in
- E. outside micrometer; 0.596 mm



9. The correct reading in the ... shown below is ...



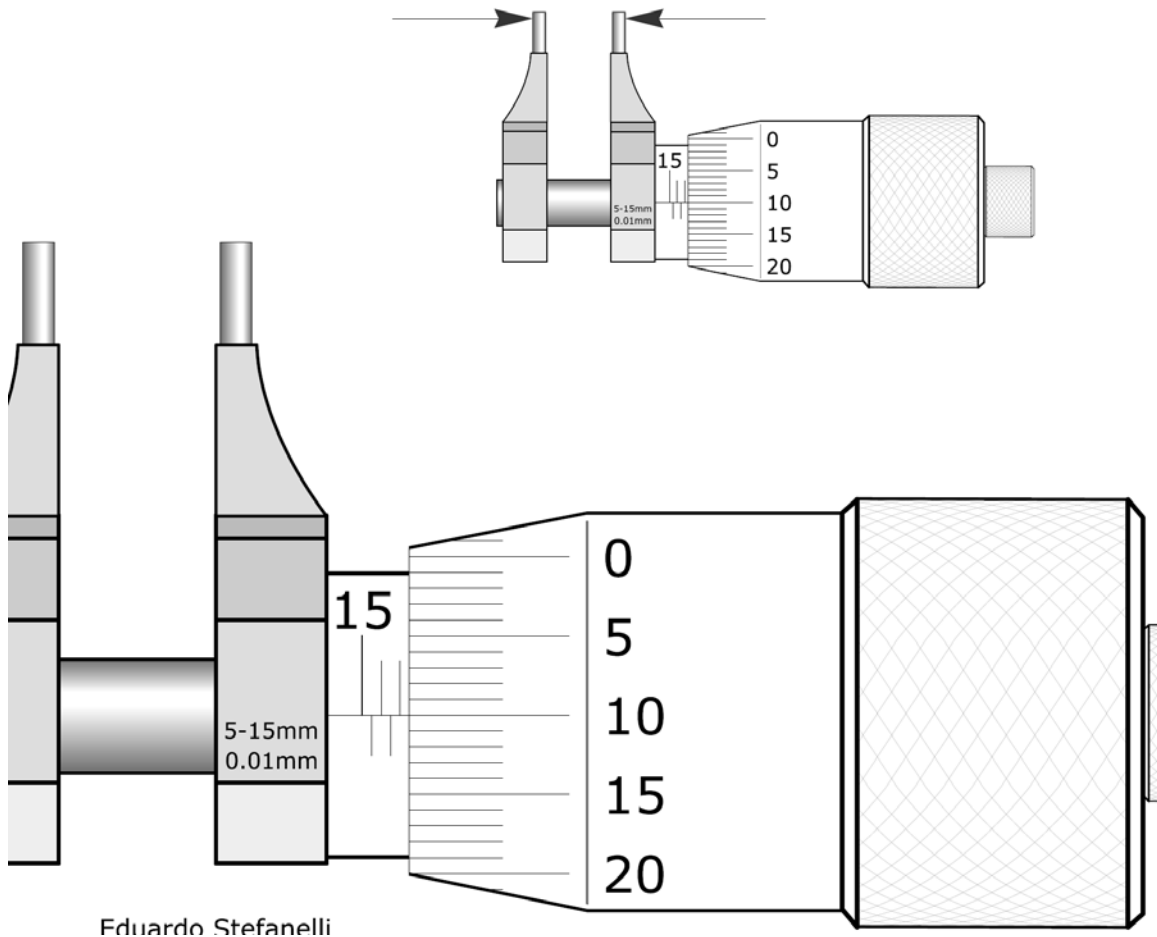
- A. Micrometer caliper; $2.\frac{17}{32}$ in
- B. Vernier caliper; $2.\frac{17}{32}$ in
- C. Vernier caliper; 2.54 in
- D. Micrometer caliper; 2.54 in
- E. Vernier caliper; 24.4 mm



10. The correct reading in the ... shown below is ...



- A. Inside micrometer; 13.10 mm
- B. Outside micrometer; 13.10 in
- C. Outside micrometer; 12.60 mm
- D. Inside micrometer; 12.60 mm
- E. Inside micrometer; 13.60 mm

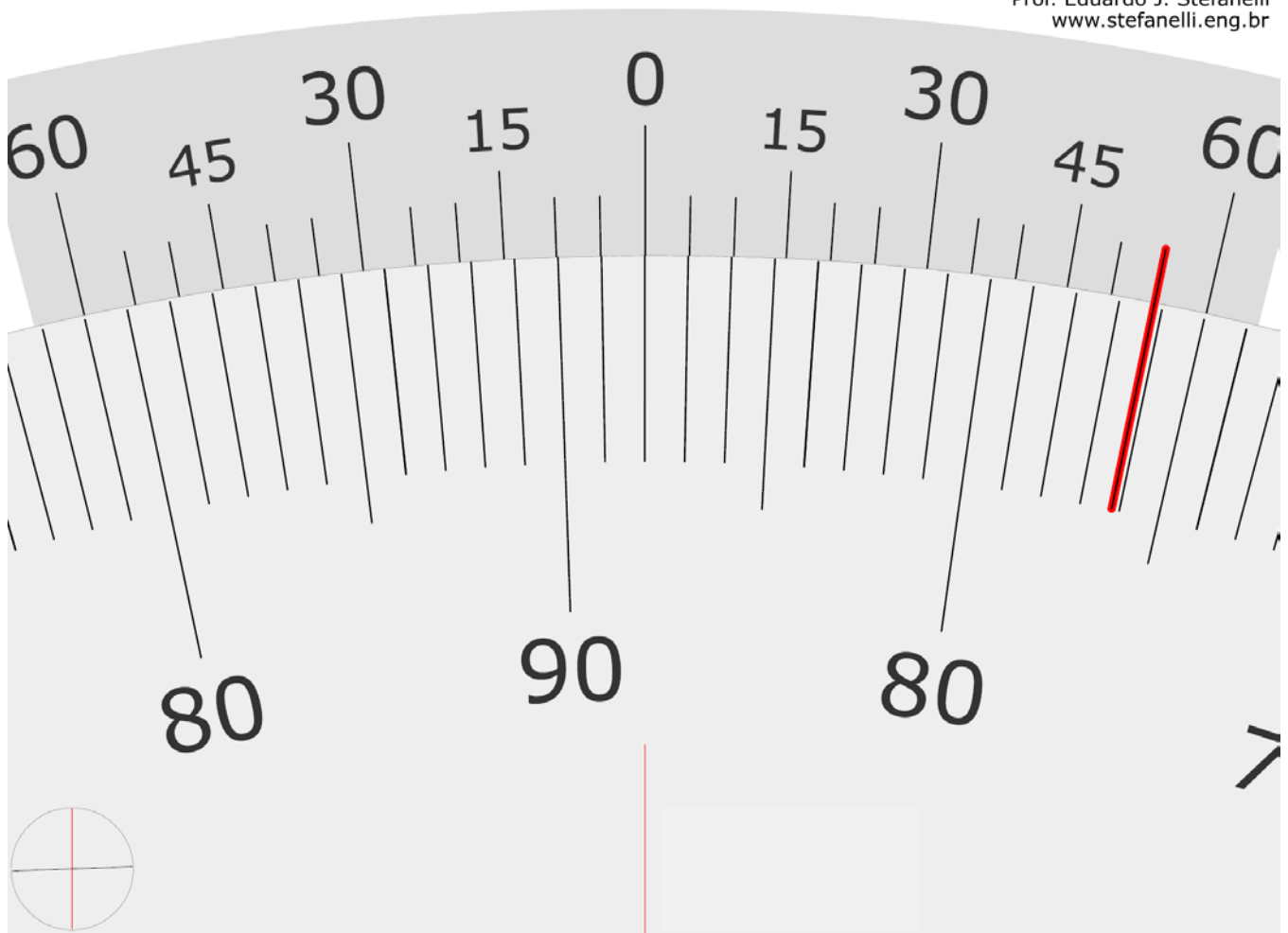


11. The correct reading in the gage shown with ... accuracy is ...



- A. 0.1° ; $87^\circ 55'$
- B. $1'$; $92^\circ 55'$
- C. $1'$; $87^\circ 55'$
- D. $5'$; $92^\circ 55'$
- E. $5'$; $87^\circ 55'$

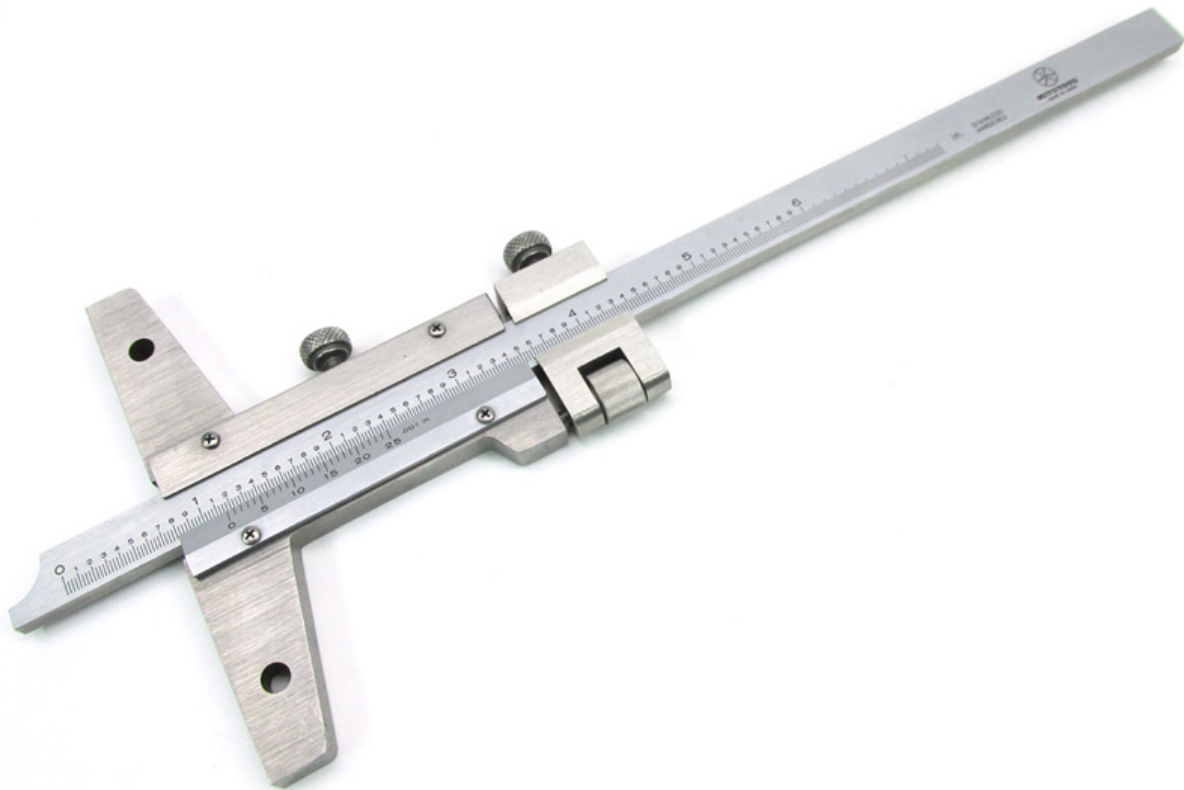
Prof. Eduardo J. Stefanelli
www.stefanelli.eng.br



12. The device shown below is an example of a(n) ...



- A. micrometer depth gage
- B. Vernier height gage
- C. Vernier depth gage
- D. inside Vernier gage
- E. micrometer height gage



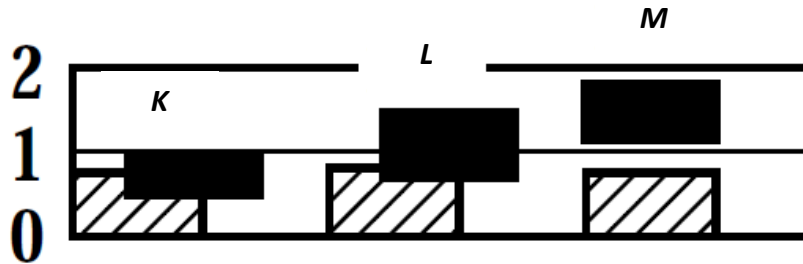
13. Figure below shows a(an) ... gage, where X and Y denote, respectively, ...



- A. plug gage; no-go gage; go gage
- B. non-adjustable snap gage; no-go gage; go gage
- C. adjustable snap gage; go gage; no-go gage
- D. adjustable snap gage; no-go gage; go gage
- E. non-adjustable snap gage; go gage; no-go gage



Questions 14-15. Consider the diagram below and answer the questions to follow.



14. Figure above shows different ... fits; fit ... has the largest $shaft_{MMC}$.

- A. interference locational; M
- B. clearance locational; M
- C. interference locational; K
- D. clearance locational; K
- E. transition; M

15. What is true about fit L ?

- A. $shaft_{MMC} > shaft_{LMC} > hole_{LMC} > hole_{MMC}$
- B. $hole_{LMC} > shaft_{MMC} > shaft_{LMC} > hole_{MMC}$
- C. $shaft_{LMC} > hole_{LMC} > hole_{MMC} > shaft_{MMC}$
- D. $shaft_{MMC} > hole_{LMC} > shaft_{LMC} > hole_{MMC}$
- E. $shaft_{MMC} > hole_{LMC} > hole_{MMC} > shaft_{LMC}$

Questions 16 - 20. Consider a $\frac{13}{16}$ " nominal diameter, *LC5* fit between a shaft and hole.

16. The basic size is ...

- A. 0.812 in
- B. 0.8125 in
- C. 0.81250 in
- D. 0.81 in
- E. 0.813 in

17. Respectively, $shaft_{MMC} =$; $shaft_{LMC} =$...

- A. 0.8122 in; 0.8117 in
- B. 0.8117 in; 0.8122 in
- C. 0.8125 in; 0.8133 in
- D. 0.8133 in; 0.8125 in
- E. 0.8128 in; 0.8133 in

18. Respectively, $hole_{MMC} =$; $hole_{LMC} =$...

- A. 0.8122 in; 0.8117 in
- B. 0.8117 in; 0.8122 in
- C. 0.8125 in; 0.8133 in
- D. 0.8133 in; 0.8125 in
- E. 0.8128 in; 0.8133 in

19. **Respectively**, *shaft tolerance* =; *hole tolerance* =...

- A. 0.0008 *in*; 0.0005 *in*
- B. 0.0005 *in*; 0.0008 *in*
- C. 0.0003 *in*; 0.0008 *in*
- D. 0.0016 *in*; 0.0003 *in*
- E. 0.0003 *in*; 0.0016 *in*

20. **Respectively**, *min. clearance* =; *max. clearance* = ...

- A. 0.0008 *in*; 0.0005 *in*
- B. 0.0005 *in*; 0.0008 *in*
- C. 0.0003 *in*; 0.0008 *in*
- D. 0.0016 *in*; 0.0003 *in*
- E. 0.0003 *in*; 0.0016 *in*

Table 5. American National Standard Clearance Locational Fits ANSIB4.1-1967 (R1987)

Nominal Size Range, Inches	Class LC 1				Class LC 2				Class LC 3				Class LC 4				Class LC 5	
	Clearance ^a	Standard Tolerance Limits		Clearance ^a	Standard Tolerance Limits	Clearance ^a	Standard Tolerance Limits		Clearance ^a	Standard Tolerance Limits		Clearance ^a	Standard Tolerance Limits		Clearance ^a	Standard Tolerance Limits		
		H6	h5				H7	h6		H8	h7		H10	h9		H7	h7	H7
Over To	Values shown below are in thousandths of an inch																	
0-0.12	0	+0.25	0	0	+0.4	0	0	+0.6	0	0	-0.4	2.6	+1.6	0	-1.0	0.1	+0.4	-0.1
	0.45	0	-0.2	0.65	0	-0.25	1	0	-0.25	1	0	2.6	0	-0.4	2.6	0.75	0	-0.35
0.12-0.24	0	+0.3	0	0	+0.5	0	0	+0.7	0	0	0	0	+1.8	0	0	0.15	+0.5	-0.15
	0.5	0	-0.2	0.8	0	-0.3	1.2	0	-0.3	1.2	0	3.0	0	-0.5	3.0	0.95	0	-0.45
0.24-0.40	0	+0.4	0	0	+0.6	0	0	+0.9	0	0	0	0	+2.2	0	0	0.2	+0.6	-0.2
	0.65	0	-0.25	1.0	0	-0.4	1.5	0	-0.4	1.5	0	3.6	0	-0.6	3.6	1.2	0	-0.6
0.40-0.71	0	+0.4	0	0	+0.7	0	0	+1.0	0	0	0	0	+2.8	0	0	0.25	+0.7	-0.25
	0.7	0	-0.3	1.1	0	-0.4	1.7	0	-0.4	1.7	0	4.4	0	-0.7	4.4	1.35	0	-0.65
0.71-1.19	0	+0.5	0	0	+0.8	0	0	+1.2	0	0	0	0	+3.5	0	0	0.3	+0.8	-0.3
	0.9	0	-0.4	1.3	0	-0.5	2	0	-0.5	2	0	5.5	0	-0.8	5.5	1.6	0	-0.8
1.19-1.97	0	+0.6	0	0	+1.0	0	0	+1.6	0	0	0	0	+4.0	0	0	0.4	+1.0	-0.4
	1.0	0	-0.4	1.6	0	-0.6	2.6	0	-0.6	2.6	0	6.5	0	-1	6.5	2.0	0	-1.0
1.97-3.15	0	+0.7	0	0	+1.2	0	0	+1.8	0	0	0	0	+4.5	0	0	0.4	+1.2	-0.4
	1.2	0	-0.5	1.9	0	-0.7	3	0	-0.7	3	0	7.5	0	-1.2	7.5	2.3	0	-1.1
3.15-4.73	0	+0.9	0	0	+1.4	0	0	+2.2	0	0	0	0	+5.0	0	0	0.5	+1.4	-0.5
	1.5	0	-0.6	2.3	0	-0.9	3.6	0	-0.9	3.6	0	8.5	0	-1.4	8.5	2.8	0	-1.4
4.73-7.09	0	+1.0	0	0	+1.6	0	0	+2.5	0	0	0	0	+6.0	0	0	0.6	+1.6	-0.6
	1.7	0	-0.7	2.6	0	-1.0	4.1	0	-1.0	4.1	0	10.0	0	-1.6	10.0	3.2	0	-1.6
7.09-9.85	0	+1.2	0	0	+1.8	0	0	+2.8	0	0	0	0	+7.0	0	0	0.6	+1.8	-0.6
	2.0	0	-0.8	3.0	0	-1.2	4.6	0	-1.2	4.6	0	11.5	0	-1.8	11.5	3.6	0	-1.8
9.85-12.41	0	+1.2	0	0	+2.0	0	0	+3.0	0	0	0	0	+8.0	0	0	0.7	+2.0	-0.7
	2.1	0	-0.9	3.2	0	-1.2	5	0	-1.2	5	0	13.0	0	-2.0	13.0	3.9	0	-1.9
12.41-15.75	0	+1.4	0	0	+2.2	0	0	+3.5	0	0	0	0	+9.0	0	0	0.7	+2.2	-0.7
	2.4	0	-1.0	3.6	0	-1.4	5.7	0	-1.4	5.7	0	15.0	0	-2.2	15.0	4.3	0	-2.1
15.75-19.69	0	+1.6	0	0	+2.5	0	0	+4	0	0	0	0	+10.0	0	0	0.8	+2.5	-0.8
	2.6	0	-1.0	4.1	0	-1.6	6.5	0	-1.6	6.5	0	16.0	0	-2.5	16.0	4.9	0	-2.4

^aPairs of values shown represent minimum and maximum amounts of interference resulting from application of standard tolerance limits.

Rules:

- You must prepare and submit the homework **individually**.
- Your work must be **neatly written** in pencil (or typed) and in **proper English** (where applicable).
- **You must show all work.**
- **BOX** your answer(s) and include the **units**.

Due date:

- **Thursday, April 19, 2005, 2014 (28/05/1436)**