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"

Thursday, March 12, 2015 (21/05/1436H)

MIDTERM 1 [10 POINTS]

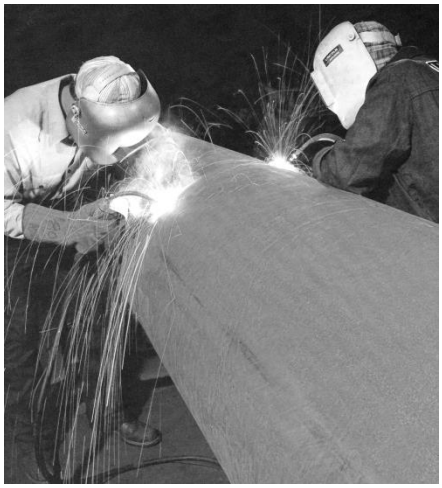
Name:	Student Number: 4	Section: 10 / 11

Place the correct letter in the box at the right of each question [½ 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 …**

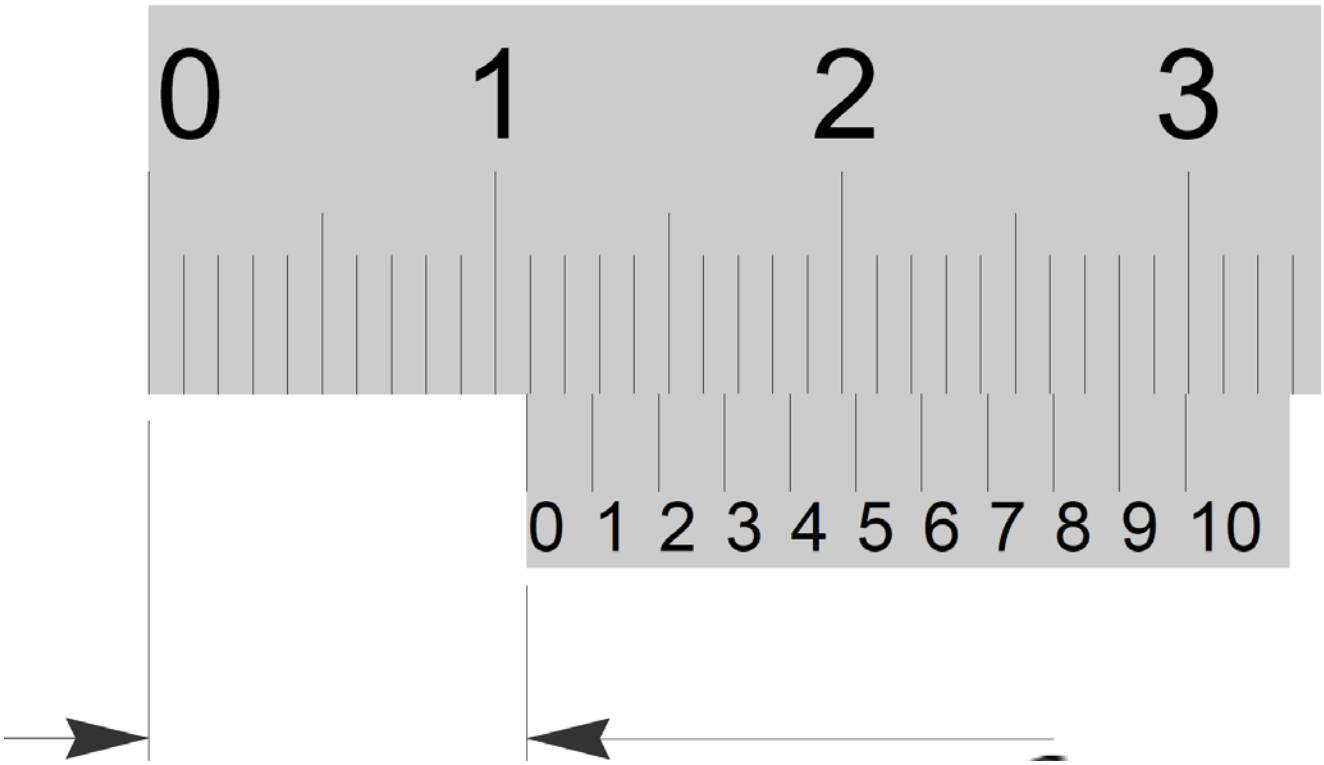
   A. Micrometer scale; $10.9\ mm$

   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 …**

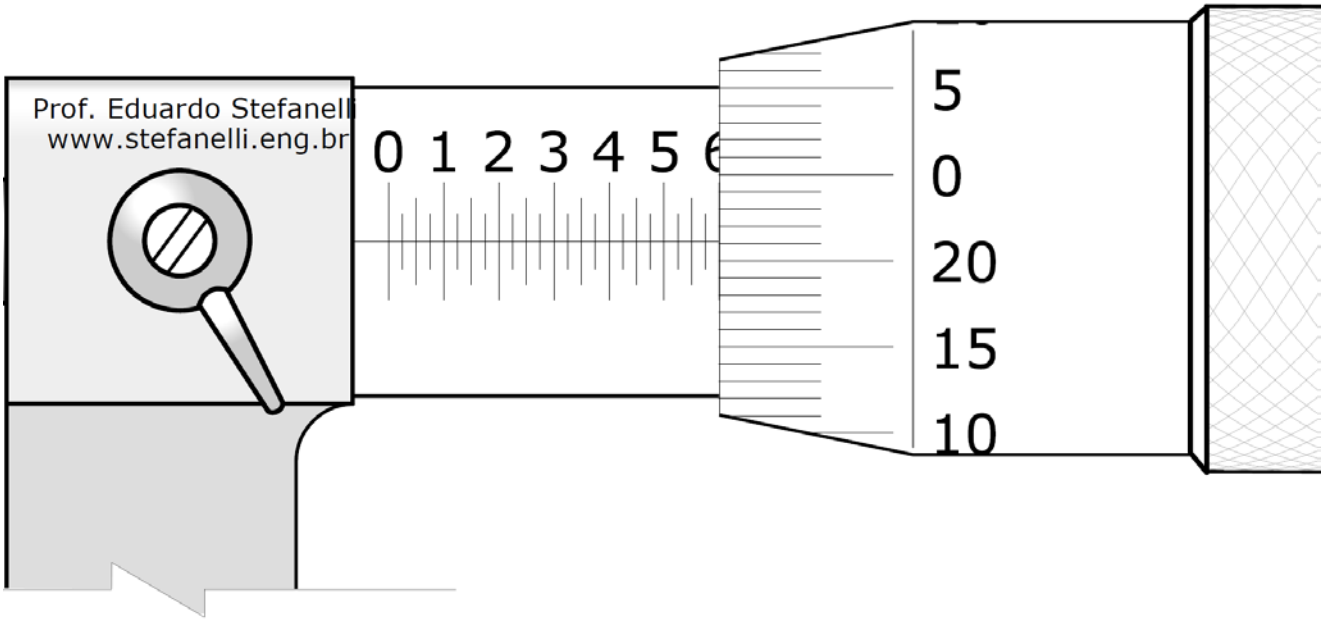
A. outside micrometer; $0.596\ in$

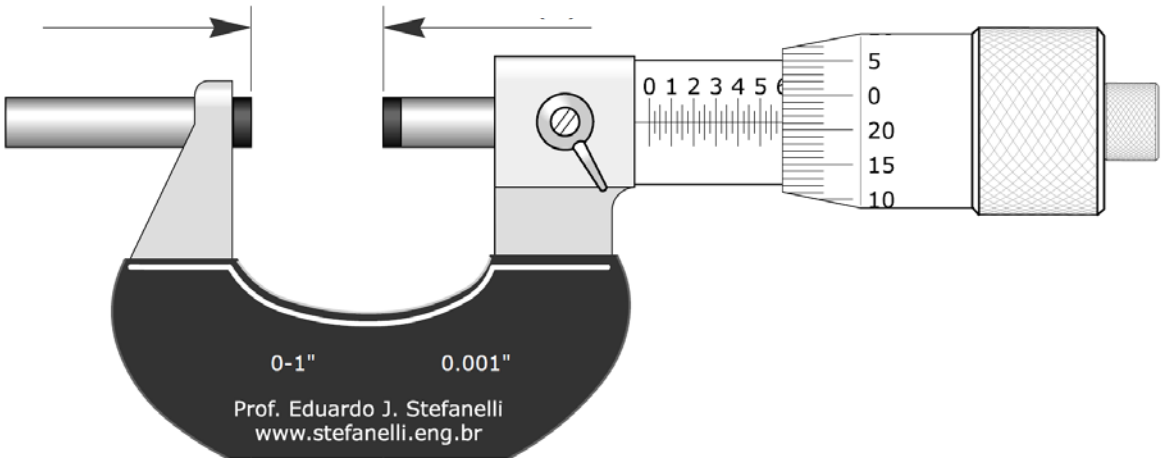
B. outside micrometer; $5.96\ in$

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 …**

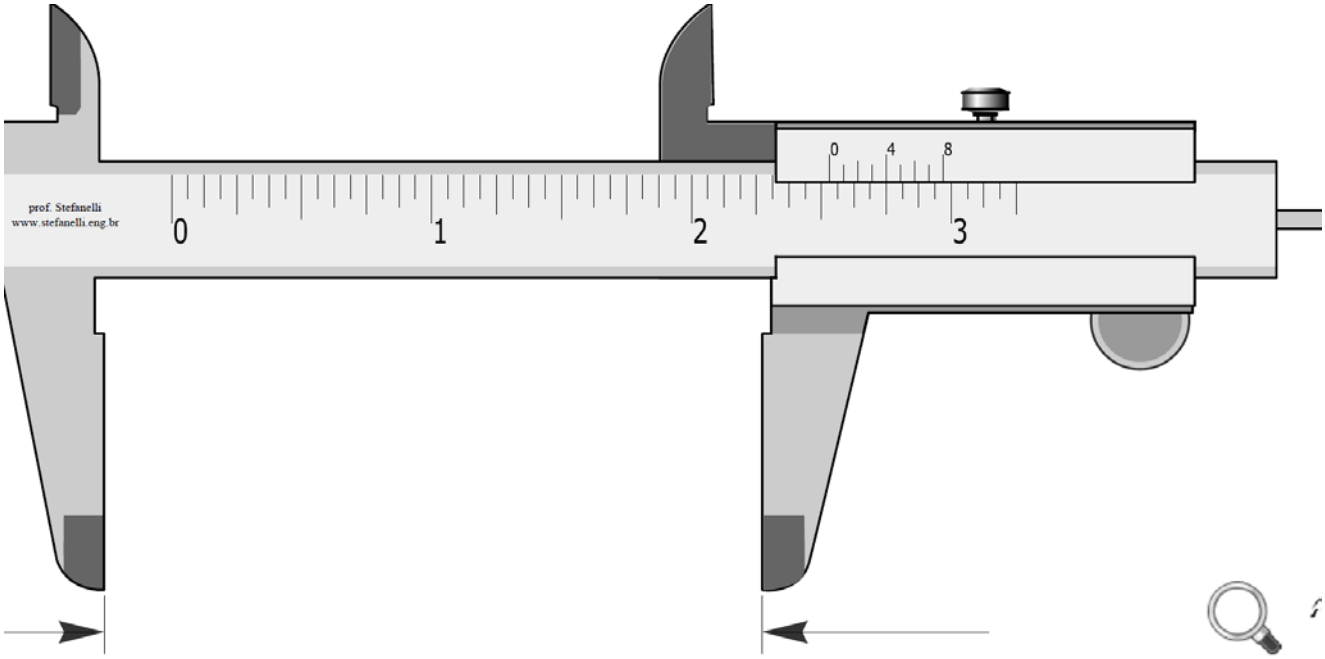
A. Micrometer caliper; $2.\frac{17}{32}\ in$

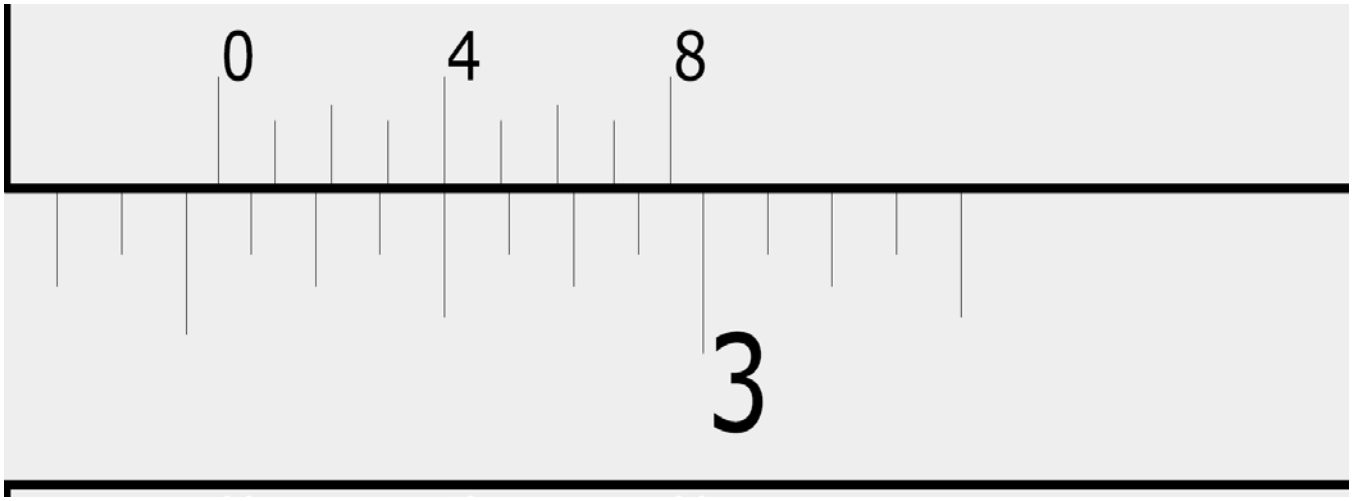
B. Vernier caliper; $2.\frac{17}{32}\ in$

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 …**

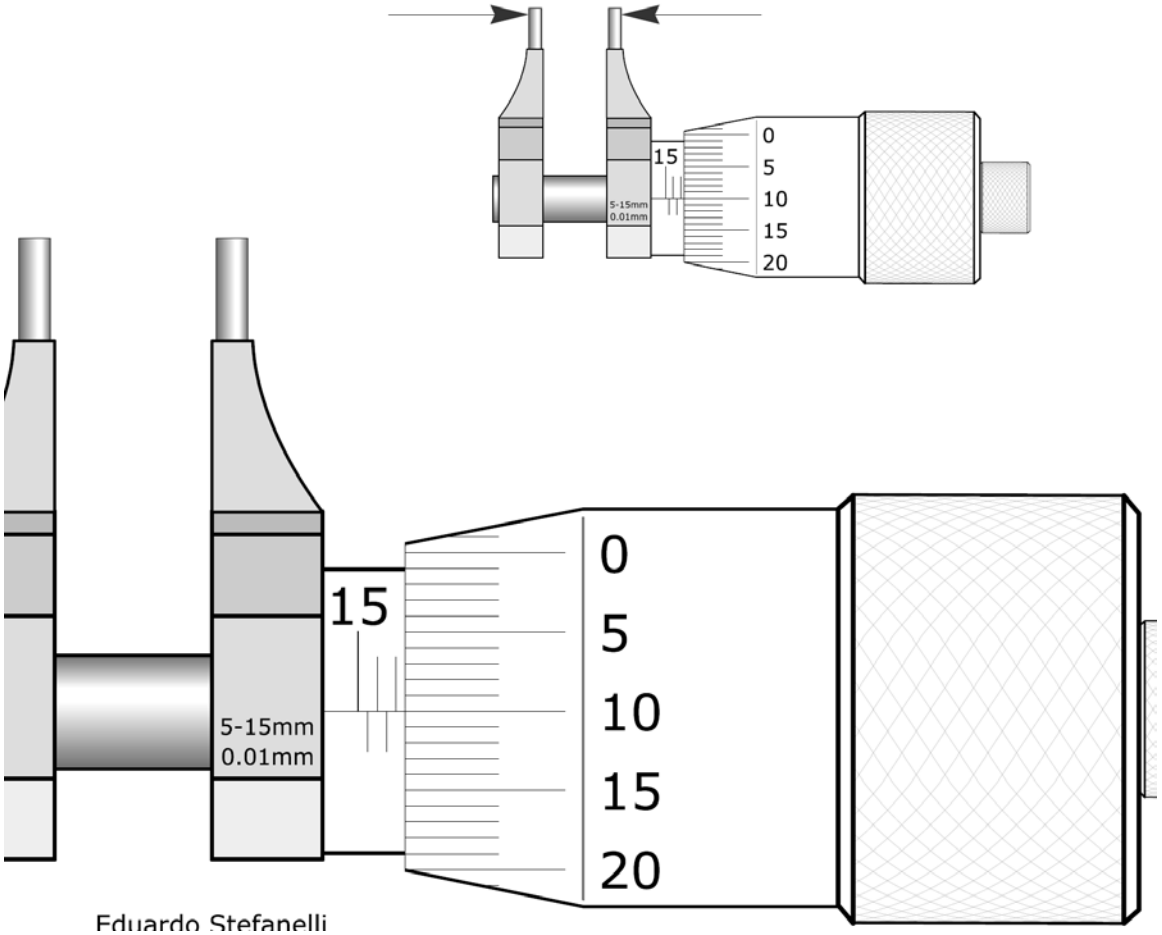
A. Inside micrometer; 13.10 mm

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 …**

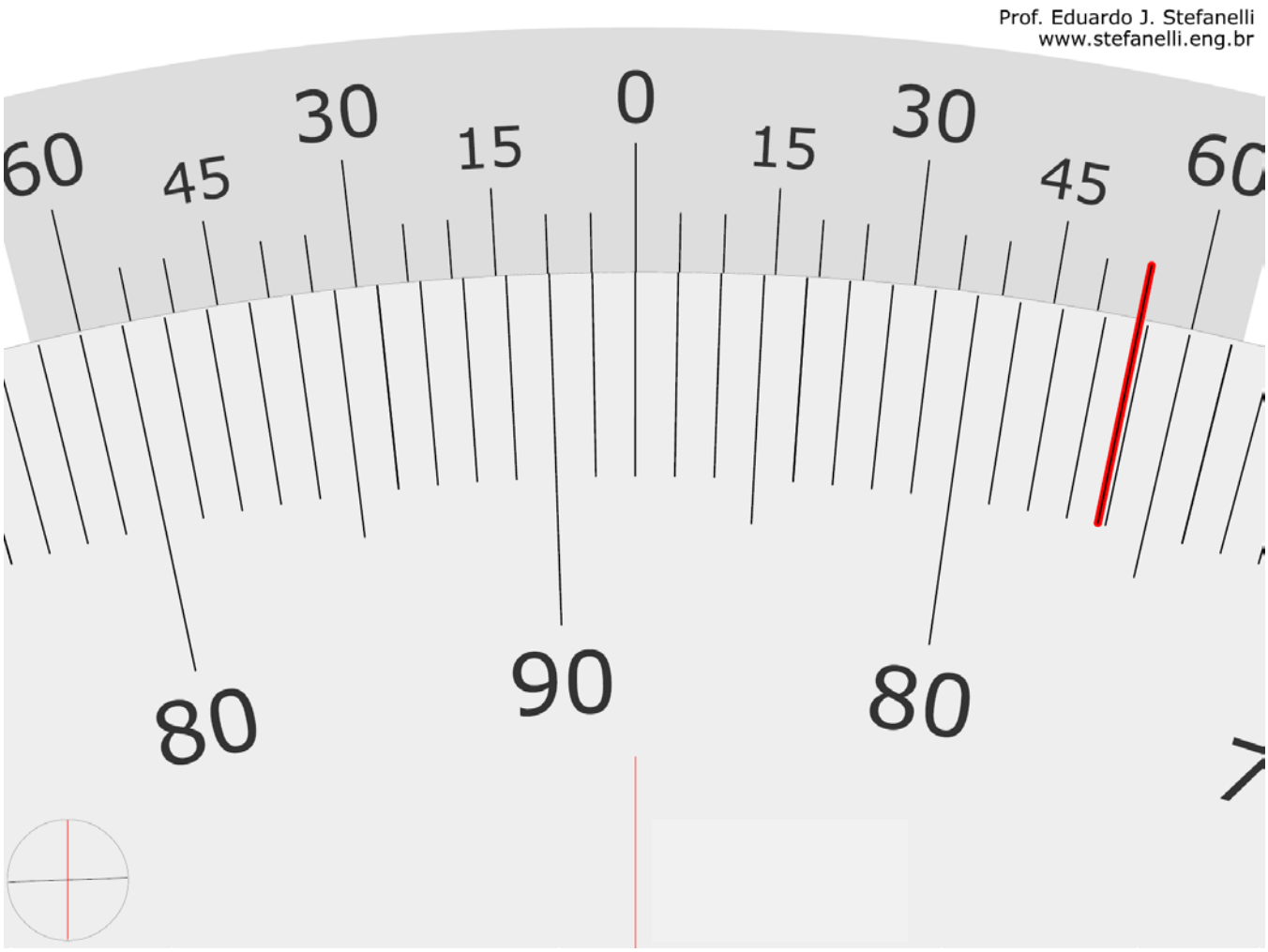
A. 0.1°; 87°55′

B. 1′; 92°55′

C. 1′; 87°55′

D. 5′; 92°55′

E. 5′; 87°55′



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

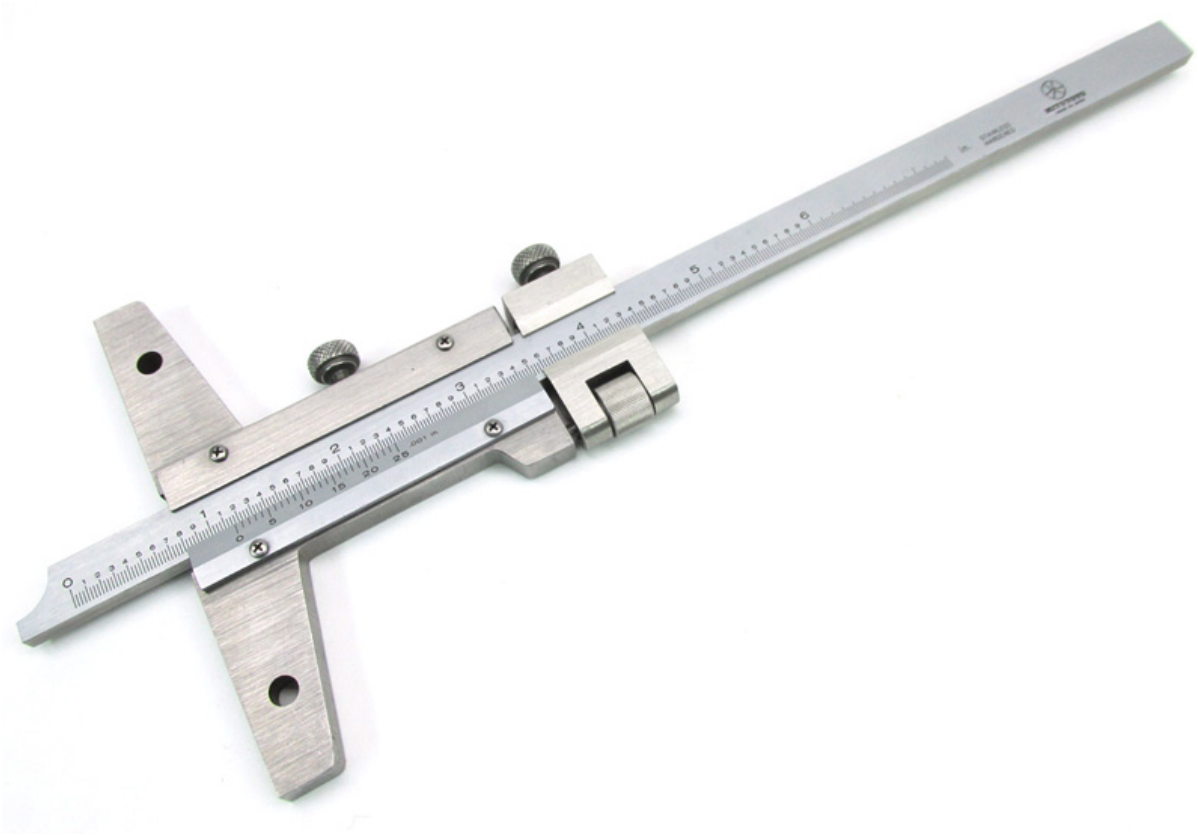
A. micrometer depth gage

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*

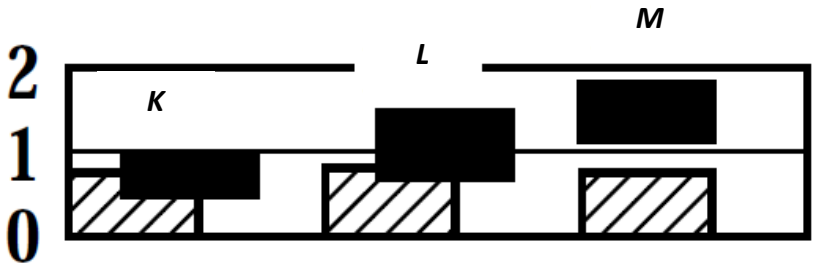
B. non-adjustable snap gage; *no-go gage*; *go gage*

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 *ANSI B4.1-1967 (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	
			Hole H6	Shaft h5		Hole H7	Shaft h6		Hole H8	Shaft h7		Hole H10	Shaft h9		Hole H7	Shaft g6
Over	To	Values shown below are in thousandths of an inch														
0–	0.12	0 0.45	+0.25 0	0 –0.2	0 0.65	+0.4 0	0 –0.25	0 1	+0.6 0	0 –0.4	0 2.6	+1.6 0	0 –1.0	0.1 0.75	+0.4 0	–0.1 –0.35
0.12–	0.24	0 0.5	+0.3 0	0 –0.2	0 0.8	+0.5 0	0 –0.3	0 1.2	+0.7 0	0 –0.5	0 3.0	+1.8 0	0 –1.2	0.15 0.95	+0.5 0	–0.15 –0.45
0.24–	0.40	0 0.65	+0.4 0	0 –0.25	0 1.0	+0.6 0	0 –0.4	0 1.5	+0.9 0	0 –0.6	0 3.6	+2.2 0	0 –1.4	0.2 1.2	+0.6 0	–0.2 –0.6
0.40–	0.71	0 0.7	+0.4 0	0 –0.3	0 1.1	+0.7 0	0 –0.4	0 1.7	+1.0 0	0 –0.7	0 4.4	+2.8 0	0 –1.6	0.25 1.35	+0.7 0	–0.25 –0.65
0.71–	1.19	0 0.9	+0.5 0	0 –0.4	0 1.3	+0.8 0	0 –0.5	0 2	+1.2 0	0 –0.8	0 5.5	+3.5 0	0 –2.0	0.3 1.6	+0.8 0	–0.3 –0.8
1.19–	1.97	0 1.0	+0.6 0	0 –0.4	0 1.6	+1.0 0	0 –0.6	0 2.6	+1.6 0	0 –1	0 6.5	+4.0 0	0 –2.5	0.4 2.0	+1.0 0	–0.4 –1.0
1.97–	3.15	0 1.2	+0.7 0	0 –0.5	0 1.9	+1.2 0	0 –0.7	0 3	+1.8 0	0 –1.2	0 7.5	+4.5 0	0 –3	0.4 2.3	+1.2 0	–0.4 –1.1
3.15–	4.73	0 1.5	+0.9 0	0 –0.6	0 2.3	+1.4 0	0 –0.9	0 3.6	+2.2 0	0 –1.4	0 8.5	+5.0 0	0 –3.5	0.5 2.8	+1.4 0	–0.5 –1.4
4.73–	7.09	0 1.7	+1.0 0	0 –0.7	0 2.6	+1.6 0	0 –1.0	0 4.1	+2.5 0	0 –1.6	0 10.0	+6.0 0	0 –4	0.6 3.2	+1.6 0	–0.6 –1.6
7.09–	9.85	0 2.0	+1.2 0	0 –0.8	0 3.0	+1.8 0	0 –1.2	0 4.6	+2.8 0	0 –1.8	0 11.5	+7.0 0	0 –4.5	0.6 3.6	+1.8 0	–0.6 –1.8
9.85–	12.41	0 2.1	+1.2 0	0 –0.9	0 3.2	+2.0 0	0 –1.2	0 5	+3.0 0	0 –2.0	0 13.0	+8.0 0	0 –5	0.7 3.9	+2.0 0	–0.7 –1.9
12.41–	15.75	0 2.4	+1.4 0	0 –1.0	0 3.6	+2.2 0	0 –1.4	0 5.7	+3.5 0	0 –2.2	0 15.0	+9.0 0	0 –6	0.7 4.3	+2.2 0	–0.7 –2.1
15.75–	19.69	0 2.6	+1.6 0	0 –1.0	0 4.1	+2.5 0	0 –1.6	0 6.5	+4 0	0 –2.5	0 16.0	+10.0 0	0 –6	0.8 4.9	+2.5 0	–0.8 –2.4

[a] Pairs of values shown represent minimum and maximum amounts of interference resulting from application of standard tolerance limits.