

A BattleBots IQ Exercise

Drilling and Tapping

Directions: Use the two tables below to answer the following questions.

- _____ 1. You need to drill and tap a hole for a 5/16" UNC coarse thread bolt. What size tap drill will you select?
- _____ 2. What is the diameter of the drill bit you selected?
- _____ 3. How many threads per inch will it have?
- _____ 4. What size tap drill is required for a 1/4", fine thread machine screw?
- _____ 5. How many threads per inch will it have?
- _____ 6. What is the diameter of the drill bit selected in question #4?
- _____ 7. What is the diameter of a letter P tap drill?
- _____ 8. Is a letter Z tap drill larger in diameter than 1/2"?
- _____ 9. A 49/64 tap drill is required for which size bolt?
- _____ 10. Which is larger, a No# 1 tap drill or an A sized tap drill?

Possible Answers:

# 18	#17	#20	#15	F	G	H	0.2570
0.2500	0.2610	18	20	16	0.2130	0.2090	0.2210
24	32	28	w	x	y	z	0.3230
0.3320	0.3160	Yes	No	3/4-9	3/4-10	7/8-14	
7/8-9	No#1	A					

An Exercise in Tapping and Drilling, continued.

A chart of number and letter drill sizes.

No.	Size	No.	Size	No.	Size	No.	Size
80	0.0135	53	0.0595	26	0.1470	A	0.2340
79	0.0145	52	0.0635	25	0.1495	B	0.2380
78	0.0160	51	0.0670	24	0.1520	C	0.2420
77	0.0118	50	0.0700	23	0.1540	D	0.2460
76	0.0200	49	0.0730	22	0.1570	E	0.2500
						F	0.2570
75	0.0210	48	0.0760	21	0.1590	G	0.2610
74	0.0225	47	0.0785	20	0.1610	H	0.2660
73	0.0240	46	0.0810	19	0.1660	I	0.2720
72	0.0250	45	0.0820	18	0.1695	J	0.2770
71	0.0260	44	0.0860	17	0.1730	K	0.2810
						L	0.2900
70	0.0280	43	0.0890	16	0.1770	M	0.2950
69	0.0292	42	0.0935	15	0.1800	N	0.3020
68	0.0310	41	0.0960	14	0.1820	O	0.3160
67	0.0320	40	0.0980	13	0.1850	P	0.3230
66	0.0330	39	0.0995	12	0.1890	Q	0.3320
						R	0.3390
65	0.0350	38	0.1015	11	0.1910	S	0.3480
64	0.0360	37	0.1040	10	0.1935	T	0.3580
63	0.0370	36	0.1065	9	0.1960	U	0.3680
62	0.0380	35	0.1100	8	0.1990	V	0.3770
61	0.0390	34	0.1110	7	0.2010	W	0.3860
						X	0.3970
60	0.0400	33	0.1130	6	0.2040	Y	0.4040
59	0.0410	32	0.1160	5	0.2055	Z	0.4130
58	0.0420	31	0.1200	4	0.2090		
57	0.0430	30	0.1285	3	0.2130		
56	0.0465	29	0.1360	2	0.2210		
55	0.0520	28	0.1405	1	0.2280		
54	0.0550	27	0.1440				

An Exercise in Tapping and Drilling, continued.

UNC and UNF Thread Chart for medium sized Machine Screws

Nominal Diameter	Coarse Thread UNC		Fine Thread UNF	
	Threads /Inch	Tap Drill	Threads/Inch	Tap Drill
#5 (.125")	40	# 38	44	# 37
#6 (.138")	32	# 36	40	# 33
#8 (.164")	32	# 29	36	#29
#10 (.190")	24	# 25	32	#21
#12 (.216")	24	# 16	28	#14
¼"	20	# 7	28	#3
5/16"	18	F	24	I
3/8"	16	5/16	24	Q
7/16"	14	U	20	25/64
½"	13	27/64	20	29/64
9/16"	12	31/64	18	33/64
5/8"	11	17/32	18	37/64
¾"	10	21/32	16	45/64
7/8"	9	49/64	14	13/16