

## LESSON1\_ HANDOUTS

## AMS 107 SAFETY WORKSHEET

Name \_\_\_\_\_ Date \_\_\_\_\_

### Personal Safety

#### Procedure

1. Do you wear safety glasses as a routine? \_\_\_\_\_

Explain the reason(s) for your answer.

\_\_\_\_\_

2. Do you consider yourself a safe person at work with regard to clothing, protection devices, and work habits? Explain. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. What protection device/clothing do you routinely use when using a parts washer?

\_\_\_\_\_

\_\_\_\_\_

Explain the reason(s) for your answer. \_\_\_\_\_

\_\_\_\_\_

4. What protection device/clothing do you routinely use when using a grinder or other machining equipment or tool? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Explain the reason(s) for your answer. \_\_\_\_\_

\_\_\_\_\_

5. What information can be found on an MSDS?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. Explain your immediate action(s) in event of an accident in your immediate work area.

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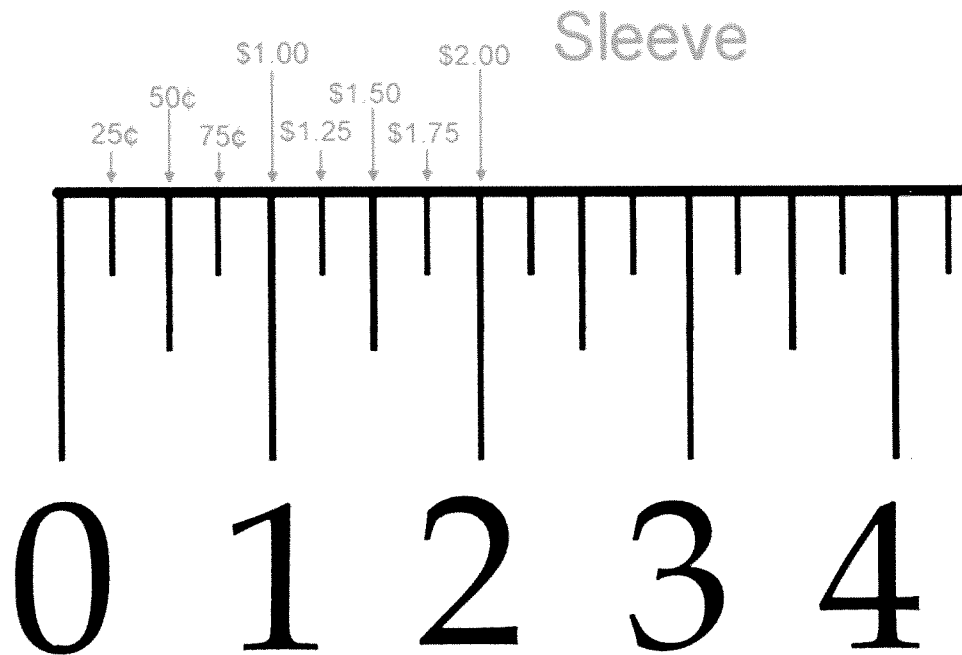
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**Instructor's response** \_\_\_\_\_

The **Sleeve** does not move. It looks like a ruler with ten numbers. The space between each number is divided into quarters. As the **Thimble** rotates around this Sleeve it covers up, or reveals the numbers marked on the Sleeve.

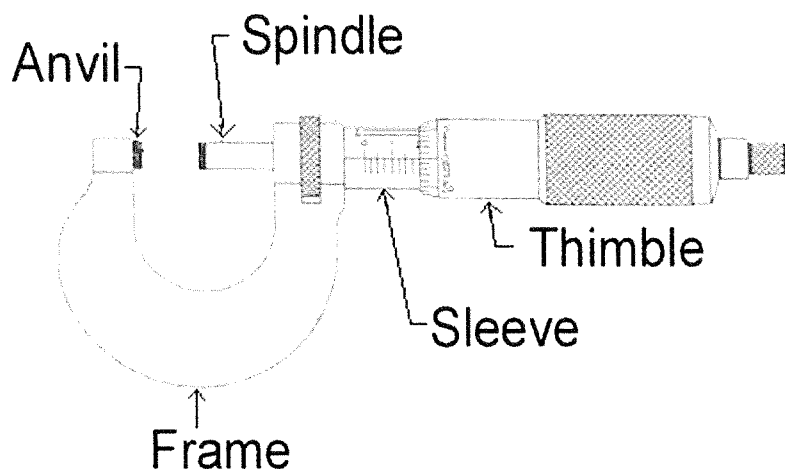
It is easy to read a micrometer if you think of the markings on the Sleeve as dollars and quarters.



Now it gets a little easier to read the mike.

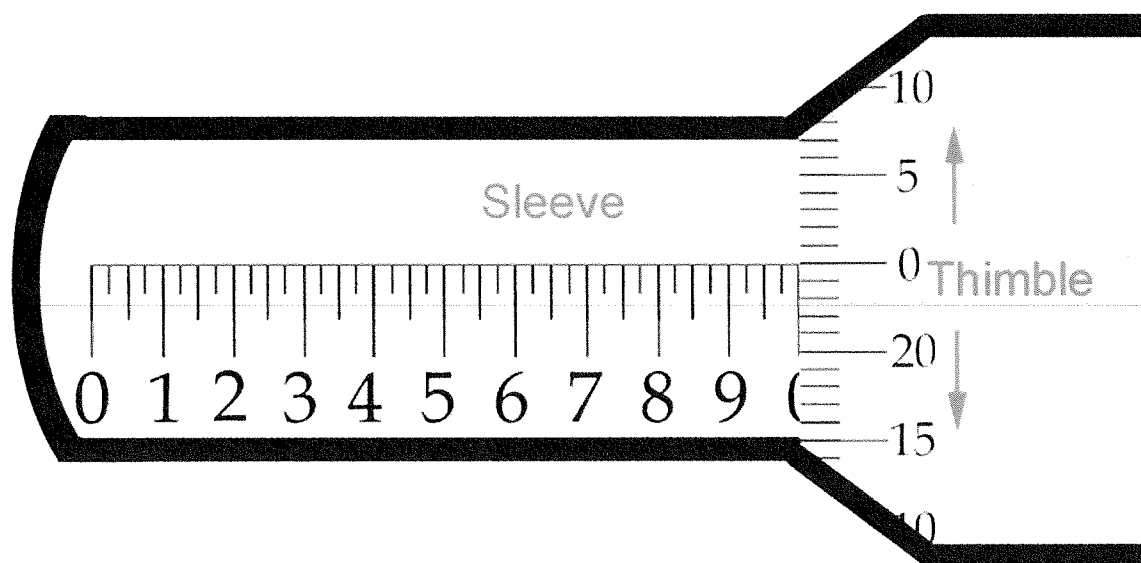
## How to Read a Micrometer

Reading a micrometer takes practice.



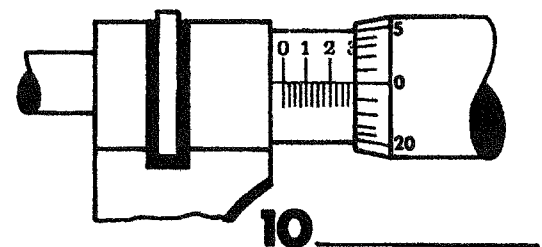
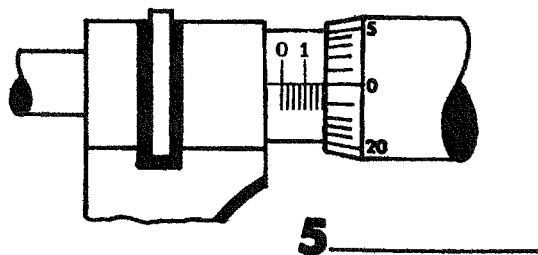
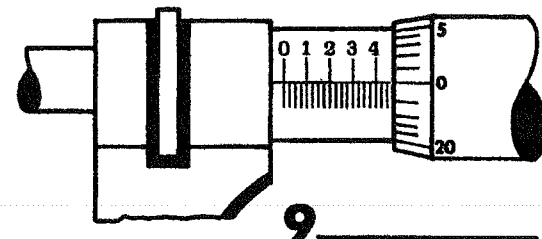
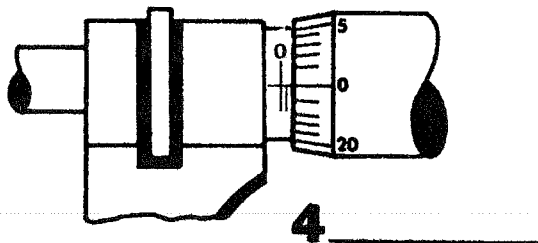
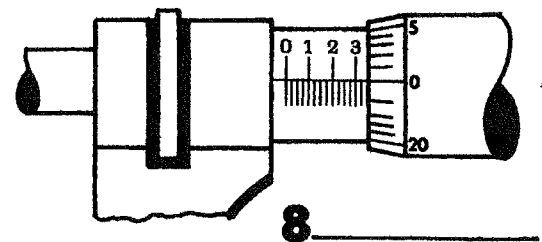
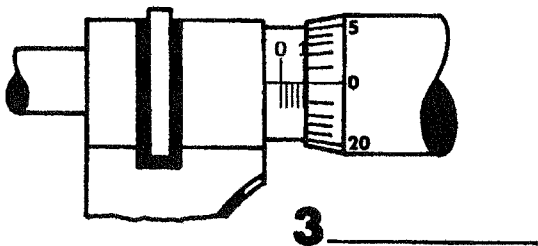
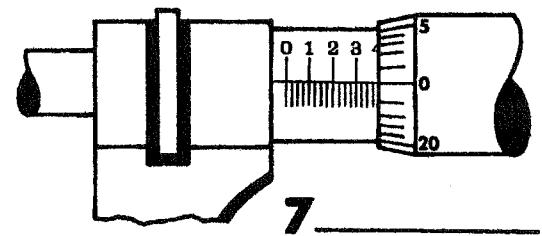
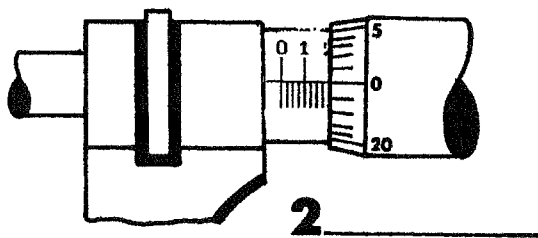
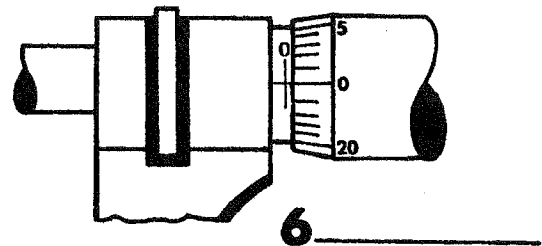
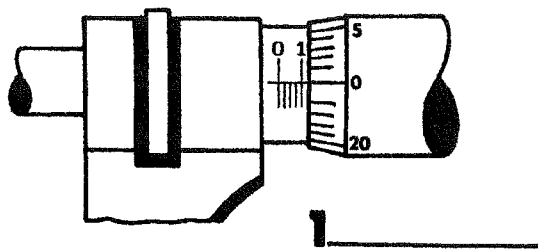
To learn to read the mike you need to understand the **Thimble** and the **Sleeve**.

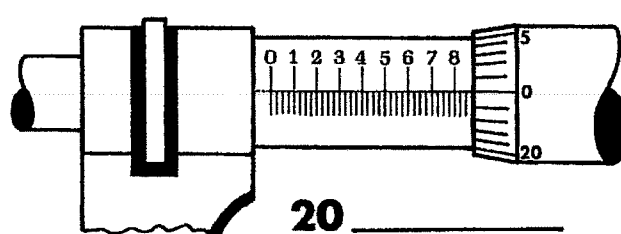
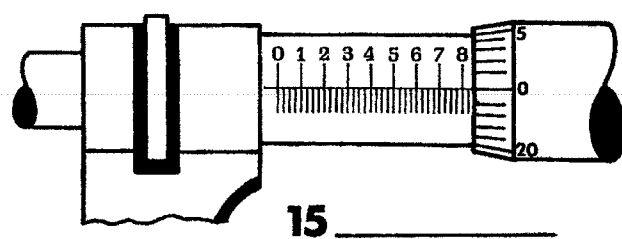
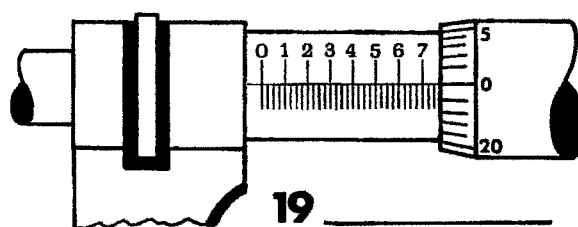
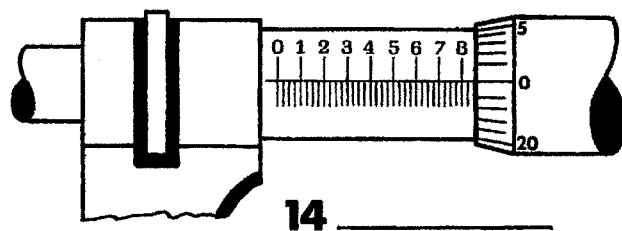
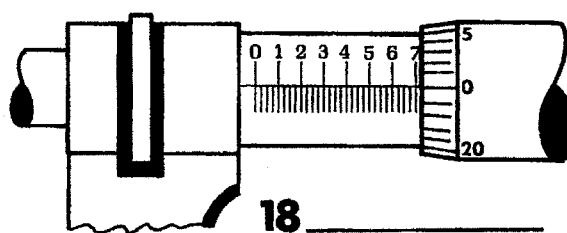
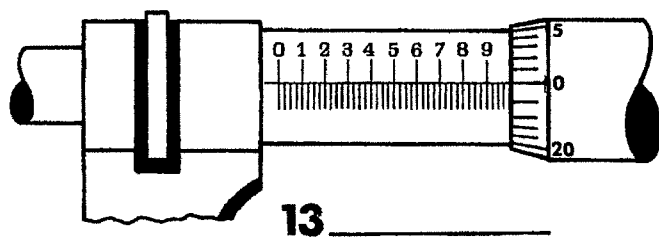
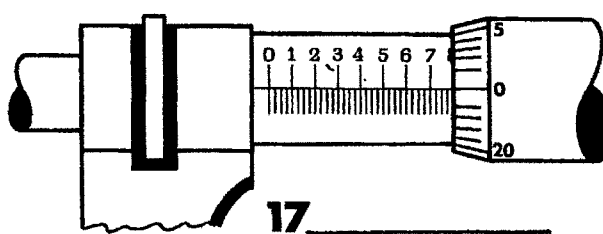
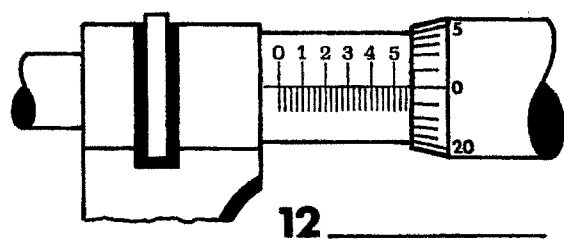
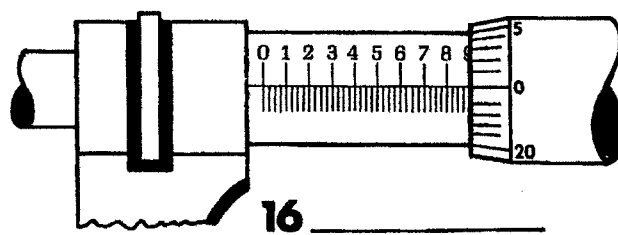
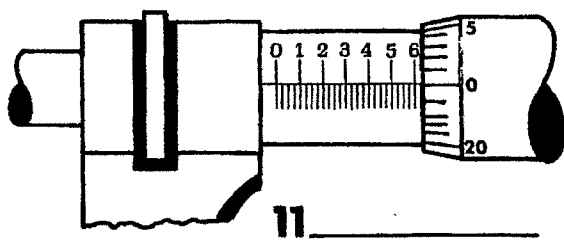
Here we are going to learn to read the micrometer by figuring out the markings on the Thimble and the Sleeve.



Pictorial Recall Test Sheet  
on  
Reading The One Inch Micrometer

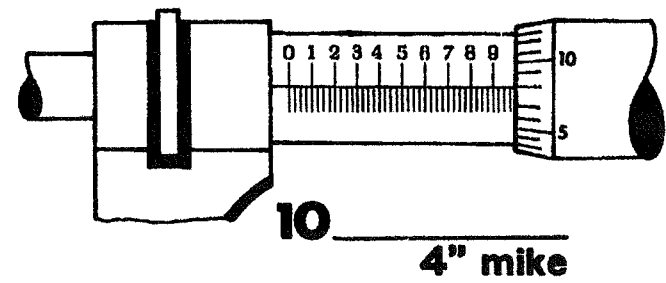
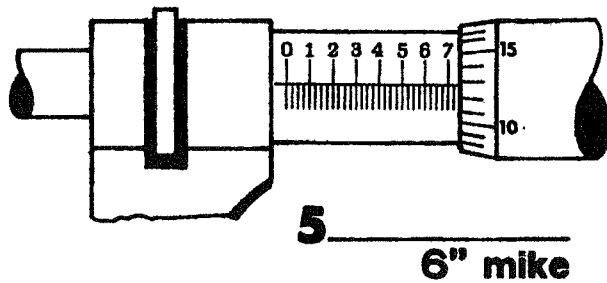
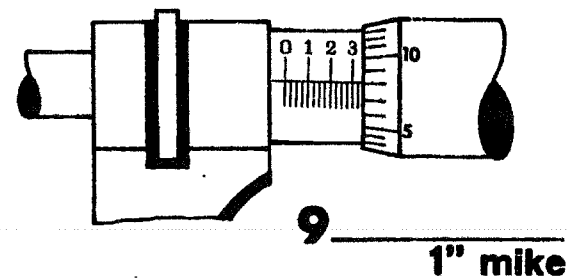
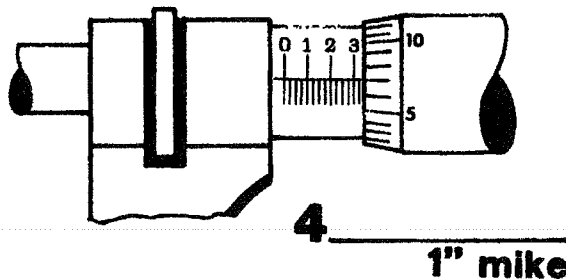
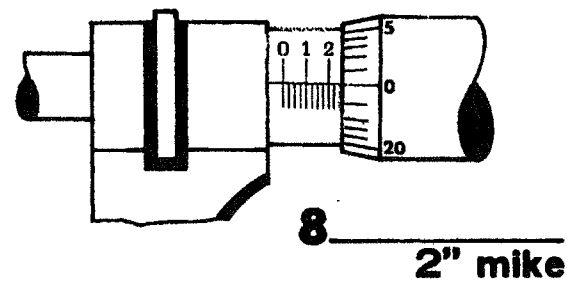
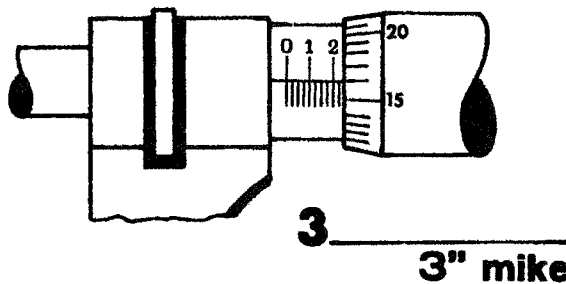
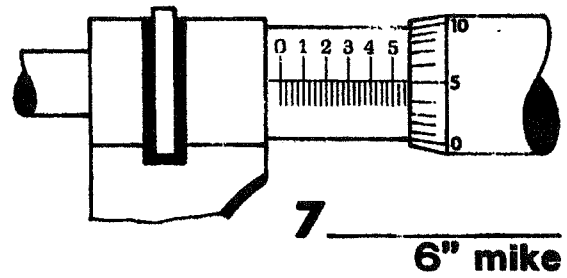
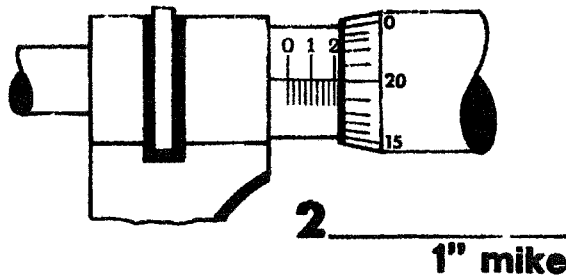
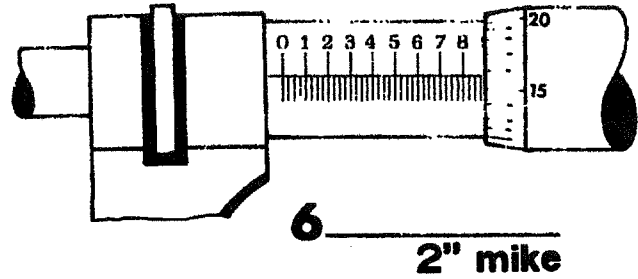
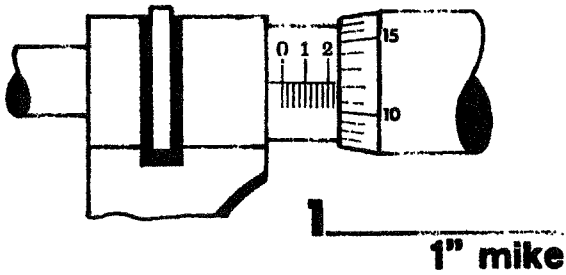
What are the correct readings in thousandths of an inch for the following settings on the one inch micrometer? Write in the correct answer in the blank space provided by each illustration.



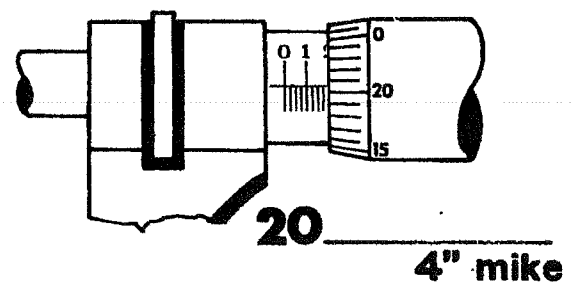
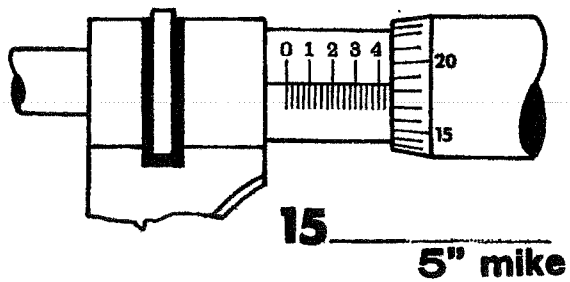
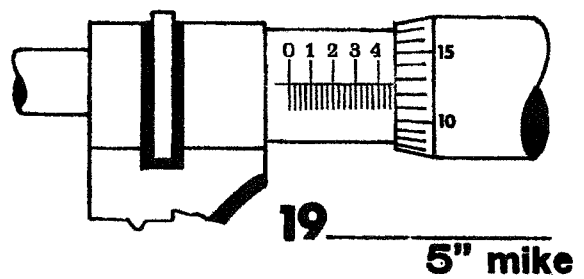
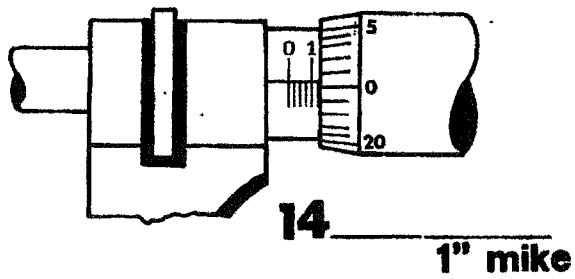
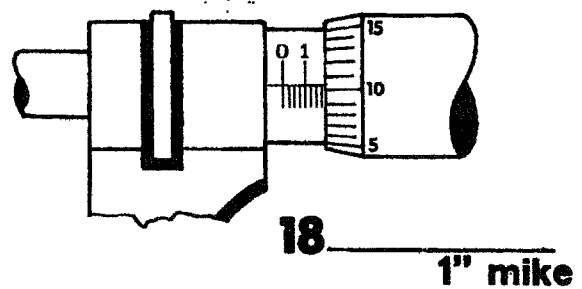
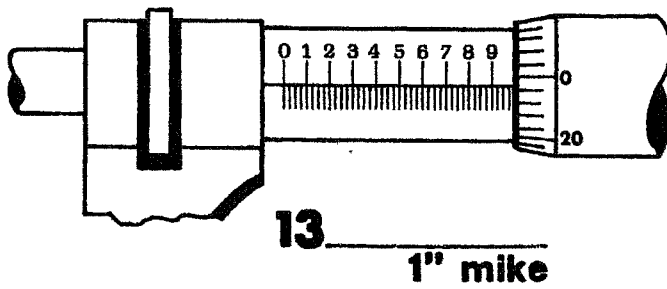
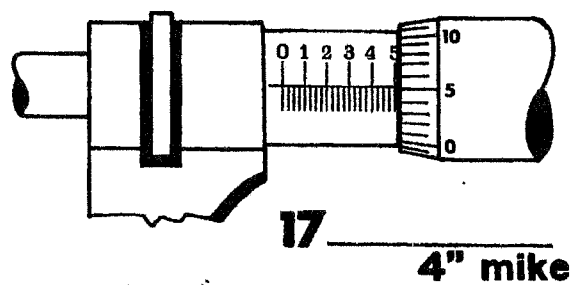
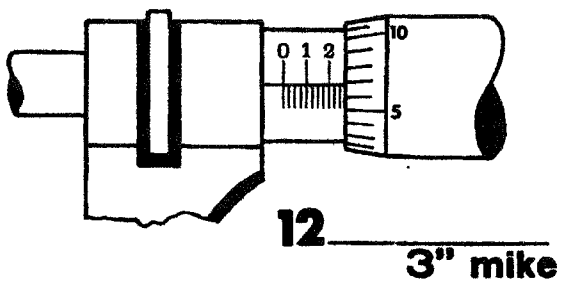
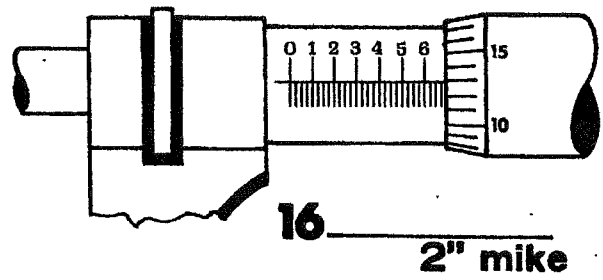
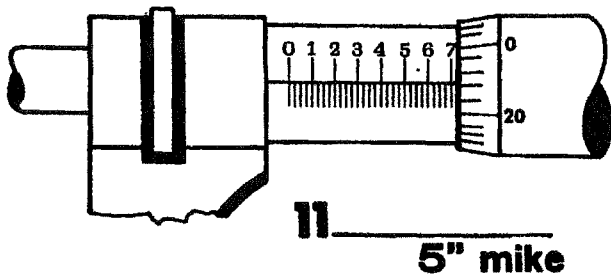


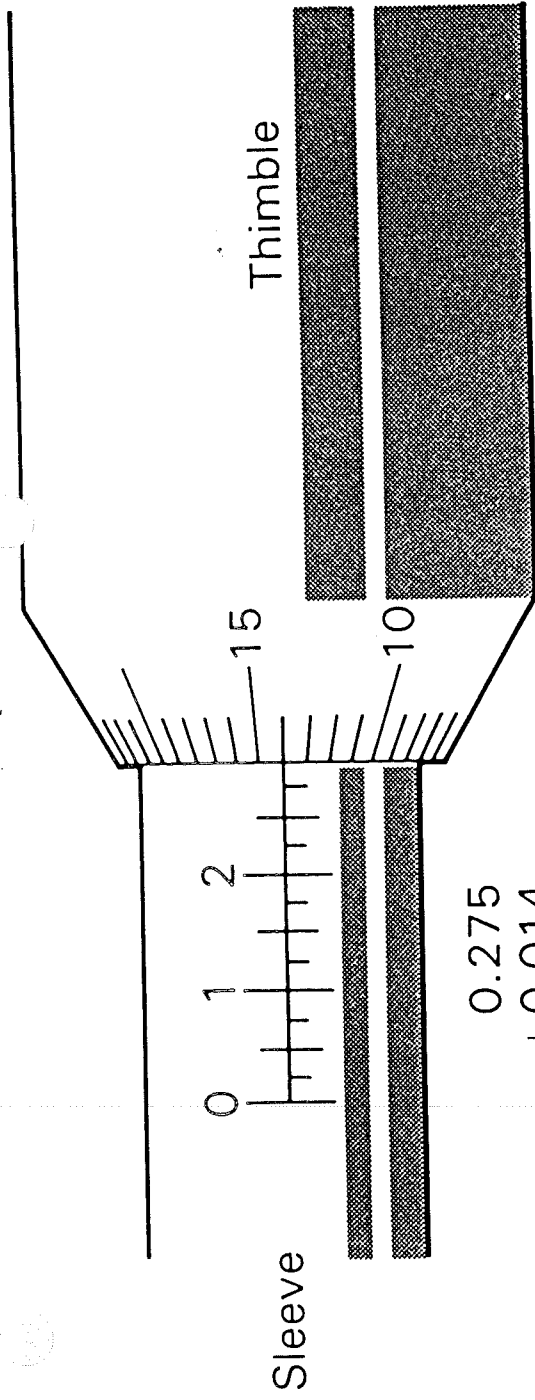
Pictorial Recall Test Sheet  
on  
Reading Various Size Micrometers

What are the correct readings in thousandths of the following settings on various size micrometers? Place the correct answer in the blank space provided by each illustration.









$$\begin{array}{r} 0.275 \\ +0.014 \\ \hline \text{Reading} = 0.289 \text{ in} \end{array}$$

# DRILL SIZE DECIMAL EQUIVALENT & TAP DRILL CHART

## DECIMAL EQUIVALENT CHART

DRILL SIZE	MM	DECIMAL EQUIVALENT	DRILL SIZE	MM	DECIMAL EQUIVALENT	DRILL SIZE	MM	DECIMAL EQUIVALENT	DRILL SIZE	MM	DECIMAL EQUIVALENT	DRILL SIZE	MM	DECIMAL EQUIVALENT
—	0.10	.0039	53	1.51	.0595	—	4.00	.1575	J	7.04	.2770	—	14.00	.5512
—	0.20	.0079	1/16	1.59	.0625	21	4.04	.1590	K	7.14	.2810	9/16	14.29	.5625
—	0.25	.0098	52	1.61	.0635	20	4.09	.1610	9/32	7.14	.2812	37/64	14.68	.5781
—	0.30	.0118	51	1.70	.0670	19	4.22	.1660	L	7.37	.2900	—	15.00	.5906
80	0.34	.0135	50	1.78	.0700	18	4.31	.1695	M	7.49	.2950	19/32	15.08	.5938
79	0.37	.0145	49	1.85	.0730	11/64	4.37	.1719	19/64	7.54	.2969	39/64	15.48	.6094
1/64	0.40	.0156	48	1.93	.0760	17	4.39	.1730	N	7.67	.3020	5/8	15.88	.6250
78	0.41	.0160	5/64	1.98	.0781	16	4.50	.1770	5/16	7.94	.3125	—	16.00	.6299
77	0.46	.0180	47	1.99	.0785	15	4.57	.1800	—	8.00	.3150	41/64	16.27	.6406
—	0.50	.0197	—	2.00	.0787	14	4.62	.1820	O	8.03	.3160	21/32	16.67	.6562
76	0.51	.0200	46	2.06	.0810	13	4.70	.1850	P	8.20	.3230	—	17.00	.6693
75	0.53	.0210	45	2.08	.0820	3/16	4.76	.1875	21/64	8.33	.3281	43/64	17.07	.6719
74	0.57	.0225	44	2.18	.0860	12	4.80	.1890	Q	8.43	.3320	11/16	17.46	.6875
—	0.60	.0236	43	2.26	.0890	11	4.85	.1910	R	8.61	.3390	45/64	17.86	.7031
73	0.61	.0240	42	2.37	.0935	10	4.91	.1935	11/32	8.73	.3438	—	18.00	.7087
72	0.64	.0250	3/32	2.38	.0938	9	4.98	.1960	S	8.84	.3480	23/32	18.26	.7188
71	0.66	.0260	41	2.44	.0960	—	5.00	.1968	—	9.00	.3543	47/64	18.65	.7344
—	0.70	.0276	40	2.50	.0980	8	5.05	.1990	T	9.09	.3580	—	19.00	.7480
70	0.71	.0280	39	2.53	.0995	7	5.11	.2010	23/64	9.13	.3594	3/4	19.05	.7500
69	0.74	.0292	38	2.58	.1015	13/64	5.16	.2031	U	9.35	.3680	49/64	19.45	.7656
—	0.75	.0295	37	2.64	.1040	6	5.18	.2040	3/8	9.53	.3750	25/32	19.84	.7812
68	0.79	.0310	36	2.71	.1065	5	5.22	.2055	V	9.56	.3770	—	20.00	.7874
1/32	0.79	.0313	7/64	2.78	.1094	4	5.31	.2090	W	9.80	.3860	51/64	20.24	.7969
—	0.80	.0315	35	2.79	.1100	3	5.41	.2130	25/64	9.92	.3906	13/16	20.64	.8125
67	0.81	.0320	34	2.82	.1110	7/32	5.56	.2188	—	10.00	.3937	—	21.00	.8268
66	0.84	.0330	33	2.87	.1130	2	5.61	.2210	X	10.08	.3970	53/64	21.03	.8281
65	0.89	.0350	32	2.95	.1160	1	5.79	.2280	Y	10.26	.4040	27/32	21.43	.8438
—	0.90	.0354	—	3.00	.1181	A	5.94	.2340	13/32	10.32	.4062	55/64	21.84	.8594
64	0.91	.0360	31	3.05	.1200	15/64	5.95	.2344	Z	10.49	.4130	—	22.00	.8661
63	0.94	.0370	1/8	3.18	.1250	—	6.00	.2362	27/64	10.72	.4219	7/8	22.23	.8750
62	0.97	.0380	30	3.26	.1285	B	6.05	.2380	—	11.00	.4331	57/64	22.62	.8906
61	0.99	.0390	29	3.45	.1360	C	6.15	.2420	7/16	11.11	.4375	—	23.00	.9055
—	1.00	.0394	28	3.57	.1405	D	6.25	.2460	29/64	11.51	.4531	29/32	23.02	.9062
60	1.02	.0400	9/64	3.57	.1406	1/4	6.35	.2500	15/32	11.91	.4688	59/64	23.42	.9219
59	1.04	.0410	27	3.66	.1440	E	6.35	.2500	—	12.00	.4724	15/16	23.81	.9375
58	1.07	.0420	26	3.73	.1470	F	6.53	.2570	31/64	12.30	.4844	—	24.00	.9449
57	1.09	.0430	25	3.80	.1495	G	6.63	.2610	1/2	12.70	.5000	61/64	24.21	.9531
56	1.18	.0465	24	3.86	.1520	17/64	6.75	.2656	—	13.00	.5118	31/32	24.61	.9688
3/64	1.19	.0469	23	3.91	.1540	H	6.76	.2660	33/64	13.10	.5156	—	25.00	.9842
55	1.32	.0520	5/32	3.97	.1562	I	6.91	.2720	17/32	13.49	.5312	63/64	25.00	.9844
54	1.40	.0550	22	3.99	.1570	—	7.00	.2756	35/64	13.89	.5469	1"	25.40	1.0000

## TAP DRILL CHART

TAP SIZE	DRILL SIZE	PROBABLE % THREAD	TAP SIZE	DRILL SIZE	PROBABLE % THREAD	TAP SIZE	DRILL SIZE	PROBABLE % THREAD
0 - 80	3/64	71 - 81	10 - 32	21	68 - 76	5/8 - 18	37/64	58 - 65
M1.6 x .35	1.25 mm	67 - 77	M5 x .8	4.2 mm	69 - 77	M16 x 2	35/64	76 - 81
1 - 64	53	59 - 67	12 - 24	17	66 - 72	3/4 - 10	21/32	68 - 72
M2 x .4	1/16	72 - 79	12 - 28	15	70 - 78	3/4 - 16	11/16	71 - 77
1 - 72	53	67 - 75	M6 x 1	10	76 - 84	M20 x 2.5	11/16	74 - 78
2 - 56	51	62 - 69	1/4 - 20	7	70 - 75	7/8 - 9	49/64	72 - 76
2 - 64	50	70 - 79	1/4 - 28	3	72 - 80	7/8 - 14	13/16	62 - 67
M2.5 x .45	2.05 mm	69 - 77	5/16 - 18	F	72 - 77	M24 x 3	53/64	72 - 76
3 - 48	5/64	70 - 77	5/16 - 24	I	67 - 75	1 - 8	7/8	73 - 77
3 - 56	46	69 - 78	M8 x 1.25	6.7 mm	74 - 80	1 - 12	59/64	67 - 72
4 - 40	44	65 - 71	3/8 - 16	5/16	72 - 77	1 - 14	15/16	61 - 67
4 - 48	42	61 - 68	3/8 - 24	Q	71 - 79	1-1/8 - 7	63/64	72 - 76
M3 x .5	40	70 - 79	M10 x 1.5	8.4 mm	76 - 82	1/18 - 12	1-3/64	66 - 72
5 - 40	39	65 - 72	7/16 - 14	U	70 - 75	M30 x 3.5	1-3/64	75
5 - 44	38	63 - 71	7/16 - 20	25/64	65 - 72	1-1/4 - 7	1-7/64	76
M3.5 x .6	33	72 - 81	M12 x 1.75	13/32	69 - 74	1-1/4 - 12	1-11/64	72
6 - 32	36	71 - 78	1/2 - 13	27/64	73 - 78	1-3/8 - 6	1-7/32	72
6 - 40	33	69 - 77	1/2 - 20	29/64	65 - 72	1-3/8 - 12	1-19/64	72
M4 x .7	3.25 mm	74 - 82	M14 x 2	15/32	76 - 81	M36 x 4	1-1/4	82
8 - 32	29	62 - 69	9/16 - 12	31/64	68 - 72	1-1/2 - 6	1-11/32	72
8 - 36	29	70 - 78	9/16 - 18	33/64	58 - 65	1-1/2 - 12	1-27/64	72
10 - 24	25	69 - 75	5/8 - 11	17/32	75 - 79			

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## Torque Conversion Chart Newton Meters to Inch Pounds

This printable torque conversion chart of newton meters to inch pounds is provided by

TheToolHut.com

Newton Meters (N-m)	Inch Pounds (in-lbs)	Newton Meters (N-m)	Inch Pounds (in-lbs)	Newton Meters (N-m)	Inch Pounds (in-lbs)	Newton Meters (N-m)	Inch Pounds (in-lbs)	Newton Meters (N-m)	Inch Pounds (in-lbs)
1 =	8.85	32 =	283.22	63 =	557.60	94 =	831.97	125 =	1106.34
2 =	17.70	33 =	292.07	64 =	566.45	95 =	840.82	126 =	1115.19
3 =	26.55	34 =	300.93	65 =	575.30	96 =	849.67	127 =	1124.04
4 =	35.40	35 =	309.78	66 =	584.15	97 =	858.52	128 =	1132.90
5 =	44.25	36 =	318.63	67 =	593.00	98 =	867.37	129 =	1141.75
6 =	53.10	37 =	327.48	68 =	601.85	99 =	876.22	130 =	1150.60
7 =	61.96	38 =	336.33	69 =	610.70	100 =	885.07	131 =	1159.45
8 =	70.81	39 =	345.18	70 =	619.55	101 =	893.93	132 =	1168.30
9 =	79.66	40 =	354.03	71 =	628.40	102 =	902.78	133 =	1177.15
10 =	88.51	41 =	362.88	72 =	637.25	103 =	911.63	134 =	1186.00
11 =	97.36	42 =	371.73	73 =	646.10	104 =	920.48	135 =	1194.85
12 =	106.21	43 =	380.58	74 =	654.96	105 =	929.33	136 =	1203.70
13 =	115.06	44 =	389.43	75 =	663.81	106 =	938.18	137 =	1212.55
14 =	123.91	45 =	398.28	76 =	672.66	107 =	947.03	138 =	1221.40
15 =	132.76	46 =	407.13	77 =	681.51	108 =	955.88	139 =	1230.25
16 =	141.61	47 =	415.99	78 =	690.36	109 =	964.73	140 =	1239.10
17 =	150.46	48 =	424.84	79 =	699.21	110 =	973.58	141 =	1247.96
18 =	159.31	49 =	433.69	80 =	708.06	111 =	982.43	142 =	1256.81
19 =	168.16	50 =	442.54	81 =	716.91	112 =	991.28	143 =	1265.66
20 =	177.01	51 =	451.39	82 =	725.76	113 =	1000.13	144 =	1274.51
21 =	185.87	52 =	460.24	83 =	734.61	114 =	1008.99	145 =	1283.36
22 =	194.72	53 =	469.09	84 =	743.46	115 =	1017.84	146 =	1292.21
23 =	203.57	54 =	477.94	85 =	752.31	116 =	1026.69	147 =	1301.06
24 =	212.42	55 =	486.79	86 =	761.16	117 =	1035.54	148 =	1309.91
25 =	221.27	56 =	495.64	87 =	770.01	118 =	1044.39	149 =	1318.76
26 =	230.12	57 =	504.49	88 =	778.87	119 =	1053.24	150 =	1327.61
27 =	238.97	58 =	513.34	89 =	787.72	120 =	1062.09	151 =	1336.46
28 =	247.82	59 =	522.19	90 =	796.57	121 =	1070.94	152 =	1345.31
29 =	256.67	60 =	531.04	91 =	805.42	122 =	1079.79	153 =	1354.16
30 =	265.52	61 =	539.90	92 =	814.27	123 =	1088.64	154 =	1363.01
31 =	274.37	62 =	548.75	93 =	823.12	124 =	1097.49	155 =	1371.87
Conversion Formula: newton meters x 8.85074579 = inch pounds									Print Chart

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## CONVERSION CHART FOOT POUNDS OF TORQUE TO NEWTON METERS

### Torque Conversion Chart English to Metric

This printable torque conversion chart of foot pounds to newton meters is provided by

[TheToolHut.com](http://TheToolHut.com)

Foot Pounds (ft. lbs.)	Newton Meters (N-m)	Foot Pounds (ft. lbs.)	Newton Meters (N-m)	Foot Pounds (ft. lbs.)	Newton Meters (N-m)	Foot Pounds (ft. lbs.)	Newton Meters (N-m)	Foot Pounds (ft. lbs.)	Newton Meters (N-m)
1 =	1.3	32 =	43.4	63 =	85.4	94 =	127.4	125 =	169.5
2 =	2.7	33 =	44.7	64 =	86.8	95 =	128.8	126 =	170.8
3 =	4.1	34 =	46.1	65 =	88.1	96 =	130.2	127 =	172.2
4 =	5.4	35 =	47.4	66 =	89.5	97 =	131.5	128 =	173.5
5 =	6.8	36 =	48.8	67 =	90.8	98 =	132.9	129 =	174.9
6 =	8.1	37 =	50.7	68 =	92.2	99 =	134.2	130 =	176.2
7 =	9.5	38 =	51.5	69 =	93.6	100 =	135.6	131 =	177.6
8 =	10.8	39 =	52.9	70 =	94.9	101 =	136.9	132 =	179.0
9 =	12.2	40 =	54.2	71 =	96.3	102 =	138.3	133 =	180.3
10 =	13.6	41 =	55.6	72 =	97.6	103 =	139.6	134 =	181.7
11 =	14.9	42 =	56.9	73 =	99.0	104 =	141.0	135 =	183.0
12 =	16.3	43 =	58.3	74 =	100.3	105 =	142.4	136 =	184.4
13 =	17.6	44 =	59.7	75 =	101.7	106 =	143.7	137 =	185.7
14 =	18.9	45 =	61.0	76 =	103.0	107 =	145.1	138 =	187.1
15 =	20.3	46 =	62.4	77 =	104.4	108 =	146.4	139 =	188.5
16 =	21.7	47 =	63.7	78 =	105.8	109 =	147.8	140 =	189.8
17 =	23.0	48 =	65.1	79 =	107.1	110 =	149.1	141 =	191.2
18 =	24.4	49 =	66.4	80 =	108.5	111 =	150.5	142 =	192.5
19 =	25.8	50 =	67.8	81 =	109.8	112 =	151.8	143 =	193.9
20 =	27.1	51 =	69.2	82 =	111.2	113 =	153.2	144 =	195.2
21 =	28.5	52 =	70.5	83 =	112.5	114 =	154.6	145 =	196.6
22 =	29.8	53 =	71.9	84 =	113.9	115 =	155.9	146 =	198.0
23 =	31.2	54 =	73.2	85 =	115.2	116 =	157.3	147 =	199.3
24 =	32.5	55 =	74.6	86 =	116.6	117 =	158.6	148 =	200.7
25 =	33.9	56 =	75.9	87 =	118.0	118 =	160.0	149 =	202.0
26 =	35.2	57 =	77.3	88 =	119.3	119 =	161.3	150 =	203.4
27 =	36.6	58 =	78.6	89 =	120.7	120 =	162.7	151 =	204.7
28 =	38.0	59 =	80.0	90 =	122.0	121 =	164.0	152 =	206.1

29 =	39.3	60 =	81.4	91 =	123.4	122 =	165.4	153 =	207.4
30 =	40.7	61 =	82.7	92 =	124.7	123 =	166.8	154 =	208.8
31 =	42.0	62 =	84.1	93 =	126.1	124 =	168.1	155 =	210.2
									<b>Print Chart</b>



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